September 2025

Rule 34 Registration
Vast Containment and RF
Section 17, T26S, R33E, Lea County

Volume2 Vast In-Ground Containments

- ***C-147 Form & Liner Equivalency Demonstration***
- ***Closure Cost Estimate for In-Ground Containment***
- ***Stamped Design Drawings and Avian Deterrence***
- ***Recently Approved Plans for Design/Construction, O&M, and Closure***

Southeast of the existing Vast Frac Pond a low spot caught last week's rain. The result was mud cracks and wild flowers. The east levee of the Vast Pond is in the upper left side of the image.

Prepared for:
Cerberus Land and Cattle Company, LLC
Houston, Texas

Prepared by:

R.T. Hicks Consultants, Ltd.
Albuquerque, New Mexico

Cascade Services LLC
Midland, Texas

State of New Mexico
Energy Minerals and Natural Resources
Department Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505
https://www.emnrd.nm.gov/ocd/ocd-e-permitting/

Form C-147
Revised October 11, 2022

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: Cerberus Land and Cattle Company, LLC (For multiple operators attach page with information) OGRID #: 333499
Address: 8849 Larston, Houston, TX 77056
Facility or well name (include API# if associated with a well): Vast Containment
OCD Permit Number: _____ (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr G, H,I J Section 17 Township T26S Range R33E County: Lea
Surface Owner: ☐ Federal ☑ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.
☑ **Recycling Facility:**
Location of recycling facility (if applicable): Latitude 32.040572 Longitude -103.581214 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 32.043055 Longitude -103.589166 NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☑ Lined ☐ Liner type: Thickness 60 p 40 s mil ☐ LLDPE ☑ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☑ Welded ☐ Factory ☐ Other _____ Volume: 1080,741 bbl Dimensions: L_____ x W_____ x D_____
☐ Recycling Containment Closure Completion Date:_____
See Drawings

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 $ $500,087.00 **(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 Game Fence

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.

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): William Ditto Title: Managing Partner

Signature: Date: 2025-11-11

e-mail address: Wditto@cerberuslcc.com Telephone: 432-312-2859

11.
OCD Representative Signature: Victoria Venegas **Approval Date:** 01/21/2026

Title: Environmental Specialist **OCD Permit Number:** FVV2602229361

- [x] OCD Conditions
- [ ] Additional OCD Conditions on Attachment

C-147

LINER EQUIVALENCY DEMONSTRATION

R.K. FROBEL & ASSOCIATES
Consulting Engineers

Technical Memorandum: 40-mil HDPE as Alternative Secondary Liner System for In Ground Recycling Containment Facilities

NMAC 19.15.34.12 A

I have investigated the suitability of application for 40 mil HDPE geomembrane as an equivalent secondary liner to 30 mil scrim reinforced LLDPE (LLDPEr) in the application for In Ground Recycling Containment facilities. *In summary, it is my professional opinion that the specified 40 mil HDPE geomembrane will provide a secondary liner system that is equal to or better than 30 mil scrim reinforced LLDPEr and will provide the requisite protection of fresh water, public health and the environment for many years when engineering design provides requisite site/soil/slope preparation and when used in concert with requisite primary liners and drainage layers.*

It is understood that the lining system under discussion is composed of a 60 mil HDPE Primary liner, geonet drainage layer and a 40 mil HDPE Secondary liner. *In consideration of the secondary lining system application, size of impoundment and depth, design details as well as the chemical nature of typical processed water, it is my professional opinion that the 40 mil HDPE geomembrane will provide the requisite barrier against processed water loss and will function effectively as a secondary liner.*

The following are discussion points that hopefully will exhibit the equivalency of a 40 mil HDPE secondary liner to that of a 30 mil LLDPEr.

The nature and formulation of the 40 mil HDPE resin is the same as the Primary 60 mil HDPE. The major difference is that the 40 mil HDPE is lower in thickness (more flexible and less puncture resistant). However, in covered conditions, HDPE will resist aging and degradation and remain intact for many decades. In fact, a secondary liner of 40 mil HDPE will outlast an exposed 60 mil HDPE liner. According to the Geosynthetic Research Institute (GRI) study on lifetime prediction (GRI Paper No. 6), the half life of HDPE (GRI GM 13) exposed is > 36 years and the half-life of HDPE covered or buried is greater than 100 years. It is understood that in order to ensure compliance of materials, the primary 60 mil HDPE to be used must meet or exceed GRI GM 13 Standards. Likewise, the secondary liner that is not exposed to the same environmental and chemical conditions must meet or exceed GRI GM 13 for non-reinforced HDPE. Adhering to the minimum requirements of the GRI Specifications, 40 mil HDPE when used as a secondary liner will be equally as protective as the primary 60 mil HDPE liner (reference: www.geosynthetic-institute.org/grispecs) and equally as protective as a 30 mil scrim reinforced LLDPEr liner.

Durability of Geomembranes is directly affected by exposure conditions. Buried or covered geomembranes are not affected by the same degradation mechanisms (UV, Ozone, Chemical, Stress, Temperature, etc) as are fully exposed geomembranes. In this regard, the secondary liner material and thickness can be much less robust than the fully exposed primary liner which in this case is 60 mil HDPE. This is also the case for

32156 Castle Court / Suite 211-240 / Evergreen, CO 80439
Ph 720-289-0300 / geosynthetics@msn.com

landfill lining systems where the secondary geomembrane in a bottom landfill cell may be 40 mil HDPE.

Thermal Fusion Seaming Requirements. Thermal seaming and QC seam test requirements for geomembranes are product specific and usually prescribed by the sheet manufacturer. Dual wedge thermal fusion welding is commonly used on HDPE and QC testing by air channel (ASTM D 5820) is fully acceptable and recognized as an industry standard. In this regard, there should be no exception requirement for seaming and QC testing as both the Primary and Secondary geomembranes are HDPE. This is fully covered in comprehensive specifications for both the Primary and Secondary geomembranes (Reference: www.ASTM.org/Standards).

Potential for Leakage through the Primary and Secondary Liners. Leakage through geomembrane liners is directly a function of the height of liquid head above any hole or imperfection. The geonet drainage media provides immediate drainage to a low point or sump and thus no hydrostatic head or driving gradient is available to push leakage water through a hole in the secondary liner. In this regard, secondary geomembrane materials can be (and usually are) much less in thickness and also polymer type. Hydraulic Conductivity through the 40 mil HDPE liner material is extremely low due to the polymer type, structure and crystallinity and exceeds requirements of EPA SW-846 Method 9090A.

Chemical Attack. Chemical attack to polymeric geomembranes is directly a function of type of chemical, temperature and exposure time. Again, the HDPE Primary provides the chemically resistant liner and is QC tested to reduce potential defects or holes. If there is a small hole, the geonet drain takes any leakage water immediately to the sump for extraction. Thus, exposure time is very limited on a secondary liner in addition to low temperature, little volume and virtually no head pressure. In this regard, a chemically resistant geomembrane material such as 40 mil HDPE can be specified for the secondary and is a fully acceptable alternate to 30 mil scrim reinforced LLDPEr.

Mechanical Properties Characteristics. Geomembranes of different polymer and/or structure (i.e., reinforced vs non-reinforced) cannot be readily compared using such characteristics as tensile stress/strain, tear, puncture and polymer requirements. For a 40 mil HDPE liner material to function as a Secondary liner it should meet or exceed the manufacturers minimum requirements for Density, Tensile Properties, Tear, Puncture as well as other properties such as UV resistance. The sheet material must also meet or exceed GRI GM 13 minimum requirements. *In this regard, a 40 mil HDPE will be equivalent to a 30 mil LLDPEr as a secondary liner for the conditions listed below:*

- *The subgrade or compacted earth foundation will be smooth, free of debris or loose rocks, dry, unyielding and will support the lining system.*
- *The side slopes for the containment shall be equal to or less than 3H:1V.*
- *The physical properties and condition of the subgrade or liner foundation*

(i.e., density, slope, moisture) will be inspected and certified by a Professional Engineer that it meets or exceeds specification requirements.

- *Immediately prior to installation, the installation contractor shall inspect and sign off on the subgrade conditions that they meet or exceed the HDPE manufacturer and installers requirements.*
- *A protective geotextile will be placed on the finished and accepted subgrade between subgrade and the 40 mil HDPE Secondary liner.*
- *A 200 mil geonet will be placed over the 40 mil HDPE Secondary Liner.*
- *A 60 mil HDPE Primary liner will be placed over the 200 mil geonet drainage layer.*

If you have any questions on the above technical memorandum or require further information, give me a call at 720-289-0300 or email geosynthetics@msn.com

Sincerely Yours,

R K Frobel

Ronald K. Frobel, MSCE, PE

References:

NMAC 19.15.34.12 A DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT

Geosynthetic Research Institute (GRI) Published Standards and Papers 2017
www.geosynthetic-institute.org

ASTM Geosynthetics Standards 2017
www.ASTM.org/Standards

CLOSURE COST ESTIMATE

Corporate Headquarters | 952 Echo Lane, Ste 130 | Houston, TX 77024
Midland Headquarters | 3403-B E. County Road 44 | Midland, TX 79705

Vast In-Ground Containment Financial Assurance Cost Estimate

Attached is the cost estimate for reclamation of the Vast Recycling In-Ground containment.

Vast In-Ground Containment

The contractor's detailed estimate for closure of the in-ground containment immediately follows this outline of closure costs.

The attached cost sheet shows closure sampling and analysis cost is estimated at $1,725 (sampling) plus $2,700 (laboratory cost) to "test the soils beneath the containment for contamination with a five-point composite sample which includes stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in Table I" of Rule 34. Total closure sampling costs including project management and preparation of the Closure Report for the site are estimated at $7,500. The cost estimates are presented below.

All work elements required by Rule 34:	$492,587.00
Preparation of sampling results and closure report:	$7,500.00
Total Closure Cost:	$500,087.00

Cascade Services, LLC
952 Echo Ln
Ste 130
Houston, TX 77024-2814
www.cascadeservicesllc.com

Estimate

ADDRESS
Cerberus Land & Cattle Company, LLC
8849 Larston St
Houston, TX 77055

SHIP TO
Cerberus Land & Cattle Company, LLC
8849 Larston St
Houston, TX 77055

ESTIMATE 2110
DATE 07/21/2025

CUSTOMER PROJECT NAME
Vast Closure

PROJECT LOCATION COORDINATES
32.0431638505, -103.589284641

DESCRIPTION	QTY	UNIT	RATE	AMOUNT
This is pricing a package to reclaim the 1,127,429 BBL produced water ponds Mobilize equipment to site. Dirt reclaim of pond consist of- Bury all material (Caliche, Gypsum, Sand, ect.) below ground level, backfill pond area with uncontaminated soil from pond walls. Pond area will be reclaimed to natural elevations and water flow patterns. All stockpiled strippings will be put down last to ensure ground has been completely returned to native design.	114,017		2.00	228,034.00
Environmental soil sampling This will include digging 6 sample locations for each containment. One composite sample from 0-4 feet below surface and one discrete sample from each location at 4.25 feet Cost include trip, labor, materials, and laboratory testing	1		1,725.00	1,725.00
Environmental Soil testing Before earthwork can begin the soil must be tested for contamination in case of liner leakage. Cost include trip, labor, materials, and laboratory testing of 18 tests.	1		2,700.00	2,700.00
Broadcast seeding of pond area Seed will be a native mix for Lea County NM Includes purchase of seed mix and placement	1		0.00	0.00

Fence removal and disposal Fence estimated at 3,400 ft This includes removal of all posts, braces, wire, fabric, gates, and hardware.	3,400	4.00	13,600.00
Remove and dispose of all four layers. Textile, 40 mil, net, and 60 mil	1,643,520	0.15	246,528.00

Preferred payment method: ACH/Wire
Email AR@cascadeservicesllc.com for ACH/Wire details.

Remit Checks To:
Cascade Services LLC
PO Box 200954
Dallas, TX 75320-0954
**THIS ESTIMATE IS SUBJECT TO THE TERMS & CONDITIONS ATTACHED.

**If pumping is needed due to weather conditions, a $350 daily fee will be charged on final invoice.

**Materials will be invoiced upon receipt of customer purchase order or job approval.

**This estimate may not include tax and may be added on invoice unless customer provides a valid tax exemption document.

Questions? Email AR@Cascadeservicesllc.com

SUBTOTAL	492,587.00
TAX	0.00
TOTAL	**$492,587.00**

Accepted By

Accepted Date

RECYCLING CONTAINMENT DESIGN DRAWINGS

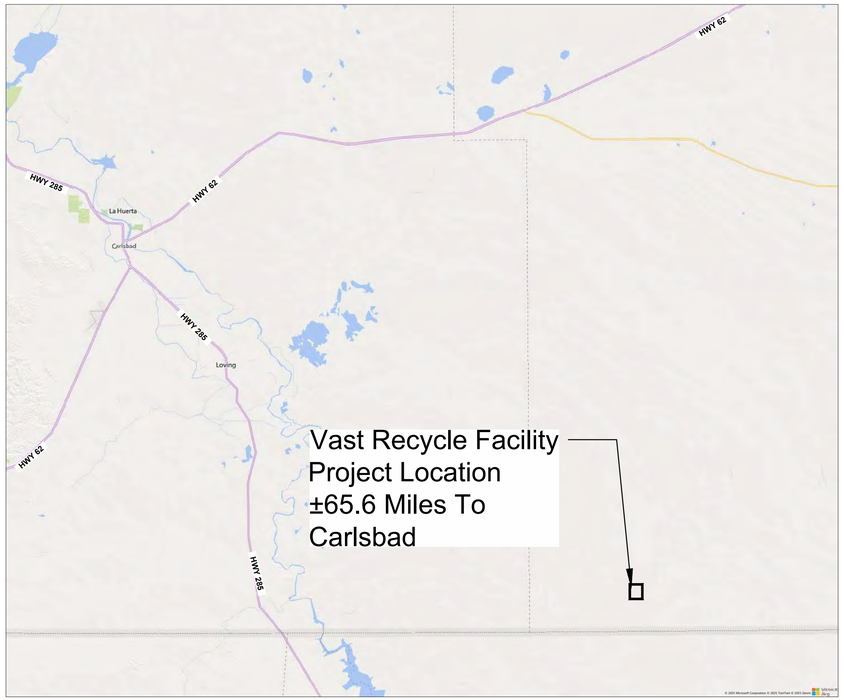
SquareRoot services
Engineering | Surveying
Materials Testing
7921 N. World Dr.
Hobbs, NM 88242
Squarerootservices.net
575-231-7347

CIVIL PLANS

CERBERUS, LLC

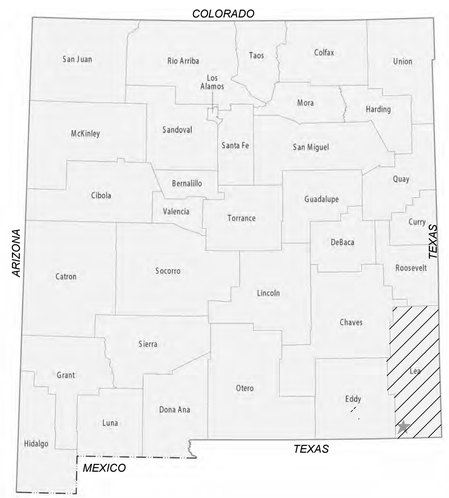
VAST RECYCLE FACILITY

SECTION 17, TOWNSHIP 26 SOUTH, RANGE 33 EAST
N.M.P.M., LEA COUNTY, NEW MEXICO
(32.043055°, -103.589166°)



INDEX OF SHEETS		
SHEET	NAME	DESCRIPTION
1	C-100	COVER SHEET
2	SU-101	TOPOGRAPHIC SURVEY
3	C-101	GENERAL NOTES
4	CS-101	CIVIL SITE PLAN
5	CS-102	CONTAINMENT PROFILES A & B
6	CS-103	CONTAINMENT VOLUMES
7	CS-501	LEAK DETECTION DETAILS
8	CS-502	LINER DETAILS
9	CS-503	FENCE DETAILS

EDDY COUNTY
NEW MEXICO



Know what's below. Call before you dig.

(505)-254-7310

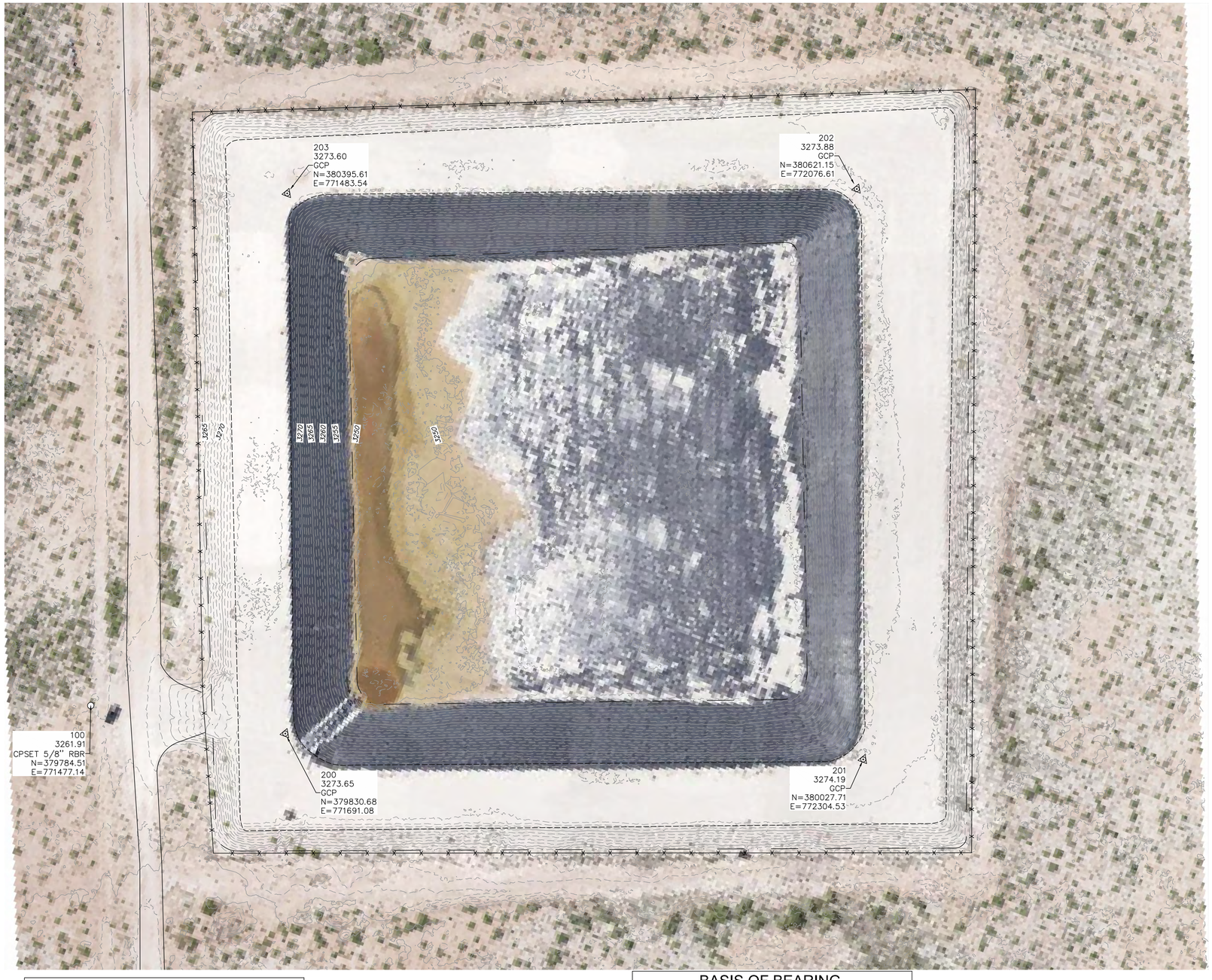
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

07/31/2025

TOPOGRAPHIC SURVEY

of VAST RECYCLE FACILITY



I, JEREMY BAKER, NEW MEXICO PROFESSIONAL SURVEYOR NO. 25773, DO HEREBY CERTIFY THAT THIS TOPOGRAPHIC SURVEY 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. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS A TOPOGRAPHIC SURVEY PLAT OF AN EXISTING TRACT OR TRACTS.

Jeremy Baker, N.M. P.S 25773 — Date: 07/31/2025

SURVEYOR NOTE

THIS IS NOT A BOUNDARY SURVEY OR A RIGHT-OF-WAY SURVEY. APPARENT PROPERTY CORNERS, RIGHT-OF-WAY LINES, OR PROPERTY LINES AS SHOWN ARE DERIVED FROM RECORD SURVEY PLATS, RIGHT-OF-WAY MAPS, OR DEEDS REFERENCED HEREON AND ARE NOT GUARANTEED OR TO BE RELIED ON FOR THE ESTABLISHMENT OF PROPERTY LINES.

BASIS OF BEARING

BEARINGS SHOWN HEREON ARE FROM GPS/GNSS OBSERVATIONS AND CONFORM TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM "***NEW MEXICO EAST ZONE***" NORTH AMERICAN DATUM OF 1983. TRUE NORTH CAN BE OBTAINED BY APPLYING A CONVERGENCE ANGLE OF ***00°23'38.7"*** AT ***CONTROL POINT #100 "CPSET 5/8" RBR"***. DISTANCES SHOWN HEREON ARE IN GROUND AND WERE OBTAINED BY APPLYING A COMBINED GRID TO GROUND SCALE FACTOR OF ***1.0001823984*** AT THE PREVIOUSLY NOTED POINT LOCATED AT ***N 379784.514, E 771477.141***. THE VERTICAL DATUM IS BASED ON GEOID18 AND IT PROVIDES ORTHOMETRIC HEIGHTS CONSISTENT WITH THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

TOPOGRAPHIC NOTE

THE TOPOGRAPHY SHOWN HEREIN IS A COMBINATION OF UAV DATA AND CONVENTIONAL/GPS DATA. THE UAV DATA WAS GENERATED USING INDUSTRY STANDARD QUALITY CHECKS AND IS **WITHIN** THE INDUSTRY RECOGNIZED GROUND SAMPLING DISTANCE (GSD) STANDARD OF BELOW 2.5 CM (1 IN / 0.08 FT). THE ABSOLUTE ACCURACY LEVEL IN STANDARD UAV DATA IS EQUAL TO 3 X GSD (3 X 0.08 FT = 0.24 FT). UAV DATA WAS USED FOR MEASUREMENTS ON NATURAL GROUND AND SUPPLEMENTAL FEATURES.

SquareRoot services
Engineering | Surveying
Materials Testing

7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

TYPE OF SURVEY:
TOPOGRAPHIC SURVEY
OF
PROJECT NAME:
VAST RECYCLE FACILITY
FOR
CLIENT:
CERBERUS, LLC

PROJECT NUMBER: 25176

PROJECT SURVEYOR: Jeremy Baker, PS
DRAWN BY: M. SEALY

GRAPHIC SCALE
0 60' 120'
SCALE: 1" = 60'
(IN FEET)

LEGEND

- CONTROL POINT AS NOTED
- SET CONTROL AS NOTED
- FENCE
- EDGE OF ROAD
- TOP OF EDGE
- BOTTOM OF EDGE
- MAJOR CONTOUR (5FT)
- MINOR CONTOUR (1FT)

JEREMY E. BAKER NEW MEXICO 25773 PROFESSIONAL SURVEYOR
07/31/2025

SHEET: 2 of 9
SU - 101

C:\Users\Brayden.Sealy\OneDrive - squarerootservices.net\Project Folder\25176 Cascade Vast Recycle Facility\Survey\DWG\25176_CASCADE_TOPO.dwg 7/22/2025 9:47 AM

GENERAL NOTES

1. NEW MEXICO ADMINISTRATIVE CODE TITLE 19, CHAPTER 15, PART 34, DESIGN CRITERIA FOR RECYCLING CONTAINMENTS SHALL APPLY TO THIS PROJECT.
2. ALL BOUNDARY, TOPOGRAPHIC AND UTILITY INFORMATION SHOWN ARE BASED ON SURVEY INFORMATION FURNISHED BY TOPOGRAPHIC.
3. THE CONTRACTOR SHALL IDENTIFY AND LOCATE UTILITY LINES, MONITORING WELLS, SURVEY MONUMENTS, AND OTHER NEARBY STRUCTURES PRIOR TO PERFORMING WORK.
4. COORDINATE INFORMATION IS BASED ON STATE PLANE COORDINATES, NEW MEXICO EAST, NAD 83.
5. THE CONTRACTOR SHALL IDENTIFY ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION AND CONTACT THE ENGINEER IN WRITING.
6. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN BEST MANAGEMENT PRACTICES (BMPS) TO MINIMIZE EROSION AND CONTROL SEDIMENT TO PROTECT SURFACE WATER QUALITY DURING STORM EVENTS.

EARTHWORK NOTES

1. THE CONTRACTOR SHALL USE WATER FOR COMPACTION AT ALL TIMES. THE CONTRACTOR SHALL ENSURE THEIR BID INCLUDES CONSTRUCTION WATER. NO EARTHWORK OPERATIONS SHALL TAKE PLACE IF CONSTRUCTION WATER IS NOT AVAILABLE ONSITE.
2. THE CONTRACTOR SHALL BUILD THE LEVEES USING COMPACTED LAYERS. UNCONTROLLED AND INCONSISTENT PUSHING AND PILING OF MATERIAL FOR LEVEE CONSTRUCTION IS NOT ACCEPTABLE. THE CONTRACTOR SHALL DEVELOP A SUCCESSFUL COMPACTION PATTERN EARLY IN THE PROCESS, VERIFIED THROUGH NUCLEAR DENSITY OR SAND CONE TESTING, AND SHALL MAINTAIN CONSISTENCY IN THE COMPACTIVE EFFORT AS LONG AS THE MATERIALS ENCOUNTERED REMAINS CONSISTENT. IF ONSITE SOILS ENCOUNTERED CHANGE, THE CONTRACTOR SHALL DEVELOP A NEW COMPACTION PATTERN.
3. FILL FOR LEVEES SHALL BE PLACED AND COMPACTED IN HORIZONTAL LIFTS WITH MAXIMUM LOOSE LIFT THICKNESS OF 10 INCHES, OR AS DIRECTED BY ENGINEER. CONSTRUCT EACH LAYER CONTINUOUSLY AND APPROXIMATELY HORIZONTAL FOR THE WIDTH AND LENGTH OF THE LEVEE. FILL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY DETERMINED BY THE ASTM D698 AND AT MOISTURE CONTENT WITHIN +2% TO -2% OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY A STANDARD PROCTOR SOILS TEST ON SAMPLES FROM THE SOURCE AREA.
4. FILL SHALL NOT BE PLACED AND COMPACTED WHEN THE MATERIALS ARE TOO WET TO PROPERLY COMPACT. MATERIAL WHICH IS TOO WET SHALL BE SPREAD ON THE FILL AREA AND PERMITTED TO DRY, ASSISTED BY HARROWING IF NECESSARY, UNTIL THE MOISTURE CONTENT IS REDUCED TO ALLOWABLE LIMITS. IF THE ENGINEER DETERMINED THAT ADDED MOISTURE IS REQUIRED, WATER SHALL BE APPLIED UNIFORMLY OVER THE AREA TO BE TREATED, AND GIVE COMPLETE AND ACCURATE CONTROL OF THE AMOUNT OF WATER TO BE USED. IF TOO MUCH WATER IS ADDED, THAT AREA SHALL BE PERMITTED TO DRY BEFORE COMPACTION IS CONTINUED.
5. PERFORM ONE NUCLEAR DENSITY GAGE TEST PER 2500 CY MINIMUM OR AS DIRECTED BY THE ENGINEER.
6. EARTHWORK CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF THE FINISHED COMPACTED POND BOTTOM AND SIDE SLOPES BEFORE HDPE LINER INSTALLATION, REMOVING ALL DEBRIS, SHARP OBJECTS AND GRAVEL LARGER THAN 3/4 INCH.
7. EARTHWORK CONTRACTOR SHALL ROLL SURFACE WITH A SMOOTH ROLLER TO ELIMINATE RUTS.

LINER NOTES

1. LINER CONTRACTOR SHALL INSPECT GRADED SURFACE FOR DEBRIS, ROCKS OR OTHER MATERIAL THAT MAY DAMAGE THE LINER AND COORDINATE WITH OWNER IF ADDITIONAL SUBGRADE RESURFACING IS NEEDED PRIOR TO PERFORMING WORK.
2. LINER CONTRACTOR TO PROVIDE SUBMITTAL OF LINER PANEL LAYOUT.
3. LINER CONTRACTOR TO SIGN SUBGRADE ACCEPTANCE FORM (PROVIDED BY OWNER REPRESENTATIVE) DAILY PRIOR TO INSTALLATION.
4. LINER TO BE INSTALLED PER GRI SPECIFICATIONS, GUIDES AND PRACTICES.
5. CONTRACTOR SHALL PLACE SANDBAGS ON LINER DURING INSTALLATION AS REQUIRED TO PREVENT WIND UPLIFT UNTIL POND IS FILLED TO A DEPTH OF 3 FEET.
6. CONTRACTOR SHALL USE BLACK 60 MIL HDPE SMOOTH GEOMEMBRANE AS THE PRIMARY LINER AND BLACK 40 MIL HDPE SMOOTH GEOMEMBRANE AS THE SECONDARY LINER.
7. A 3' DIAMETER MINIMUM PIECE OF 40MIL LINER SHALL BE EXTRUDED WELDED WHERE THE PIE SHAPED CORNER SECTIONS MEET FOR SEAM REINFORCEMENT.
8. INSTALL A FULL DOUBLE WIDTH SECTION OF BLACK OR WHITE 60 MIL TEXTURED HDPE GEOMEMBRANE RUB SHEET. EXTRUDE WELD TO LINER. WELDS SHALL BE 2" LONG AND SPACED EVERY 12" ALONG BOTH SIDES OF THE SHEET. DO NOT WELD END EDGES. SECTION SHALL EXTEND FROM SUMP AND INSTALLED INTO LINER ANCHOR TRENCH AS SHOWN.
9. LINER SHALL BE PROTECTED WITH A 8 OZ. NONWOVEN GEOTEXTILE IF ROCK OR OTHER ANGULAR MATERIALS WITH A DIMENSION GREATER THAN 3/4 INCH ARE PRESENT.
10. SUMPS SHALL BE BACKFILLED WITH NON-ANGULAR MAXIMUM 3/8 INCH SIZED PEA GRAVEL.
11. ALL SEAMS MUST BE WELDED WITH A 6" MINIMUM OVERLAP.
12. CONTRACTOR SHALL NON-DESTRUCTIVELY TEST ALL SEAMS THEIR FULL LENGTH USING AN AIR PRESSURE OR VACUUM TEST, THE PURPOSE OF THIS TEST IS TO CHECK THE CONTINUITY OF THE SEAM.
13. FOR AIR PRESSURE TESTING (ASTM 5820), THE FOLLOWING PROCEDURES ARE APPLICABLE TO THE SEAMS WELD WITH DOUBLE SEAM FUSION WELDER.
    a. THE EQUIPMENT USED SHALL CONSIST OF AN AIR TANK OR PUMP CAPABLE OF PRODUCING A MINIMUM 35 PSI AND A SHARP NEEDLE WITH A PRESSURE GAUGE ATTACHED TO INSERT INTO THE AIR CHAMBER.
    b. SEAL BOTH ENDS OF THE SEAM BY HEATING AND SQUEEZING THEM TOGETHER. INSERT THE NEEDLE WITH THE GAUGE INTO THE AIR CHANNEL. PRESSURIZE THE AIR CHANNEL TO A MINIMUM OF 35 PSI. NOTE TIME STARTS AND WAIT A MINIMUM OF 5 MINUTES TO CHECK. IF PRESSURE AFTER 5 MINUTES HAD DROPPED LESS THAN 2 PSI THE TEST IS SUCCESSFUL (THICKNESS OF MATERIAL MAY CAUSE VARIANCE).
    c. CUT OPPOSITE SEAM END AND LISTEN FOR PRESSURE RELEASE TO VERIFY FULL SEAM HAS BEEN TESTED.
    d. IF THE TEST FAILS, FOLLOW THESE PROCEDURES.
        I. WHILE CHANNEL IS UNDER PRESSURE WALK THE LENGTH OF THE SEAM LISTENING FOR A LEAK.
        II. WHILE CHANNEL IS UNDER PRESSURE APPLY A SOAPY SOLUTION TO THE SEAM EDGE AND LOOK FOR BUBBLES FORMED BY AIR ESCAPING.
        III. RE-TEST THE SEAM IN SMALLER INCREMENTS UNTIL THE LEAK IS FOUND.
    e. ONCE LEAK IS FOUND USING ONE OF THE PROCEDURES ABOVE, CUT OUT THE AREA AND RETEST THE PORTIONS OF THE PORTIONS OF THE SEAMS BETWEEN THE LEAK AREAS PER 6A AND 6B ABOVE. CONTINUE THIS PROCEDURE UNTIL ALL SECTIONS OF THE SEAM PASS THE PRESSURE TEST.
    f. REPAIR THE LEAK WITH A PATCH AND VACUUM TEST.
14. ALL NON-DESTRUCTIVE TESTS WILL BE NOTED IN THE NON-DESTRUCTIVE LOGS.
15. LINER GAS VENTS SHALL BE SPACED ALONG THE INSIDE SLOPE AT APPROXIMATELY 100 FEET ON CENTER OR MINIMUM 2 VENTS PER SIDE.
16. WHEN ANY PIPING EQUIPMENT, INLET, OR OUTLET IS IN DIRECT CONTACT WITH THE LINER, AN APRON CONSISTING OF 60 MIL HDPE MATERIAL SHALL BE INSTALLED BENEATH THE EQUIPMENT OR STRUCTURE TO PROTECT THE PRIMARY LINER.
17. LAY BOTH LINERS IN ANCHOR TRENCH. BACKFILL ANCHOR TRENCH IN 2 LIFTS AND COMPACT.

SUGGESTED CONSTRUCTION SEQUENCE

1. CLEAR EXISTING VEGETATION.

2. STRIP AND STOCKPILE TOPSOIL AT THE LOCATION DESIGNATED ON THESE PLANS.

3. PERFORM EARTHWORK OPERATIONS:
    3.1. CONSTRUCT STORMWATER DIVERSION CHANNEL.
    3.2. PERFORM RIPPING/EXCAVATING OPERATIONS.
    3.3. REPLACE EXCAVATED MATERIAL IN COMPACTED LAYERS ON THE LEVEE/PAD IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS.
    3.4. FINISH SLOPES USING A SMOOTH ROLLER.
    3.5. DIG ANCHOR TRENCH.

4. INSTALL NEW GAME FENCE AND GATES.

5. INSTALL GEOMEMBRANES:
    5.1. INSTALL GEOTEXTILE AS NEEDED, SECONDARY LINER, GEONET, LEAK DETECTION SYSTEM AND PRIMARY LINER.
    5.2. INSTALL RUB SHEETS AND WATER LEVEL GAGE/LADDER.
    5.3. BACKFILL AND COMPACT ANCHOR TRENCH.

SquareRoot services
Engineering | Surveying
Materials Testing

7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:
GENERAL NOTES
OF
PROJECT NAME:
VAST RECYCLE FACILITY
FOR
CLIENT:
CASCADE

PROJECT NUMBER:
25176

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
X. CLARK

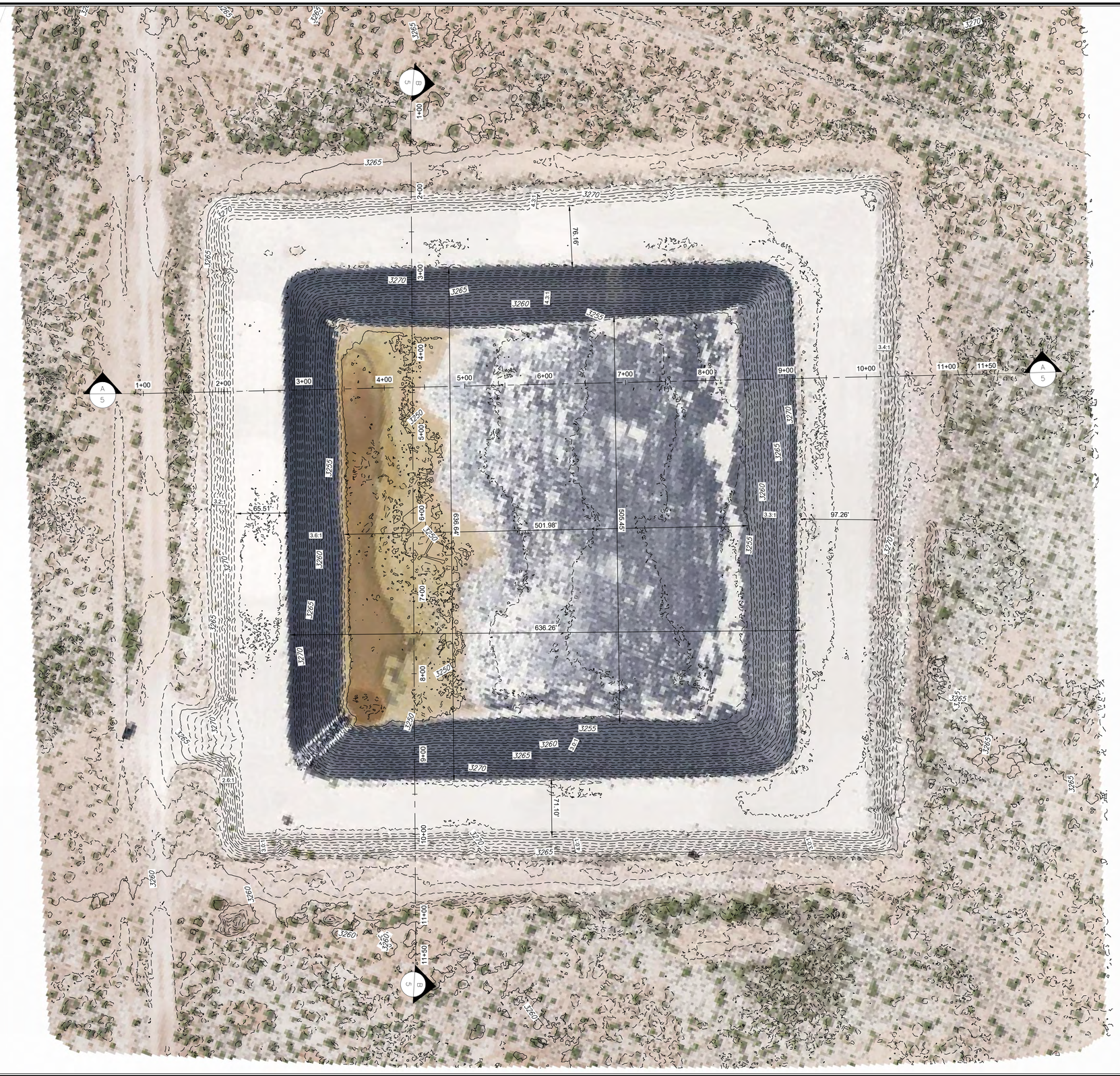
REVISIONS

No.	DATE	DESCRIPTION

JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

07/31/2025

SHEET:
3 of 9
C-101



SquareRoot services
Engineering | Surveying
Materials Testing

7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:

CIVIL SITE PLAN

OF

PROJECT NAME:

VAST RECYCLE FACILITY

FOR

CLIENT:

CERBERUS, LLC

PROJECT NUMBER:
25176

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
X. CLARK

GRAPHIC SCALE
0 60' 120'
SCALE: 1" = 60'
(IN FEET)

REVISIONS

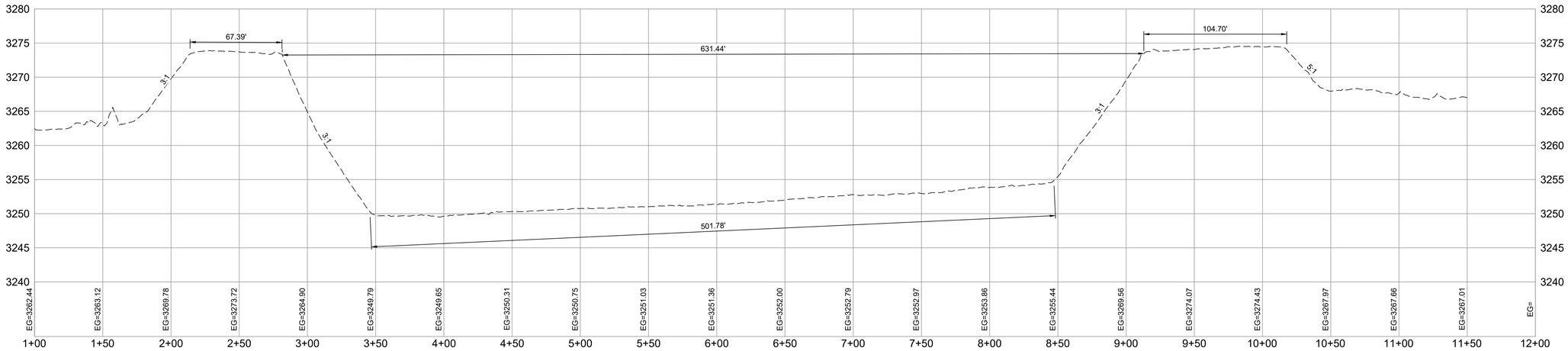
No.	DATE	DESCRIPTION

JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

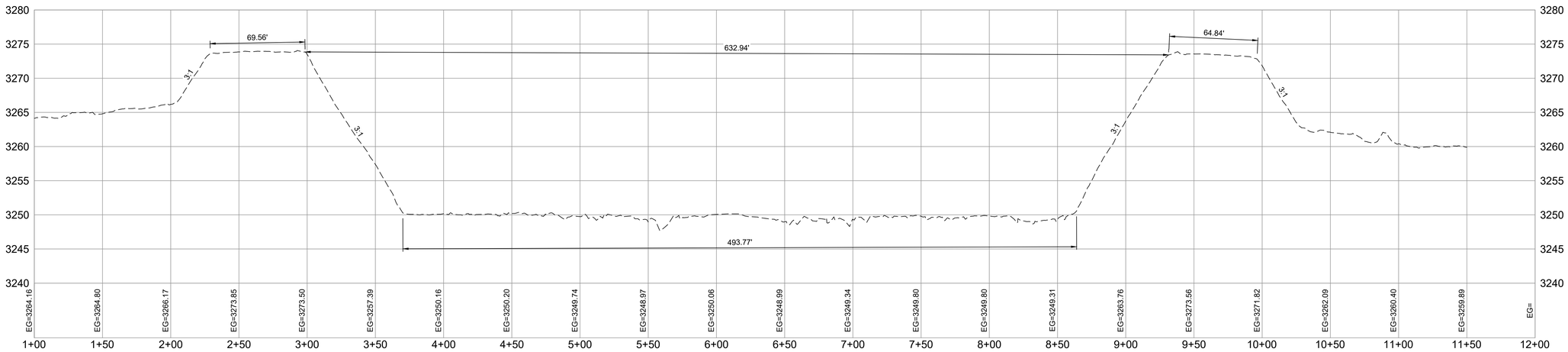
07/31/2025

SHEET: 4 of 9
CS-101

ALIGNMENT EAST TO WEST (A)



ALIGNMENT NORTH TO SOUTH (B)



SquareRoot services
Engineering | Surveying
Materials Testing
7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:
CONTAINMENT PROFILES A & B
OF
PROJECT NAME:
VAST RECYCLE FACILITY
FOR
CLIENT:
CERBERUS, LLC

PROJECT NUMBER:
25176

PROJECT ENGINEER: JEREMY BAKER, PE
DRAWN BY: X. CLARK

GRAPHIC SCALE
HORIZONTAL
0 40' 80'
SCALE: 1" = 40'
(IN FEET)

GRAPHIC SCALE
VERTICAL
0 8' 16'
SCALE: 1" = 8'
(IN FEET)

REVISIONS

No.	DATE	DESCRIPTION

JEREMY BAKER NEW MEXICO 16207 LICENSED PROFESSIONAL ENGINEER
07/31/2025

SHEET: 5 of 9
CS-102

CONTAINMENT VOLUME

GAUGE ELEVATION (FT)	ELEVATION (FT)	CONTAINMENT DEPTH (FT)	REMAINING STORAGE (FT)	REMAINING STORAGE VOL (FT3)	REMAINING STORAGE VOL (GAL)	REMAINING STORAGE VOL (BBL)	PERCENT OF TOTAL VOL (%)	VOL IN CONTAINMENT (FT3)	VOL IN CONTAINMENT (GAL)	VOL IN CONTAINMENT (BBL)	VOL IN CONTAINMENT (AC-FT)	PERCENT OF TOTAL VOL (%)	
25	3,274.00	0	25	0	-	-	0%	7,256,716	54,287,495	1,292,380	166.59	100%	
24	3,273.00	1	24	416,627	3,116,785	74,199	6%	6,840,090	51,170,710	1,218,182	157.03	94%	FREEBOARD
23	3,272.00	2	23	805,834	6,028,447	143,515	11%	6,450,882	48,259,047	1,148,866	148.09	89%	
22	3,271.00	3	22	1,188,353	8,890,070	211,639	16%	6,068,363	45,397,425	1,080,741	139.31	84%	MAX VOLUME
21	3,270.00	4	21	1,564,255	11,702,192	278,585	22%	5,692,461	42,585,303	1,013,795	130.68	78%	
20	3,269.00	5	20	1,933,426	14,463,962	344,332	27%	5,323,290	39,823,533	948,048	122.21	73%	
19	3,268.00	6	19	2,295,795	17,174,846	408,868	32%	4,960,921	37,112,649	883,512	113.89	68%	
18	3,267.00	7	18	2,651,302	19,834,390	472,182	37%	4,605,414	34,453,104	820,198	105.73	63%	
17	3,266.00	8	17	2,999,880	22,442,105	534,262	41%	4,256,836	31,845,390	758,119	97.72	59%	
16	3,265.00	9	16	3,341,381	24,996,869	595,081	46%	3,915,336	29,290,626	697,299	89.88	54%	STORAGE
15	3,264.00	10	15	3,675,681	27,497,773	654,618	51%	3,581,035	26,789,722	637,762	82.21	49%	VOLUME
14	3,263.00	11	14	4,002,847	29,945,300	712,885	55%	3,253,869	24,342,195	579,496	74.70	45%	
13	3,262.00	12	13	4,322,769	32,338,634	769,861	60%	2,933,947	21,948,861	522,520	67.35	40%	
12	3,261.00	13	12	4,635,424	34,677,609	825,543	64%	2,621,292	19,609,886	466,837	60.18	36%	
11	3,260.00	14	11	4,940,822	36,962,290	879,933	68%	2,315,894	17,325,205	412,448	53.17	32%	
10	3,259.00	15	10	5,239,038	39,193,240	933,043	72%	2,017,679	15,094,254	359,337	46.32	28%	
9	3,258.00	16	9	5,530,175	41,371,238	984,893	76%	1,726,541	12,916,257	307,487	39.64	24%	
8	3,257.00	17	8	5,814,341	43,497,084	1,035,501	80%	1,442,375	10,790,410	256,879	33.11	20%	
7	3,256.00	18	7	6,091,647	45,571,614	1,084,888	84%	1,165,069	8,715,880	207,492	26.75	16%	
6	3,255.00	19	6	6,361,968	47,593,880	1,133,031	88%	894,749	6,693,615	159,350	20.54	12%	
5	3,254.00	20	5	6,622,507	49,542,971	1,179,431	91%	634,210	4,744,523	112,949	14.56	9%	FLOOR
4	3,253.00	21	4	6,853,522	51,271,196	1,220,574	94%	403,195	3,016,298	71,807	9.26	6%	VOLUME
3	3,252.00	22	3	7,034,574	52,625,647	1,252,818	97%	222,143	1,661,848	39,562	5.10	3%	
2	3,251.00	23	2	7,160,072	53,564,502	1,275,169	99%	96,644	722,992	17,212	2.22	1%	
1	3,250.00	24	1	7,237,584	54,144,367	1,288,973	100%	19,132	143,128	3,407	0.44	0%	SUMP
0	3,249.00	25	0	7,256,716	54,287,495	1,292,380	100%	0	0	0	0.00	0%	VOLUME

SquareRoot services
Engineering | Surveying
Materials Testing
7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:
CONTAINMENT VOLUMES
OF
PROJECT NAME:
VAST RECYCLE FACILITY
FOR
CLIENT:
CERBERUS, LLC

PROJECT NUMBER: 25176

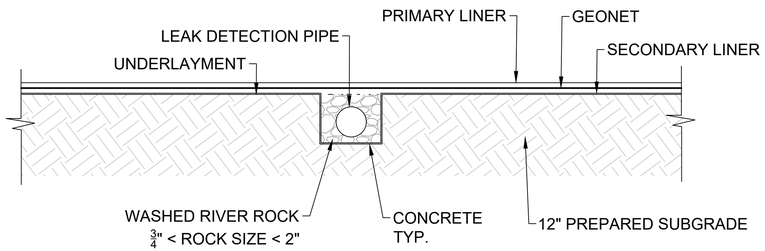
PROJECT ENGINEER: JEREMY BAKER, PE
DRAWN BY: X. CLARK

REVISIONS

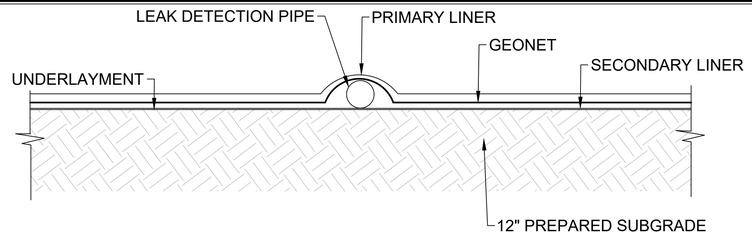
No.	DATE	DESCRIPTION

JEREMY BAKER NEW MEXICO 16207 LICENSED PROFESSIONAL ENGINEER
07/31/2025

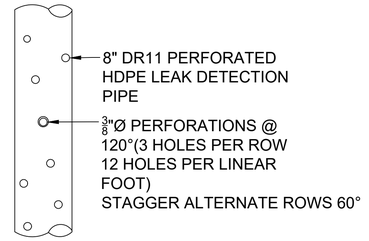
SHEET: 6 of 9
CS-103



1A SUMP DETECTION CROSS SECTION
N.T.S.



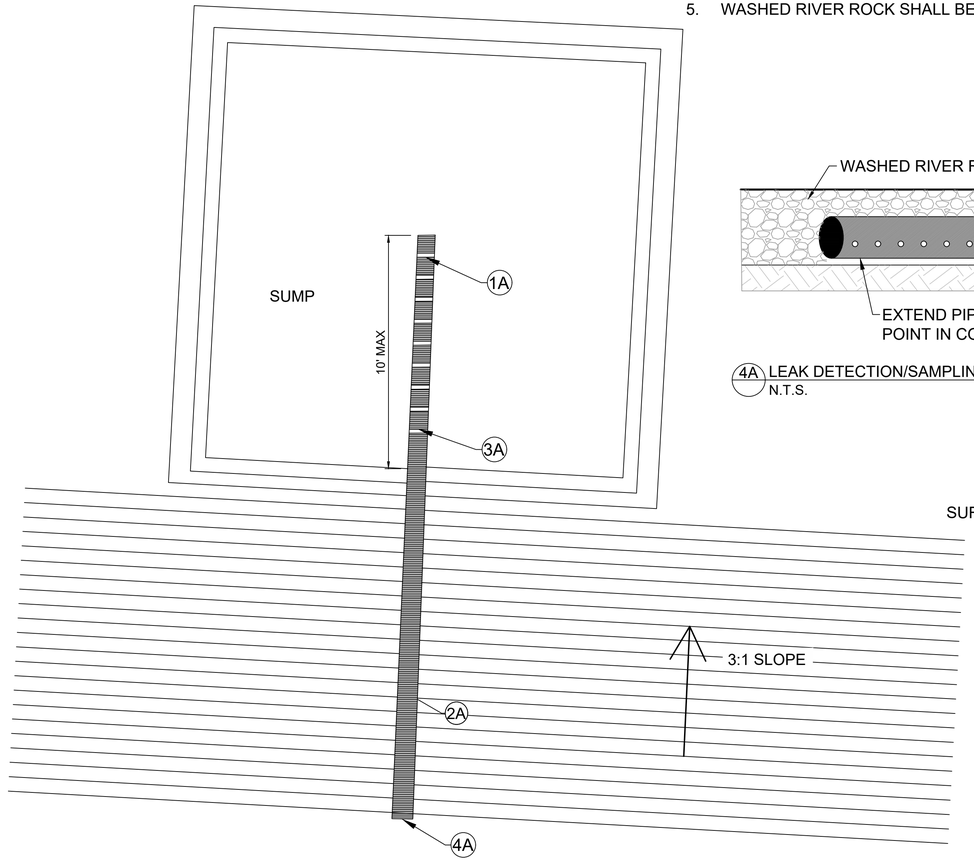
2A SIDE SLOPE LEAK DETECTION PIPE DETAIL
N.T.S.



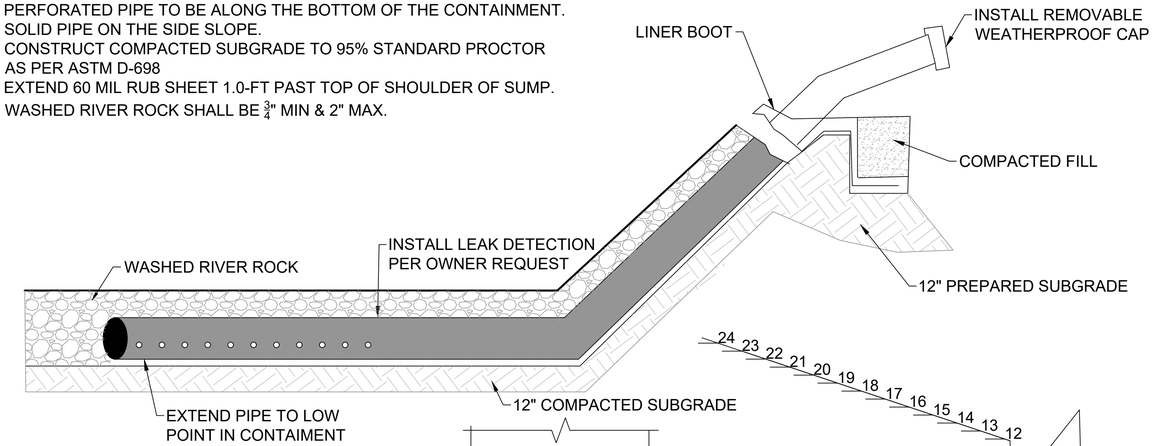
3A PERFORATED PIPE DETAIL
N.T.S.

NOTES:

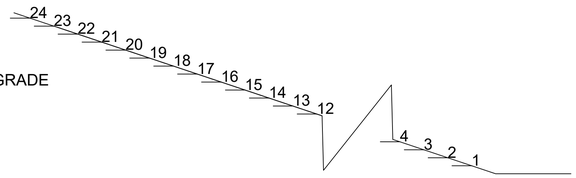
1. LEAK DETECTION SYSTEM TO BE INSTALLED BY OWNER.
2. PERFORATED PIPE TO BE ALONG THE BOTTOM OF THE CONTAINMENT. SOLID PIPE ON THE SIDE SLOPE.
3. CONSTRUCT COMPACTED SUBGRADE TO 95% STANDARD PROCTOR AS PER ASTM D-698
4. EXTEND 60 MIL RUB SHEET 1.0-FT PAST TOP OF SHOULDER OF SUMP.
5. WASHED RIVER ROCK SHALL BE ¾" MIN & 2" MAX.

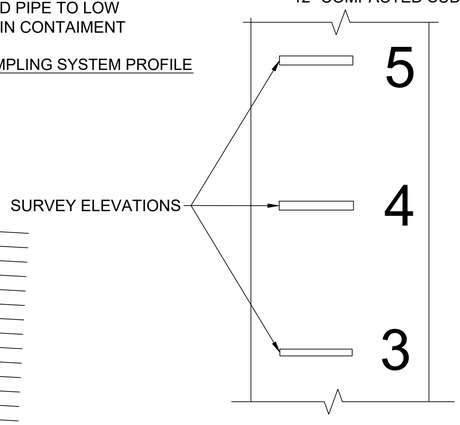


1 CONTAINMENT SUMP PLAN DETAIL
N.T.S.



4A LEAK DETECTION/SAMPLING SYSTEM PROFILE
N.T.S.





NOTE:

1. LEVEL MARKS TO BE LOCATED BY SURVEYOR
2. MARKS TO BE MADE BY AN EXTRUSION WELDER USING BLACK FILAMENT (OR WHITE FILAMENT ON BLACK LINER)
3. MARKS WILL BE DETERMINE ON THE FIELD BY THE OWNER AND CONTINUE TO THE TOP OF THE BERM.
4. REFERENCE PIT CAPACITY TABLES FOR ACCURATE ELEVATIONS.

2 WATER LEVEL MARKS
N.T.S.

PROPOSED PIT REFERENCE TABLE	
DETAIL	DESCRIPTION
PRIMARY LINER	60 MIL HDPE LINER
LEAK DETECTION	200 MIL GEONET
SECONDARY LINER	40 MIL HDPE LINER
UNDERLAYMENT	COMPACTED SUBGRADE/8 OZ GEOTEXTILE
CONTAINMENT	
BOTTOM OF POND	3,249.00
BERM (ROAD CREST)	3,274.00
LEAK DETECTION PIPING	8-IN DR11 X PERFORATED HEPE PIPE LEAK DETECTION PIPE

SquareRoot services
Engineering | Surveying
Materials Testing
7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:
LEAK DETECTION DETAILS
OF
PROJECT NAME:
VAST RECYCLE FACILITY
FOR
CLIENT:
CERBERUS, LLC

PROJECT NUMBER:
25176

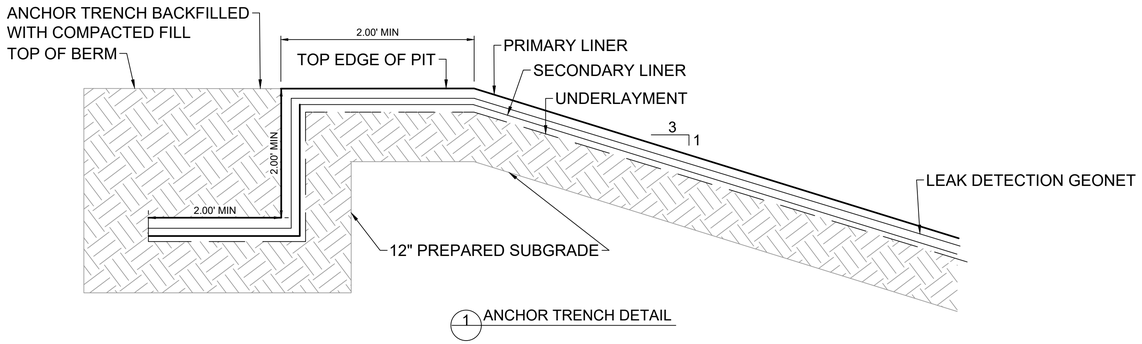
PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
X. CLARK

REVISIONS

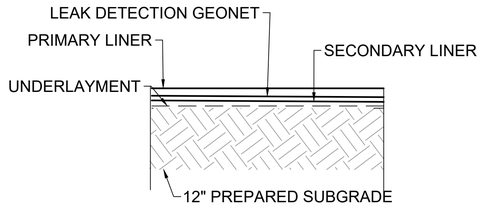
No.	DATE	DESCRIPTION

JEREMY BAKER NEW MEXICO 16207 LICENSED PROFESSIONAL ENGINEER
07/31/2025

SHEET: 7 of 9
CS-501



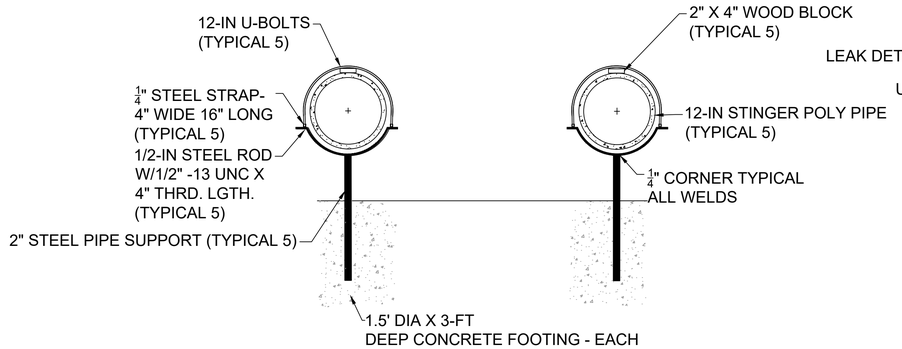
1 ANCHOR TRENCH DETAIL



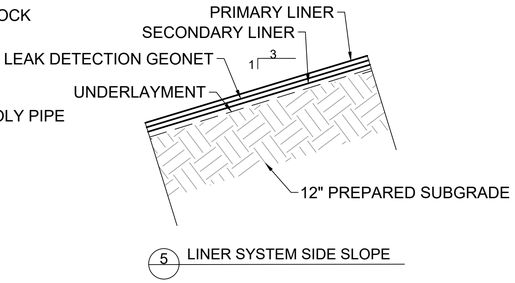
4 LINER SYSTEM FLOOR DETAIL

GENERAL NOTES:

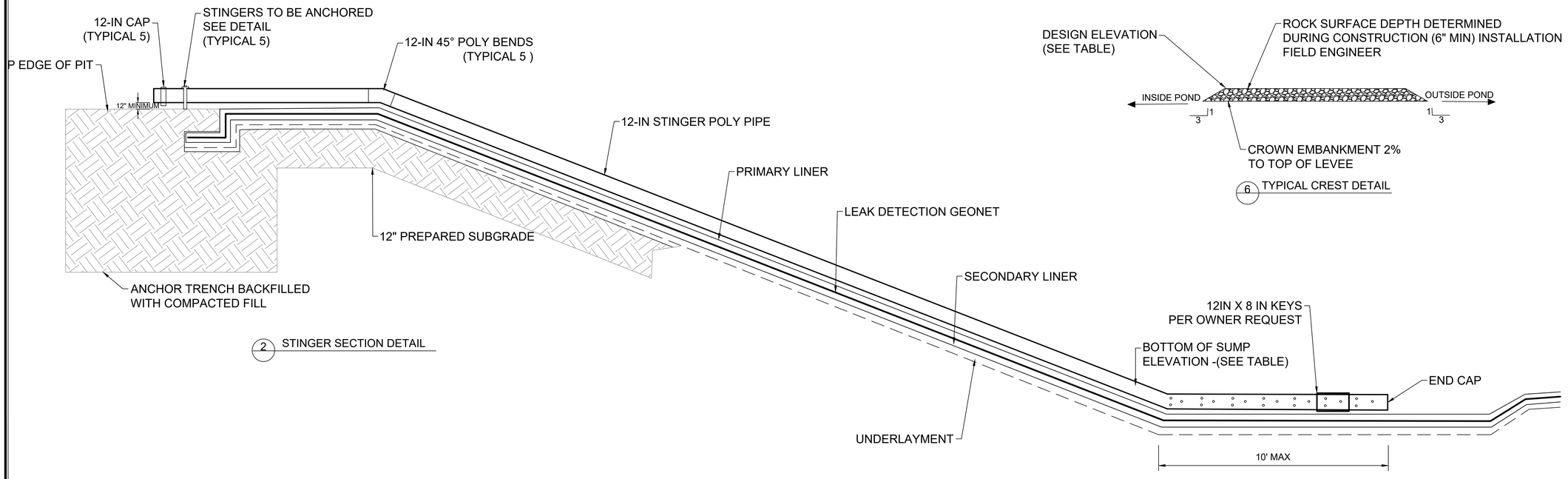
1. PREPARED SUBGRADE MEANS COMPACTED SMOOTH SUBGRADE FREE OF ROCK, ROOTS, WOOD DEBRIS, CONCRETE RUBBLE AND ANY SHARP OBJECTS THAT MAY PUNCTURE THE HDPE LINER, A MINIMUM COMPACTED DEPTH OF 12".
2. ALL INTERIOR SLOPES AND TOP OF BERMS TO BE SMOOTH DRUM ROLLED
3. ALL EMBANKMENT SLOPES SHALL HAVE A SLOPE (H:V RATIO) OF 3:1.
4. COMPACTED EARTH EMBANKMENTS TO BE CONSTRUCTED WITH 12 INCH (MAXIMUM LOOSE LIFTS, COMPACTED TO 95% STANDARD PROCTOR DENSITY)
5. PERFORM GEOTECHNICAL ANALYSIS ON EXISTING SOIL TO CONFIRM SOIL IS SUITABLE FOR USE IN THE LEVEE.
6. LINER SPECIFICATIONS PROVIDED ON SHEET CS - 501



3 STINGER SYSTEM ANCHOR DETAIL



5 LINER SYSTEM SIDE SLOPE



2 STINGER SECTION DETAIL

6 TYPICAL CREST DETAIL

SquareRoot services
Engineering | Surveying
Materials Testing
7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:

LINER DETAILS

OF

PROJECT NAME:

VAST RECYCLE FACILITY

FOR

CLIENT:

CERBERUS, LLC

PROJECT NUMBER:
25176

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
X. CLARK

REVISIONS

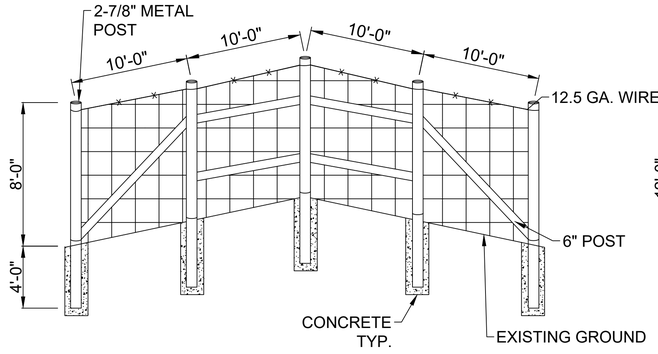
No.	DATE	DESCRIPTION

JEREMY BAKER NEW MEXICO 16207 REGISTERED PROFESSIONAL ENGINEER

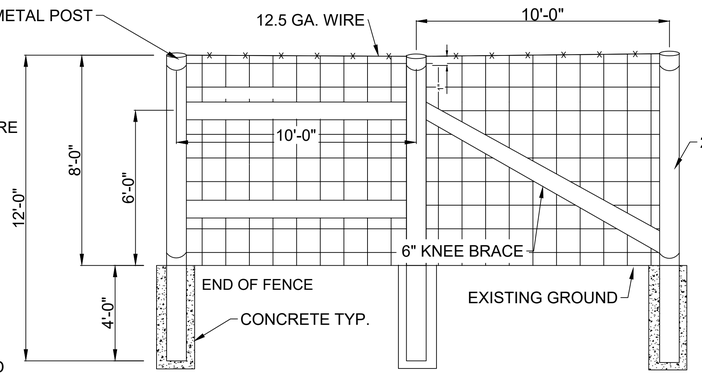
07/31/2025

SHEET: 8 of 9

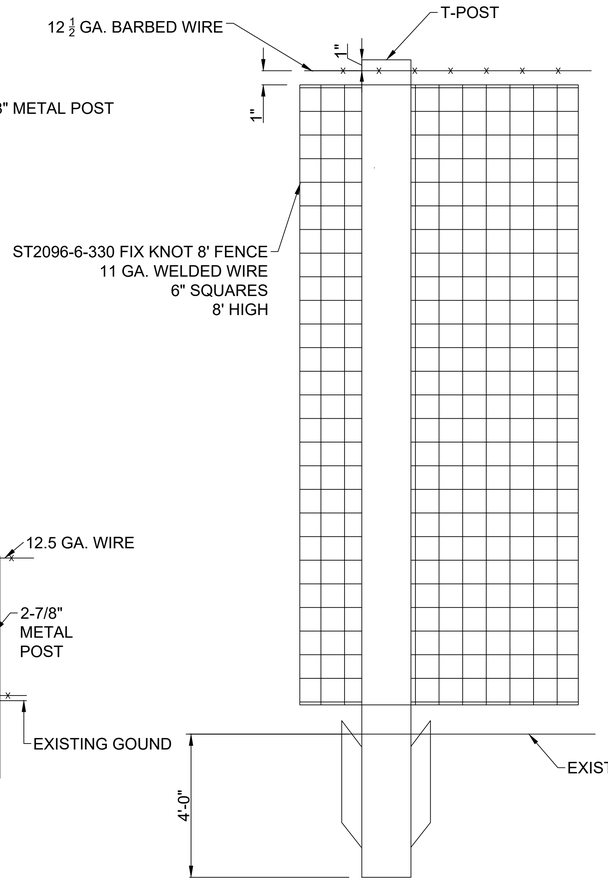
CS-502

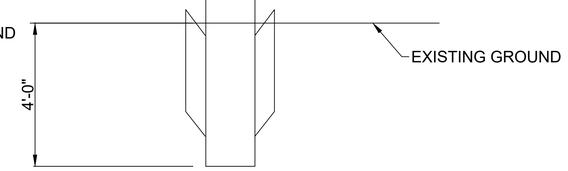


1 CORNER POST

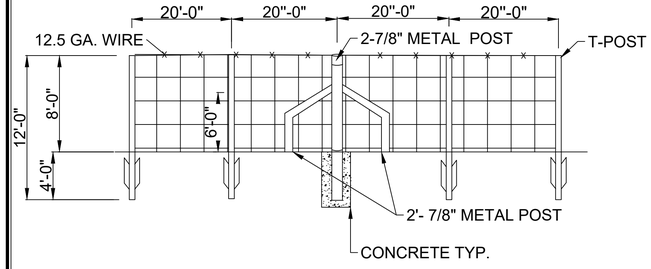


2 END POST

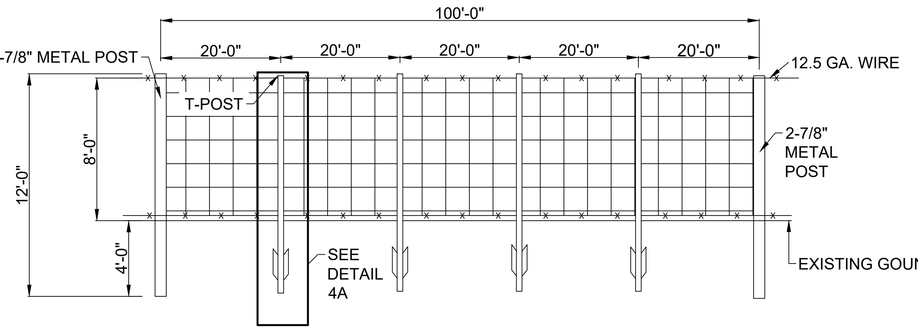




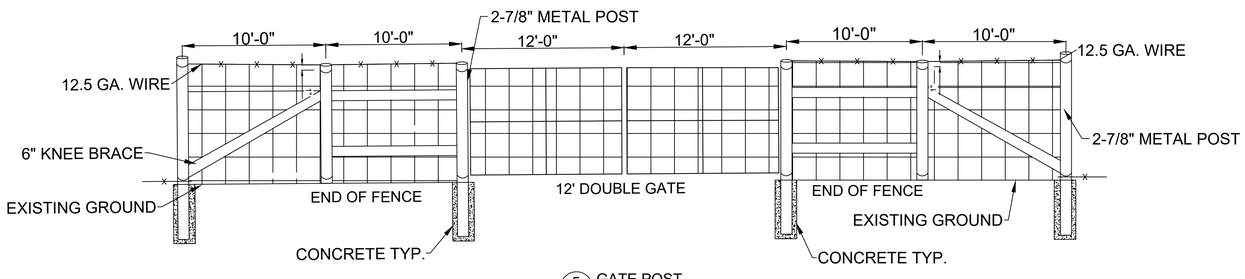
4A METAL POST



3 LINE BRACE POST



4 LINE POST



5 GATE POST

SquareRoot services
Engineering | Surveying
Materials Testing
7921 N World Dr.
Hobbs, NM 88242-9032
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:

FENCE DETAILS

OF

PROJECT NAME:

VAST RECYCLE FACILITY

FOR

CLIENT:

CERBERUS, LLC

PROJECT NUMBER:

25176

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
X. CLARK

REVISIONS

No.	DATE	DESCRIPTION

SHEET:
9 of 9

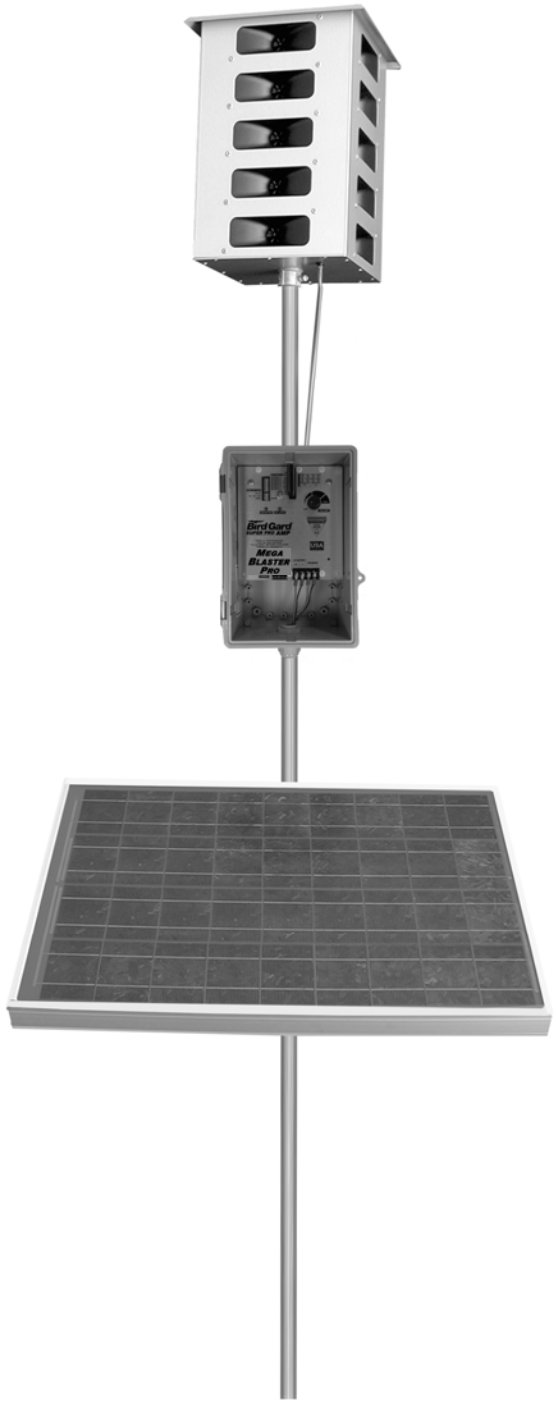
CS-503

AVIAN DETERRENT SYSTEM

MEGA BLASTER PRO

BIRD-X

User's Manual



Overview

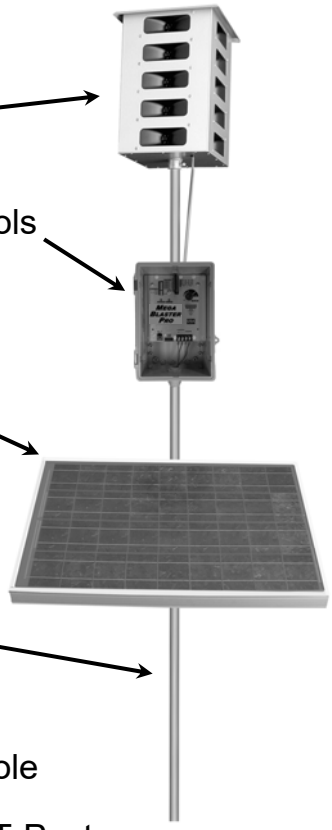
The Bird-X Mega Blaster Pro utilizes the innate power of the natural survival instincts of birds to effectively repel them. Digital recordings of distressed and alarmed birds, along with the sounds made by their natural predators are broadcast through high fidelity weather-resistant speakers over the top of areas. This action triggers a primal fear and flee response. Pest birds soon relocate to where they can feed without feeling threatened.

Your Bird-X Mega Blaster Pro system consists of:

20-Speaker Tower broadcasts the bird sounds

Control Unit produces the bird sounds and contains all operational controls

Solar Panel recharges the 12-volt deep cycle battery



Items needed but not included:

(1) **Mounting Pole** or **Mast** tall enough to raise the 20-Speaker Tower at least 5 feet above the top of the areas, trees or other obstructions

(1) **12-volt Deep Cycle Battery** (RV/Marine) Group 27 or larger wet cell

(1) **T-Post** or similar (Optional) may be needed to support the mounting pole

(1) **Bailing Wire or zip-tie** (Optional) to secure the Mounting Pole to the T-Post

CAUTION: THE MEGA BLASTER PRO IS CAPABLE OF PRODUCING SOUNDS UP TO 125 DECIBELS. PROPER HEARING PROTECTION MUST BE WORN ANYTIME THE UNIT IS TURNED ON.

Bird Control Management Guidelines

An active bird control management program is a key to successfully repelling pest birds. Bird feeding patterns may take several days or weeks to break. Follow all suggestions for maximum effectiveness. Read all instructions prior to installation.

For best results:

- **It is extremely important to fully protect your entire area from birds.** Any areas not fully protected will allow birds to begin feeding at the fringes of the sound coverage. They will soon become bolder and learn the sounds are nothing to fear. This will cause the effectiveness to diminish. Complete Bird-X product coverage forces birds to leave the area entirely.
- Install the Mega Blaster Pro unit at least two weeks before birds are attracted to your area. It is much easier to keep birds away before they have found a food source than it is to repel them once they have developed a feeding pattern.
- Most birds begin feeding from the perimeter of an area. Place Mega Blaster Pro units so the sound protection covers past the edges of the area.
- Birds will often use tall trees for roosting and observation. If birds are in bordering trees it is necessary to position the units so the sound protection covers the trees as well.
- Mount the 20-Speaker Tower at least five feet above trees, areas and structures for maximum coverage. The higher the better. Sound will disperse or reflect off structures or foliage. Mount control unit out of direct sun, if possible.
- When first installed, run Mega Blaster Pro units at FULL volume and on SHORT time off periods. This ensures maximum “bird stress” and creates a hostile environment.
- Watch for changes in bird activity and adjust the location of your Mega Blaster Pro unit if needed.
- **Check the battery and unit settings often to insure continuous bird control. Be certain that the system is not turned down or has a dead battery. Field hands or harvesters may turn down the volume.**
- Changing settings and switches often helps to prevent bird habituation. Periodically change the switch settings of the eight sounds (turning them ON or OFF). NEVER turn OFF the distress calls of the target birds you are trying to repel and always keep at least one predator bird sound turned ON.
- If different bird species enter the protected area and begin causing damage contact us immediately for an updated Sound Recording Card designed to repel the new invading birds.
- Remember that the Mega Blaster Pro system is a management tool, and should be used as part of your overall bird control strategy, sometimes in conjunction with other bird control techniques and devices.

Be aware that under extreme drought or other adverse conditions, birds will disregard all deterrents and risks in order to survive

DESIGN/CONSTRUCTION PLAN

Design and Construction Plan In Ground Containments

This plan addresses construction of the earthen containments.

Magrym Engineers is providing the design of the containment and their plans are presented in this submission.

Dike Protection and Structural Integrity

The design and operation provide for the confinement of produced water, prevention of releases and prevention of overtopping due to wave action or rainfall. Additionally, the design prevents run-on of surface water as the containment is surrounded by an above-grade levee (a berm) and/or diversion ditch (between the levee and the soil stockpile) to prevent run-on of surface water.

19.15.34.12 A Design and Construction Specifications
(1). The operator shall design and construct a recycling containment to ensure the confinement of produced water, to prevent releases and to prevent overtopping due to wave action or rainfall.
(8). The operator of a recycling containment shall design the containment to prevent run-on of surface water. The containment shall be surrounded by a berm, ditch or other diversion to prevent run-on of surface water

Stockpile Topsoil

Where topsoil is present, prior to constructing containment, the operator will strip and stockpile the topsoil for use as the final cover or fill at the time of closure.

19.15.34.12 B. Prior to constructing containment, the operator shall strip and stockpile the topsoil for use as the final cover or fill at the time of closure

Signage

The operator will place an upright sign no less than 12 inches by 24 inches with lettering not less than two inches in height in a conspicuous place on the fence surrounding the containment. The sign is posted in a manner and location such that a person can easily read the legend. The sign will provide the following information:

- the operator's name,
- the location of the site by quarter-quarter or unit letter, section, township and range, and
- emergency telephone numbers

19.15.34.12 C. Signs.
The operator shall post an upright sign no less than 12 inches by 24 inches with lettering not less than two inches in height in a conspicuous place on the fence surrounding the containment. The operator shall post the sign in a manner and location such that a person can easily read the legend. The sign shall provide the following information: the operator's name, the location of the site by quarter-quarter or unit letter, section, township and range, and emergency telephone numbers

Fencing

The operator will provide for a fence to enclose the recycling containment in a manner that deters unauthorized wildlife and human access. As specified in the design drawings, the operator will employ a chain-link or game fence. If required by the District Office, the operator will add four-strands of barbed wire to comply with the text of the Rule. Because feral pigs, javelina and deer are present in the area, a chain link or game fence is required in order to comply with Section 19.15.34.12 D.1 of the Rule because pigs will move beneath the lower strand of a 4-strand, 4-foot high barbed wire fence and deer will jump over. However, 19.15.34.12 D.2 requires "a four-foot fence that has at least four strands of barbed wire evenly spaced in the interval between one foot and four feet above ground level". Therefore, a barbed wire specification will be added to the game fence to avoid a variance if required by the OCD District Office.

19.15.34.12 D. Fencing
(1) The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair. The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.
(2) Recycling containments shall be fenced with a four-foot fence that has at least four strands of barbed wire evenly spaced in the interval between one foot and four feet above ground level.

As stated in the O&M plan, the operator will ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.

Netting and Protection of Wildlife

The perimeter game/chain-link fence will be effective in excluding stock and most terrestrial wildlife. If requested by the surface owner, the game fence can include a fine mesh from the base to 1 foot above the ground to exclude the small reptiles (e.g. dune sagebrush lizard).

19.15.34.12 E Netting.
The operator shall ensure that a recycling containment is screened, netted or otherwise protective of wildlife, including migratory birds. The operator shall on a monthly basis inspect for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.

The recycling containment will be protective of wildlife, including migratory birds through the implementation of an Avian Protection Plan, routine inspections and the perimeter fence.

The avian protection plan includes the use of a Bird-X Mega Blaster Pro[1] as a primary hazing program for avian species. The device will be equipped with sounds suitable for the Permian Basin environment. In addition to this sonic device, staff will routinely inspect the containment for the presence of avian species and, if detected, will use a blank cartridge or shell in a handgun, starter pistol or shotgun as additional hazing. Decoys of birds of prey may be placed on the game fence and other roosts around the open water to provide additional hazing.

The O&M plan calls for the operator to inspect for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.

Earthwork

The containment will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear. Geotextile is required under the liner when needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity.

19.15.34.12 A
(2) A recycling containment shall have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear. Geotextile is required under the liner when needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity…

This volume provides the stamped drawings for the containment with the following design/construction specifications:

a) levee has inside grade no steeper than two horizontal feet to one vertical foot (2H: 1V).

b) levee outside grade is no steeper than three horizontal feet to one vertical foot (3H: 1V)
c) top of the levee is wide enough to install an anchor trench and provide adequate room for inspection and maintenance.
d) The containment floor design calls for a slope toward the sump in the corner(s).

19.15.34.12 A
(2) …The operator shall construct the containment in a levee with an inside grade no steeper than two horizontal feet to one vertical foot (2H:1V). The levee shall have an outside grade no steeper than three horizontal feet to one vertical foot (3H:1V). The top of the levee shall be wide enough to install an anchor trench and provide adequate room for inspection and maintenance.

Liner and Drainage Geotextile Installation

The containment has a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.

19.15.34.12 A
(3) Each recycling containment shall incorporate, at a minimum, a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.

The primary (upper) liner is a geomembrane liner composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salts and acidic and alkaline solutions. It is 60-mil HDPE. The secondary liner is specified in the design drawings and is 40-mil HDPE or thicker and is equivalent to 30-mil LLDPEr (in accordance with a previously approved variance) Liner compatibility meets or exceeds a subsequent relevant publication to EPA SW-846 method 9090A.

19.15.34.12 A
(4) All primary (upper) liners in a recycling containment shall be geomembrane liners composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salts and acidic and alkaline solutions. All primary liners shall be 30-mil flexible PVC, 45-mil LLDPE string reinforced or 60-mil HDPE liners. Secondary liners shall be 30-mil LLDPE string reinforced or equivalent with a hydraulic conductivity no greater than 1 x 10-9 cm/sec. Liner compatibility shall meet or exceed the EPA SW-846 method 9090A or subsequent relevant publications.

The recycling containment design has a leak detection system between the upper and lower geomembrane liners of 200-mil geonet to facilitate drainage. The leak detection system consists of a properly designed drainage and collection and removal system placed above the lower geomembrane liner in depressions and sloped to facilitate the earliest possible leak detection. The containment floor design calls for a slope toward the sump in the corner(s) of the containment, as shown in the design drawings. This slope combined with the highly transmissive geonet drainage layer provide for rapid leak detection.

19.15.34.12 A
(7) The operator of a recycling containment shall place a leak detection system between the upper and lower geomembrane liners that shall consist of 200-mil geonet or two feet of compacted soil with a saturated hydraulic conductivity of 1 x 10-5 cm/sec or greater to facilitate drainage. The leak detection system shall consist of a properly designed drainage and collection and removal system placed above the lower geomembrane liner in depressions and sloped to facilitate the earliest possible leak detection.

The liners and drainage material will be installed consistent with the Manufacturer's specifications. In addition to any specifications of the Manufacturer, protocols for liner installation include measures to:

i. minimizing liner seams and orient them up and down, not across, a slope of the levee.
ii. use factory-welded seams where possible.
iii. use field seams in geosynthetic material that are thermally seamed and prior to field seaming, overlap liners four to six inches.
iv. minimize the number of field seams and comers and irregularly shaped areas.
v. provide for no horizontal seams within five feet of the

19.15.34.12 A
(5) The operator of a recycling containment shall minimize liner seams and orient them up and down, not across, a slope of the levee. Factory welded seams shall be used where possible. The operator shall ensure field seams in geosynthetic material are thermally seamed. Prior to field seaming, the operator shall overlap liners four to six inches…

slope's toe.

vi. use qualified personnel to perform field welding and testing.

vii. avoid excessive stress-strain on the liner

viii. The edges of all liners are anchored in the bottom of a compacted earth-filled trench that is at least 18 inches deep

19.15.34.12 A
(5) …The operator shall minimize the number of field seams and corners and irregularly shaped areas. There shall be no horizontal seams within five feet of the slope's toe. Qualified personnel shall perform field welding and testing.

At points of discharge into the lined earthen containment the pipe configuration effectively protects the liner from excessive hydrostatic force or mechanical damage during filling.

19.15.34.12 A
(3) The edges of all liners shall be anchored in the bottom of a compacted earth-filled trench. The anchor trench shall be at least 18 inches deep.

The design shows that at any point of discharge into or suction from the recycling containment, the liner is protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines do not penetrate the liner.

19.15.34.12 A
(6) At a point of discharge into or suction from the recycling containment, the operator shall insure that the liner is protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines shall not penetrate the liner.

Pumping from the containment to hydraulic fracturing operations is the responsibility of stimulation contractors. Typically, lines are permanently placed in the containment with floats attached to prevent damage to the liner system. The containment may be equipped with permanent HDPE stinger (supported by a sacrificial liner or geotextile) for withdrawal of fluid if the owner deems necessary during operations.

Leak Detection and Fluid Removal System Installation

The leak detection system, contains the following design elements

a. The 200-mil HyperNet Geonet drainage material between the primary and secondary liner that is sufficiently permeable to allow the transport of fluids to the observation ports (Appendix A).
b. The containment floor is sloped towards the monitoring riser pipe to facilitate the earliest possible leak detection of the containment bottom. A pump may be placed in the observation port to provide for fluid removal.
c. Piping will withstand chemical attack from any seepage, structural loading from stresses and disturbances from overlying water, cover materials, equipment operation or expansion or contraction (see Appendix A).

OPERATIONS AND MAINTENANCE PLAN

CLOSURE PLAN

Operation and Maintenance Plan
In Ground Containments

Overview

The operator will operate and maintain the lined earthen containment to contain liquids and solids (blow sand and minimal precipitates from the produced water) and maintain the integrity of the liner system in a manner that prevents contamination of fresh water and protects public health and the environment as described below. The purpose of the lined earthen containment is to facilitate recycling, reuse and reclamation of produced water derived from oil and gas wells. During periods when water for E&P operations is not needed, produced water will discharge to injection wells or to a pipeline for transfer to another recycling facility. The containment will not be used for the disposal of produced water or other oilfield waste.

19.15.34.10 D
Recycling containments may not be used for the disposal of produced water or other oilfield wastes.

The operation of the containment is summarized below.

A. Produced water generated from nearby oil and gas wells is delivered to a treatment system located as indicated in the C-147.
B. Unless specified in the transmittal letter, after treatment, the produced water discharges into the containment.
C. When required, produced water is removed from the containment for E&P operations. At this time, produced water will be used for drilling beneath the freshwater zones (beneath surface casing), for well stimulation (e.g. hydraulic fracturing) and other E&P uses as approved by OCD.
D. Whenever the maximum fluid capacity of the containment is reached, treatment and discharge to the containment ceases (see Freeboard and Overtopping Plan, below).
E. The operator will keep accurate records and shall report monthly to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148 (see attached example).
F. The operator will maintain accurate records that identify the sources and disposition of all recycled water that shall be made available for review by the division upon request.

19.15.34.9 E
The operator of a recycling facility shall keep accurate records and shall report monthly to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148.

19.15.34.9 F
The operator of a recycling facility shall maintain accurate records that identify the sources and disposition of all recycled water that shall be made available for review by the division upon request.

G. The containment shall be deemed to have ceased operations if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use. The operator will report cessation of operations to the appropriate division district office. The appropriate division district office may grant an extension to this determination of cessation of operations not to exceed six months.

19.15.34.13 C
A recycling containment shall be deemed to have ceased operations if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use. The operator must report cessation of operations to the appropriate division district office. The appropriate division district office may grant an extension to this determination of cessation of operations not to exceed six months.

The operation of the lined earthen containment will follow the mandates listed below:

1. The operator will not discharge into or store any hazardous waste (as defined by 40 CFR 261 and NMAC 19.15.2.7.H.3) in the containments.
2. If the containment's primary liner is compromised above the fluid's surface, the operator will repair the damage or initiate replacement of the primary liner within 48 hours of discovery or seek an extension of time from the division district office.
3. If the primary liner is compromised below the fluid's surface, the operator will remove all fluid above the damage or leak within 48 hours of discovery, notify the division district office and repair the damage or replace the primary liner.
4. If any penetration of the containment liner is confirmed by sampling of fluid in the leak detection system (see Monitoring, Inspection, and Reporting Plan; below), the operator will:
    a. Begin and maintain fluid removal from the leak detection/pump-back system,
    b. Notify the district office within 48 hours (phone or email) of the discovery,
    c. Identify the location of the leak, and
    d. Repair the damage or, if necessary, replace the containment liner.
5. The operator will install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release and the operator will remove any visible layer of oil from the surface of the recycling containment.
6. The operator will report releases of fluid in a manner consistent with NMAC 19.15.29
7. The containment will be operated to prevent the collection of surface water run-on.

19.15.34.13 B
(4) If the containment's primary liner is compromised above the fluid's surface, the operator shall repair the damage or initiate replacement of the primary liner within 48 hours of discovery or seek an extension of time from the division district office.
(5) If the primary liner is compromised below the fluid's surface, the operator shall remove all fluid above the damage or leak within 48 hours of discovery, notify the division district office and repair the damage or replace the primary liner.

19.15.34.13 B
(7) The operator shall install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release.
(1) The operator shall remove any visible layer of oil from the surface of the recycling containment.
19.15.34.8 A

(6) All releases from the recycling and re-use of produced water shall be handled in accordance with 19.15.29 NMAC.

8. The operator will maintain the containment free of miscellaneous solid waste or debris.
9. The operator will maintain at least three feet of freeboard for the containment and will use a free-standing staff gauge to allow easy determination of the required 3-foot of freeboard.
10. As described in the design/construction plan, the injection or withdrawal of fluids from the containment is accomplished through hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
11. The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.
12. The operator will maintain the fences in good repair.

19.15.34.13
(6) The containment shall be operated to prevent the collection of surface water run-on.

19.15.34.13 B
(2) The operator shall maintain at least three feet of freeboard at each containment.

19.15.34.13 B
(3) The injection or withdrawal of fluids from the containment shall be accomplished through a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.

19.15.34.12 D
(1) The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair. The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.

19.15.34.13 A
The operator shall inspect the recycling containment and associated leak detection systems weekly while it contains fluids. The operator shall maintain a current log of such inspections and make the log available for review by the division upon request.

Monitoring, Inspection, and Reporting Plan

The operator will inspect the recycling containment and associated leak detection systems weekly while it contains fluids. The operator shall maintain a current log of such inspections and make the log available for review by the division upon request.

Weekly inspections consist of:

- reading and recording the fluid height of staff gauges,
- recording any evidence that the pond surface shows visible oil,
- visually inspecting the containment's exposed liners
- checking the leak detection system for any evidence of a loss of integrity of the primary liner.
- inspect diversion ditches and berms around the containment to check for erosion and collection of surface water run-on.
- inspect the leak detection system for evidence of damage or malfunction and monitor for leakage.

As stated above, if a liner's integrity is compromised, or if any penetration of the liner occurs, then the operator will take appropriate action within 48 hours, based on if above or below water surface, as noted above.

Monthly, the operator will:

A. Inspect the containment for dead migratory birds and other wildlife. Within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.
B. Report to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148.
C. Record sources and disposition of all recycled water.

19.15.34.12 E
The operator shall on a monthly basis inspect for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.

19.15.34.9 E
The operator of a recycling facility shall keep accurate records and shall report monthly to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148.

19.15.34.9 F
The operator of a recycling facility shall maintain accurate records that identify the sources and disposition of all recycled water that shall be made available for review by the division upon request.

The operator will maintain a log of all inspections and make the log available for the appropriate Division district office's review upon request. An example of the log is attached to this section of the permit application.

Freeboard and Overtopping Prevention Plan

The method of operation of the containment allows for maintaining freeboard with very few potential problems. When the capacity of the containment is reached (3-feet of freeboard), the discharge of produced water ceases and the produced water generated by nearby oil and gas wells is managed by an injection well(s).

If rising water levels suggest that 3-feet of freeboard will not be maintained, the operator will implement one or more of the following options:

I. Cease discharging produced water to the containment.

II.Accelerate re-use of the produced water for purposes approved by the Division.

III. Transfer produced water from the containment to injection wells.

The reading of the staff gauge typically occurs daily when treatment operations are ongoing and weekly when discharge to the containment is not occurring.

Protocol for Leak Detection Monitoring, Fluid Removal and Reporting

As shown in Appendix A, the leak detection system includes a monitoring system. Any fluid released from the primary liner will flow to the collection sump, where fluid level monitoring is possible at the monitoring riser pipe associated with the leak detection system.

Staff may employ a portable electronic water level meter to determine if fluid exists in the monitoring riser pipe. Obtaining accurate readings of water levels in a sloped pipe beneath a containment can be a challenge. An electrician's wire snake may be required to push the probe to the bottom of the port and the probe may be fixed in a 2-inch pipe "dry housing" to avoid false readings due to water condensation on the pipe. There are many techniques to determine the existence of water in the sumps – including low flow pumps and a simple small bailer affixed to an electrician's snake. The operator will use the method that works best for this containment.

If seepage from the containment into the leak detection system is suspected by a positive fluid level measurement, the operator will:

1. Re-measure fluid levels in the monitoring riser pipe on a daily basis for one week to determine the rate of seepage.
2. Collect a water sample from the monitoring riser pipe to confirm the seepage is produced water from the containment via electrical conductivity and chloride measurements.
3. Notify NMOCD of a confirmed positive detection in the system within 48 hours of sampling (initial notification).
4. Install a pump into the monitoring riser pipe sump to continually (manually on a daily basis or via automatic timers) remove fluids from the leak detection system into the containment until the liner is repaired or replaced.
5. Dispatch a liner professional to inspect the portion of the containment suspected of leakage during a "low water" monitoring event.
6. Provide NMOCD a second report describing the inspection and/or repair within 20 days of the initial notification.

If the point of release is obvious from a low water inspection, the liner professional will repair the loss of integrity. If the point of release cannot be determined by the inspection, the liner professional will develop a more robust plan to identify the point(s) of release. The inspection plan and schedule will be submitted to OCD with the second report. The operator will implement the plan upon OCD approval.

Closure Plan
In Ground Containments

Overview

After operations cease, the operator will remove all fluids within 60 days and close the containment within six months from the date the operator ceases operations from the containment for use.

19.15.34.14 A
Once the operator has ceased operations, the operator shall remove all fluids within 60 days and close the containment within six months from the date the operator ceases operations from the containment for use.

The operator shall substantially restore the impacted surface area to

a. the condition that existed prior to the construction of the recycling containment or
b. to a condition imposed by federal, state trust land or tribal agencies on lands managed by those agencies as these provisions govern the obligations of any operator subject to those provisions,

19.15.34.14 E
The operator shall substantially restore the impacted surface area to the condition that existed prior to the construction of the recycling containment.

19.15.34.14 G
The re-vegetation and reclamation obligations imposed by federal, state trust land or tribal agencies on lands managed by those agencies shall supersede these provisions and govern the obligations of any operator subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.

The surface owner will impose a closure design that conforms to their needs for the site. The operator understands that a variance will be submitted to OCD to allow for any alternative closure protocol.

Excavation and Removal Closure Plan – Protocols and Procedures

The containment is expected to hold a small volume of solids, the majority of which will be windblown sand and dust with some mineral precipitates from the water

1. The operator will remove all liquids from the containment and either:
    a. Dispose of the liquids in a division-approved facility, or
    b. Recycle, reuse or reclaim the water for reuse in drilling and stimulation.
2. The operator will close the recycling containment by first removing all fluids, contents and synthetic liners and transferring these materials to a division approved facility.
3. After the removal of the containment contents and liners, soils beneath the containment will be tested by collection of a five-point (minimum) composite sample which includes stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in Table I of 19.15.34.14.
4. After review of the laboratory results:
    a. If any contaminant concentration is higher than the parameters listed in Table I, additional delineation may be required, and the operator must receive approval before proceeding with closure.

19.15.34.14 B
The operator shall close a recycling containment by first removing all fluids, contents and synthetic liners and transferring these materials to a division approved facility.

19.15.34.14 C
The operator shall test the soils beneath the containment for contamination with a five-point composite sample which includes stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in Table I below.

19.15.34.14 C
(1) If any contaminant concentration is higher than the parameters listed in Table I, the division may require additional delineation upon review of the results and the operator must receive approval before proceeding with closure.

b. If all contaminant concentrations are less than or equal to the parameters listed in Table I, then the operator will proceed to
    i. backfill with non-waste containing, uncontaminated, earthen material - Or
    ii. undertake an alternative closure process pursuant to a variance request after approval by OCD.

19.15.34.14 C
(2) If all contaminant concentrations are less than or equal to the parameters listed in Table I, then the operator can proceed to backfill with non-waste containing, uncontaminated, earthen material.

Reclamation and Re-vegetation

a. The operator will reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area.
b. Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.
c. The disturbed area shall then be reseeded in the first favorable growing season following closure of a recycling containment.

19.15.34.14 E
Once the operator has closed the recycling containment, the operator shall reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area. Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area shall then be reseeded in the first favorable growing season following closure of a recycling containment.

Closure Documentation

Within 60 days of closure completion, the operator shall submit a closure report on form C-147, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable. The closure report shall certify that all information in the report and attachments is correct and that the operator has complied with all applicable closure requirements and conditions specified in division rules or directives.

19.15.34.14 D
Within 60 days of closure completion, the operator shall submit a closure report on form C-147, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable. The closure report shall certify that all information in the report and attachments is correct and that the operator has complied with all applicable closure requirements and conditions specified in division rules or directives.

The operator shall notify the division when reclamation and re-vegetation are complete. Specifically the notice will document that 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 plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

19.15.34.14 H
The operator shall notify the division when reclamation and re-vegetation are complete.

19.15.34.14 F
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 plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

September 2025

Rule 34 Registration
Vast Containment and RF
Section 17, T26S, R33E, Lea County

Volume 1 RF and In-Ground Containment

- ***Transmittal Letter***
- ***Siting Criteria Demonstration, Plates***
- ***Appendices***
    - ***Well Logs and USGS Data, Cave Karst Survey, Geologic Regime of Project Area***

Southeast of the existing Vast Frac Pond a low spot caught last week's rain. The result was mud cracks and wild flowers. The east levee of the Vast Pond is in the upper left side of the image.

Prepared for:
Cerberus Land and Cattle Company, LLC
Houston, Texas

Prepared by:

R.T. Hicks Consultants, Ltd.
Albuquerque, New Mexico

Cascade Services LLC
Midland, Texas

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

September 8, 2025

Ms. Leigh Barr
EMNRD - Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505
Via E-Mail

Ms. Victoria Venegas
NMOCD - District 2
811 S. First St.
Artesia, NM 88210
Via E-Mail

RE: Cerberus Land and Cattle Company, LLC - Vast Containment Registration
Section 17 T26S R33E, Lea County

Dear Ms. Barr and Ms. Venegas:

On behalf of Cerberus Land and Cattle Company, LLC, R.T. Hicks Consultants and Cascade Services are pleased to submit a C-147 permit registration for the above-referenced project. Cerberus anticipates that installation of the primary liner and leak detection shortly.

Volume 1 of the C-147 package contains:

- Transmittal Letter
- Siting Criteria Demonstration with Plates and Appendices

Volume 2 contains:

- The C-147 Form to register the in-ground containment
- Closure cost estimate for the In-Ground Containment.
- Stamped Design Drawings with Liner Equivalency Demonstration and Avian Deterrence
- Recently Approved Plans for Design/Construction, O&M, Closure

This submission refers to the following elements that past OCD reviewers have considered variances for in-ground containments:

1. An equivalency demonstration written by experts for the proposed 40-mil HDPE secondary liner has been previously approved by OCD. We maintain that the language of the Rule is clear, and a variance is not required.
2. OCD has approved the proposed Avian Protection Plan (Bird-X Mega Blaster Pro) for other containments. Thus, the plan meets the requirement of the rule that the "otherwise protective of wildlife, including migratory birds" and a variance is not required.
3. Using the proposed deer fence in lieu of a 4-strand barbed wire fence is not a variance. Because feral pigs, javelina and deer are present in the area, a tall game fence is required to comply with Section 19.15.34.12 D.1 of the Rule. The specification for fencing provided in 19.15.34.12 D.2 contradicts D.1 because pigs will move beneath the lower strand of a 4-foot high barbed wire fence and deer will jump over. Thus, compliance with D.2 results in a violation of D.1. We maintain that compliance with D.1 is the critical component of the Rule and operators need not be required to submit a variance request to follow Best Management Practices and

comply with the Rule. Nevertheless, Cerberus will attach 4 strands of barbed wire to the game fence if required by OCD.

Cerberus will transmit the registration package to OCD via the OCD.Online portal. In compliance with 19.15.34.10 of the Rule, Cerberus provided this package to the NM SLO, the surface owner's representative.

If you have any questions or concerns regarding this permit or the attached C-147, please contact me. As always, we appreciate your work ethic and diligence.

Sincerely,
R.T. Hicks Consultants

Randall T. Hicks PG
Principal

Copy: Cerberus Land and Cattle Company LLC,

SITING CRITERIA DEMONSTRATION TEXT

Distance to Groundwater

Plates 1, 2a & 2b and the discussion below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is about 100 feet beneath the AST recycling containment.

Plate 1 is a topographic map that shows:

1. The project area of the Vast Reuse Facility is identified by the blue diagonally lined polygon.
2. Water wells from the OSE database as a blue triangle inside a colored circle. OSE wells are often mislocated in the WATERS database as older wells are plotted in the center of the quarter, quarter, quarter, of the Section Township and Range. Additionally, the OSE database can include locations of proposed wells or borings (i.e., permit applications) that were never drilled. Depth to water data for the OSE wells do not necessarily represent static water levels and these can be misleading. Depth to water and the date of measurement are presented in the Plate 1.

One water supply well exists within 2 miles of the project area. MISC-318 is within a corral and Hicks Consultants gauged it in 2016. Examination of the surrounding area and Google Earth images demonstrate to our satisfaction that USGS-14364, USGS-14368 and MISC-288 are the same well as MISC-318. The USGS reports this well is completed in alluvial deposits, perhaps a remnant of the Ogallala Formation. All water supply wells listed in public databases are completed in the Ogallala, east of the Vast containment area.

Plate 2a is a topographic and geologic map that shows:

A. The Vast Containment area identified by the blue striped rectangle with a label listing the surface elevation of 3265.
B. Water wells measured by the USGS, the date of the measurement and the calculated elevation of the groundwater elevation surface.
C. MISC water wells measured by professionals and documented in published reports or by staff of Hicks Consultants.
D. Groundwater elevations are relatively constant over time
    - MISC-288, MISC-318, USGS-14368, and USGS 14364 are the same well and over the 60-year record, elevation varies by only 10 feet.
    - USGS-14044, USGS-14030, and MISC-289 are also the same well. For the 47-year record, elevation varies by about 4 feet
    - Data are provided in *Appendix Well Logs and USGS Data*
E. The New Mexico small scale State Map indicates the Tertiary Ogallala Formation (To) around the Vast containment area.
F. Quaternary Eolian/Piedmont deposits, which are alluvial sediments associated with erosion of the Ogallala Formation overlain by a thin veneer of sand, surround the project area.
G. The upper Chinle Formation (T(r)cu) crops out west and northwest of the project area on Plate 2a.
H. As indicated above, all water supply wells exist only in the eastern half of Plate 2a. West of the Chinle outcrop, public databases suggest no water supply wells exist. .

Plate 2b is a larger scale geologic map that provides a different interpretation of exposed Chinle Formation. We know this map is more accurate than the large scale map of Plate 2a. Plate 2b shows the Vast containment area lies on the contact between surface exposure of the Ogallala Formation and the upper Chinle Formation. We concur with the mapping shown in Plater 2b – however, note that a dashed line marks the contact, signifying a lack of certainty.

Plate 2b also displays the elevation of the top of the Chinle "red beds". This Plate suggests that as much as 100 feet of alluvium may exist beneath the site.

Hydrogeology and Groundwater Data

The only driller's log in the vicinity of the project is C-4547, about 1.5 miles northwest. The driller's report in *Appendix Well Logs and USGS Data* shows:

- 0-44 feet - Caliche at the surface underlain by alluvial material. The reddish brown color may reflect erosion of the underlying Chinle Formation
- 44-51 is dark brown clay of the Chinle
- 51-103 is a sandstone layer within the Chinle Formation that is reported as water-bearing with an estimated yield of 0.0 GPM
- Given the static water depth of 89.9 feet reported presumably after the driller removed temporary well casing, groundwater in the sandstone may not be confined at this location
- Shallow alluvial groundwater is not present and groundwater in the underlying sandstone is probably not sufficient for beneficial use (yield 0.0 GPM).
- The potentiometric surface of groundwater in this boring is (3250-89.9=) 3160.1 feet asl

In Plate 2b, the dashed line that marks the contact between surface exposure of the Ogallala Aquifer and Chinle Formation Groundwater runs through the center of the Vast project area. Plate 2b indicates (with some uncertainty) that the Chinle is exposed at or due west of the Vast containment area. Looking at the topographic contours of Plate 1 and comparing the relatively steep slope of the east side of the eastern tributary of Salado Draw and the mapping of the Chinle Formation in Plate 2b allows us to conclude that Plate 2c accurately maps the outcrop and near surface existence of the Chinle Formation.

From these data we conclude:

A. The potentiometric surface measured in C-4547 is consistent with the surface of Ogallala measurements east of the containment area.
B. The potentiometric surface contours in Plate 2a (drawn by Hicks Consultants) are reliable.
C. Depth to the uppermost groundwater beneath the Vast project area (Ogallala or Chinle) is no higher than 3160 feet asl.
D. The minimum distance between the lower liner of the proposed Vast Rule 34 containment and groundwater is (3265-20-3160=) 85 feet.
E. Groundwater in the upper Chinle that was encountered in C-4547 may not be suitable for use due to low water production.

Distance to Municipal Boundaries and Fresh Water Fields

Plate 3 demonstrates that the Vast containment is not within incorporated municipal boundaries or within defined municipal fresh water well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- The closest municipality is Jal, NM approximately 23 miles east-northeast
- The closest public water supply wells are south of Jal, about 16 miles east.

Distance to Subsurface Mines

Plate 4 and our knowledge of the Vast containment area demonstrate that the nearest mines are caliche pits. This location is not within an area overlying a subsurface mine.

- The closest mapped caliche pit is 1.4 miles east-northeast. .
- There are no subsurface mines in Plate 4

Distance to High or Critical Karst Areas

Plate 5 shows the Vast site is not within a mapped zone of high or critical with respect to the 2025 BLM Karst map.

- The proposed containment is located within a “medium” area.
- The nearest high karst area is located approximately 20 miles west of the proposed containment.
- An aerial cave and karst survey report in *Appendix Cave Karst Survey* concludes “NO Surface Karst Features (i.e., sinkholes, swallets or cave entrances) were found within the limits of this Field Surface Karst Survey of the Cerberus LLC, Vast Pond Re-permitting Project area.

Finally, geologic evidence presented after the cave and karst survey report demonstrates with a high degree of scientific certainty that the probability of subsurface karst in this area is so small as to be nil. We conclude the mapping of “medium karst potential” of this area by BLM is not supported by subsurface geologic data. The depressions in the area are caused by the same solution mechanism as the playa lakes on the Ogallala Caprock.

Distance to 100-Year Floodplain

Plate 6 demonstrates that the Vast containment is within Zone D as designated by the Federal Emergency Management Agency with respect to the Flood Insurance Rate 100-Year Floodplain.

- FEMA describes the location as an area with possible but undetermined flood hazards. No flood hazard analysis has been conducted.
- The closest FEMA-mapped flood zones is about 8 miles west near the Lea/Eddy County line.

Distance to Surface Water

Plate 7 shows that the containment is not within 300 feet of a surface water body or a significant watercourse.

- Plate 7 shows a Lake/Pond about ½ mile due east of the project area: Needmore Tank.
- The closest mapped watercourse is an unnamed tributary Salado Draw. We carefully examined the area west of the proposed containment for second order tributaries of this watercourse. *Appendix Site Photographs* provide solid evidence that while small water

channels exist in the area, none have a defined bed and bank and are therefore not a significant watercourse.

Distance to Permanent Residence or Structures

Plate 8 demonstrates that the location is not within 1000 feet of an occupied permanent residence, school, hospital, institution, church, or other structure in existence at the time of initial application.

- The nearest structures are lease roads, production pads, and several pipelines.
- The orange shaded surface on Plate 8 is owned by the State of New Mexico, green shaded surface is Federal, and no shading is private surface.

Distance to Non-Public Water Supply

Plates 1 and 7 demonstrates that the Vast containment site is not within 500 horizontal feet of a spring or fresh water well used for domestic or stock watering purposes,.

- Plate 1 shows the locations of the nearest water wells, active or plugged.
- There are no domestic water wells located within 1,000 feet of the area of interest.
- No springs were identified within the mapping area (see Plate 8).

Distance to Wetlands

Plate 9 demonstrates the Vast location is not within 500 feet of any mapped wetlands identified in the USA Wetlands database. The nearest mapped wetland in this database is

- A “marsh/bog” wetland is Dinwiddie Tank, slightly less than 1 mile west of the project area.
- Riverine mapped wetlands on Plate 9 are associated with Salado Draw, also about 1 mile west.

Errant mapping is typical of the USA Wetlands database in New Mexico. The US Fish and Wildlife Service who conducts the wetlands inventory employs areal imagery: ground surveys are not routine. In the FAQ section of the inventory is this:

> **Why is there a difference between mapped wetlands and ground conditions**?
> It is likely the base imagery date is different than the date of the imagery used for photointerpretation, and interim changes in the landscape since the wetland was mapped may result in mismatch when comparing newer imagery with ground conditions. The wetlands mapper defaults to ESRI base imagery. More information can be found on ESRI's imagery metadata webpage.
>
> Imagery can also be viewed in the ESRI map viewer to determine image dates for specific areas of interest.
>
> In addition, not all wetlands are wet throughout the year. Some wetlands may appear dry during certain times of the year while still supporting hydric soils and wetland plants characteristic of wetland areas.

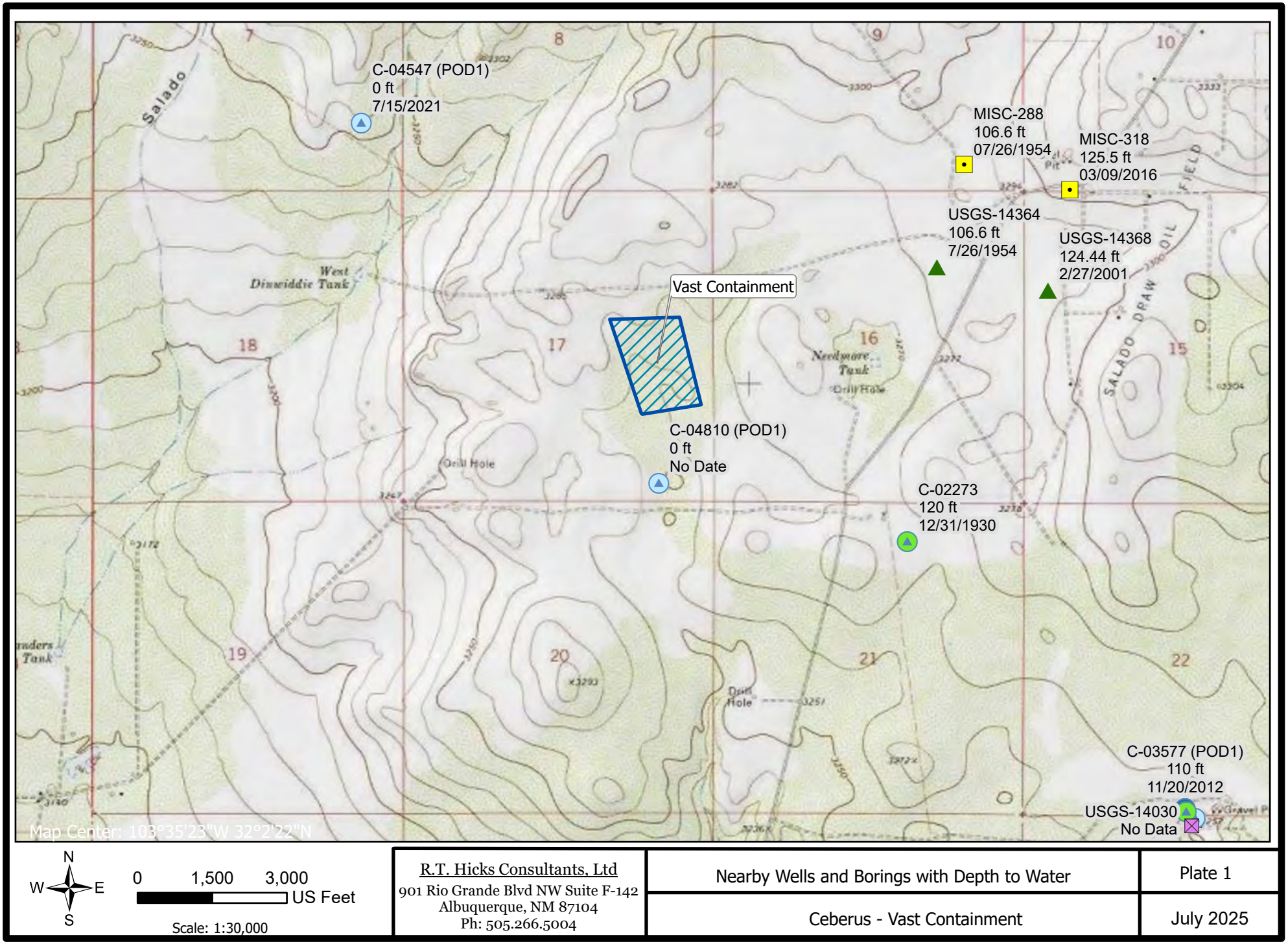
Many wetlands in New Mexico mapped by the USFW Service database do not meet the NM OCD definition of a wetland. The Hicks Consultants team has more than 100 years of combined

field experience in Eddy, Lea, and Chaves Counties and have rarely seen a mapped wetland with vegetation adapted for saturated soil conditions.

> "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions in New Mexico. This definition does not include constructed wetlands used for wastewater treatment purposes.

SITING DEMONSTRATION PLATES

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Wells and Borings with Depth to Water	Plate 1
	Ceberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx

Recycling Containment Area

USGS Gauging Station (DTW, Date)

Alluvium/Bolsom

Alluviu/Bolsom, Site was being pumped.

Misc. Water Wells (Well ID, DTW)

No Data

<= 150

151 - 350

351 - 500

> 500

NM_Geology

Qe/Qp, Quaternary-Eolian Piedmont Deposits

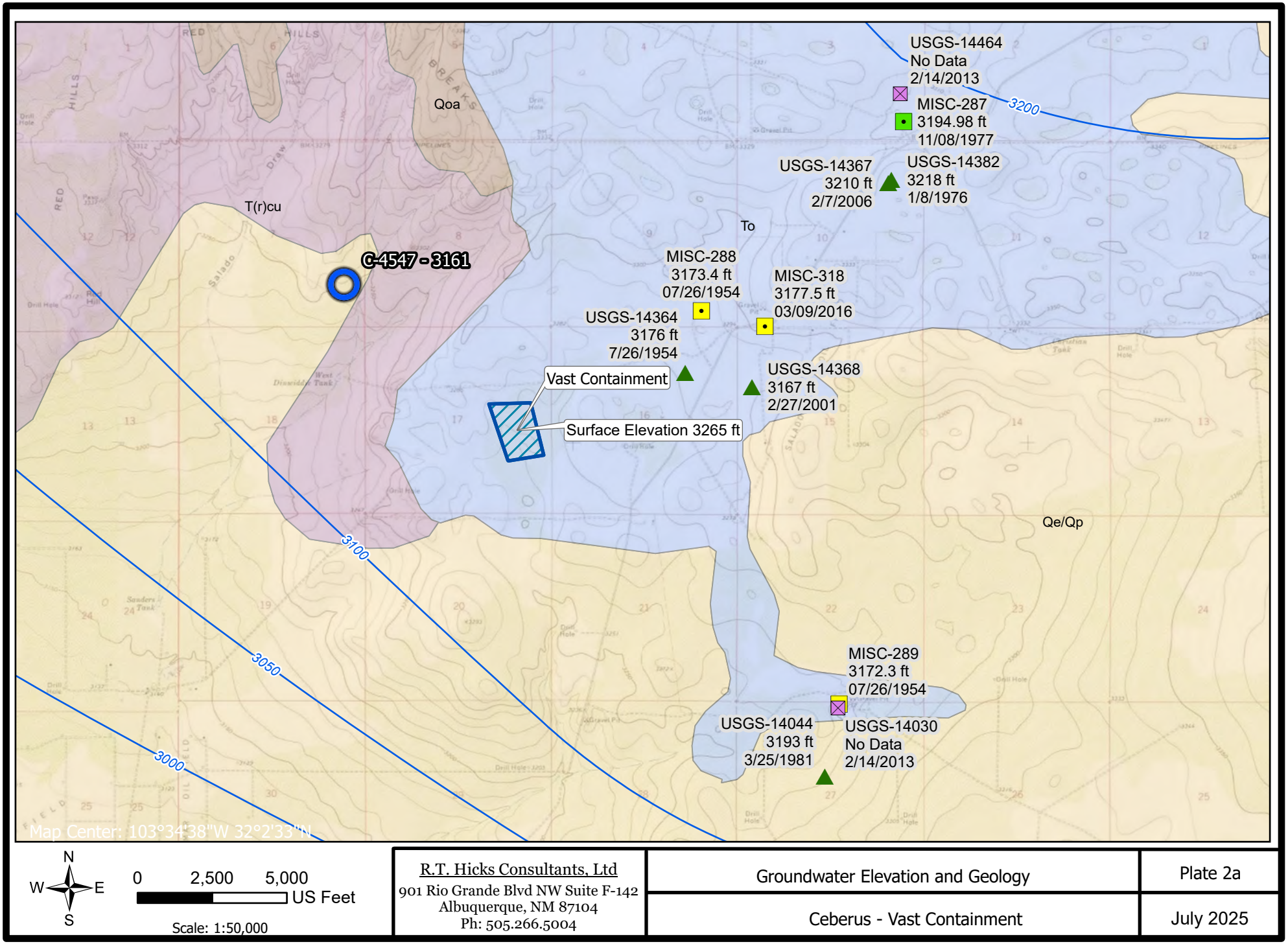
Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits

T(r)cu,Triassic-Upper Chinle Group,T(r)cu,Triassic-Upper Chinle Group

To, Tertiary-Ogallala Formation,To, Tertiary-Ogallala Formation

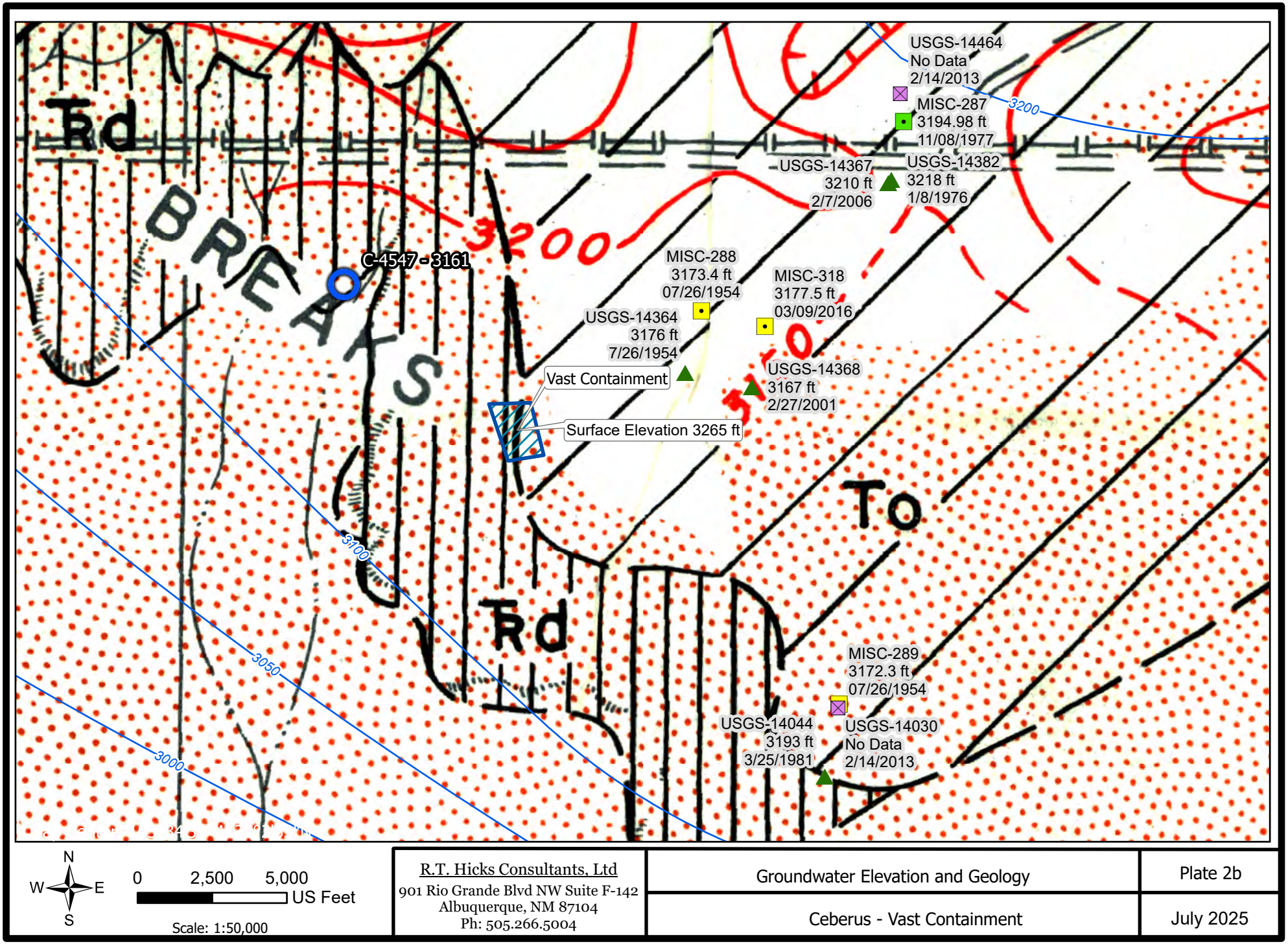
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Legend Plates 1 & 2	
	Cerberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



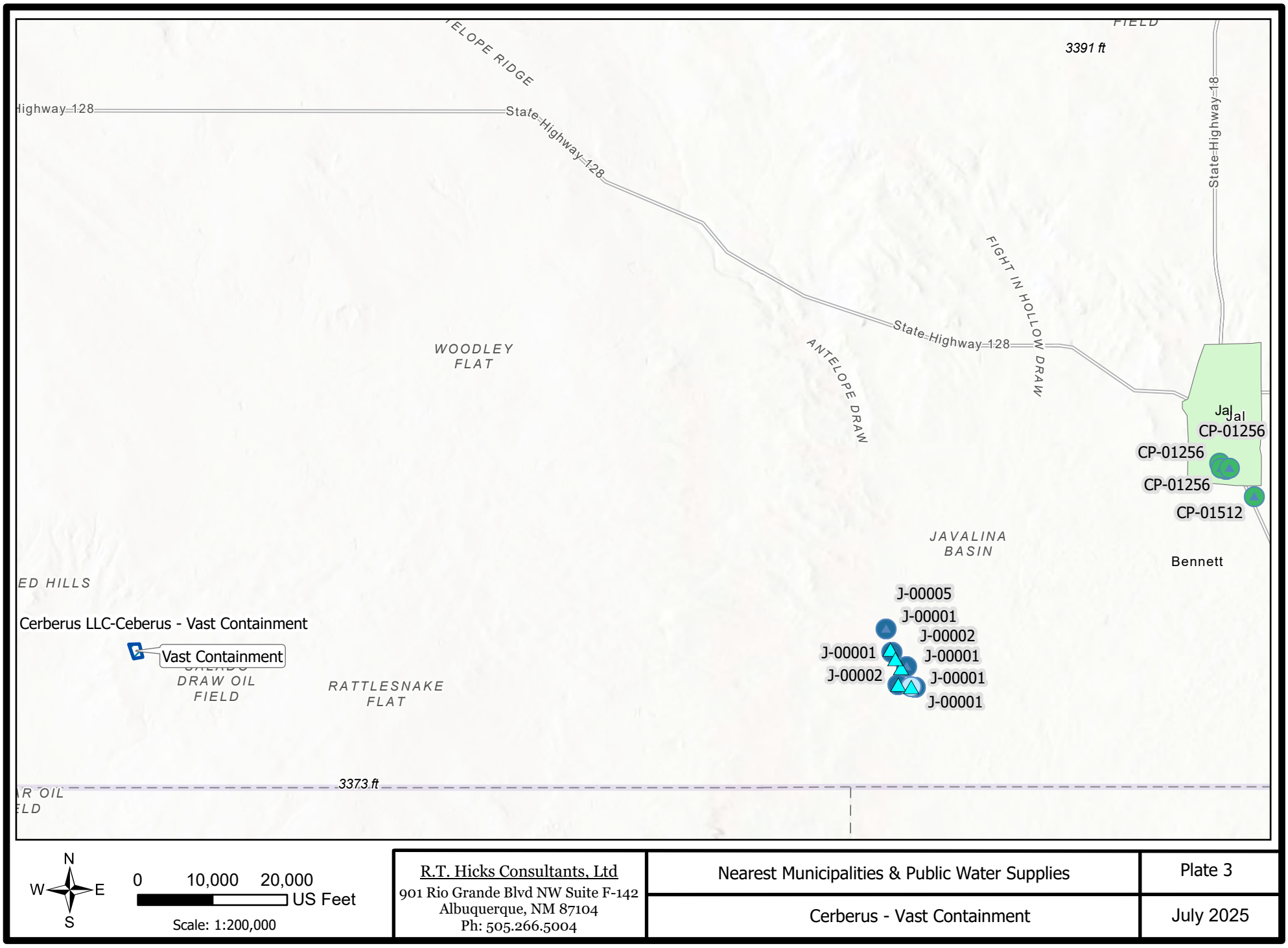
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation and Geology	Plate 2a
	Ceberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



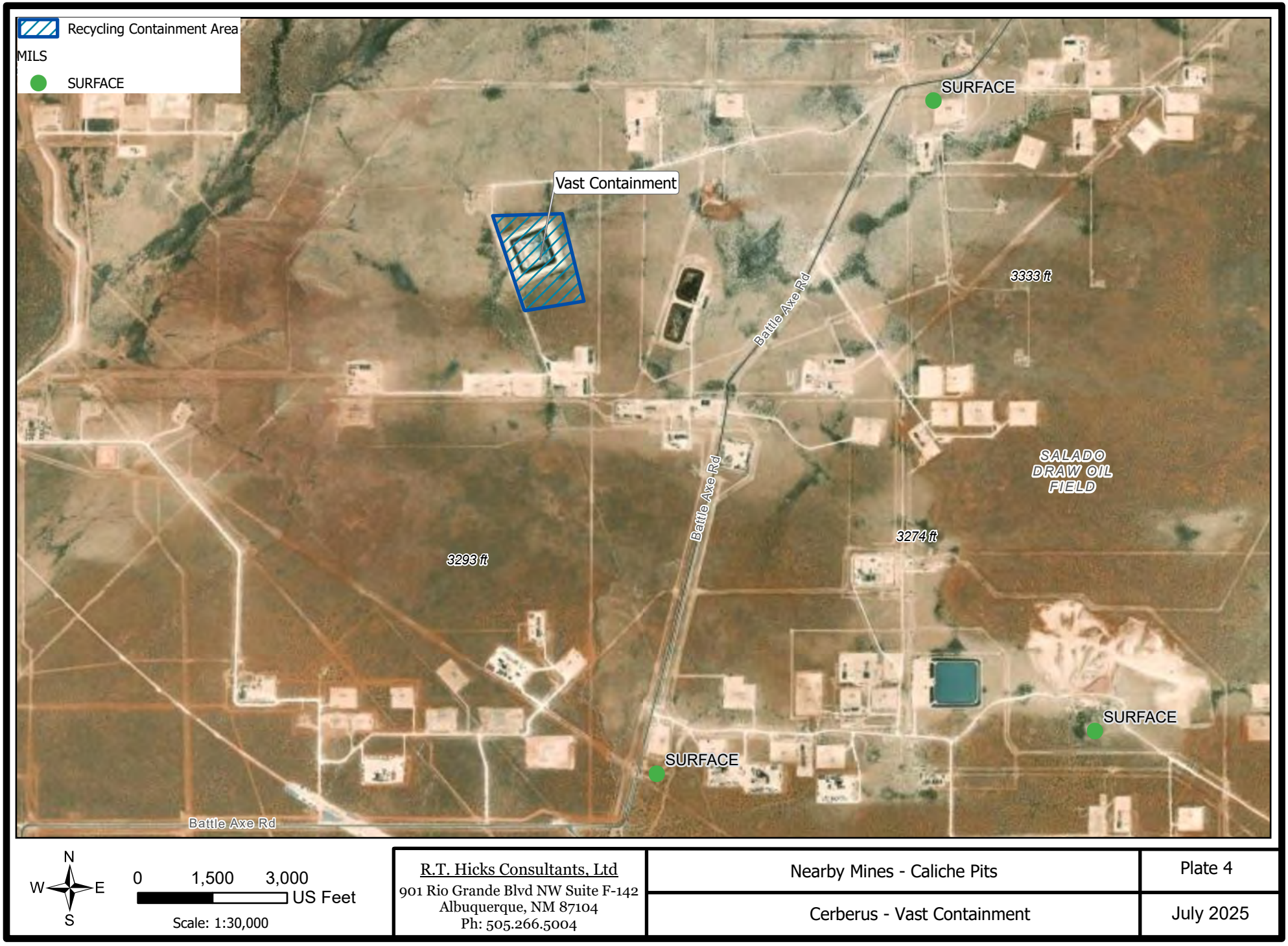
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation and Geology	Plate 2b
	Ceberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



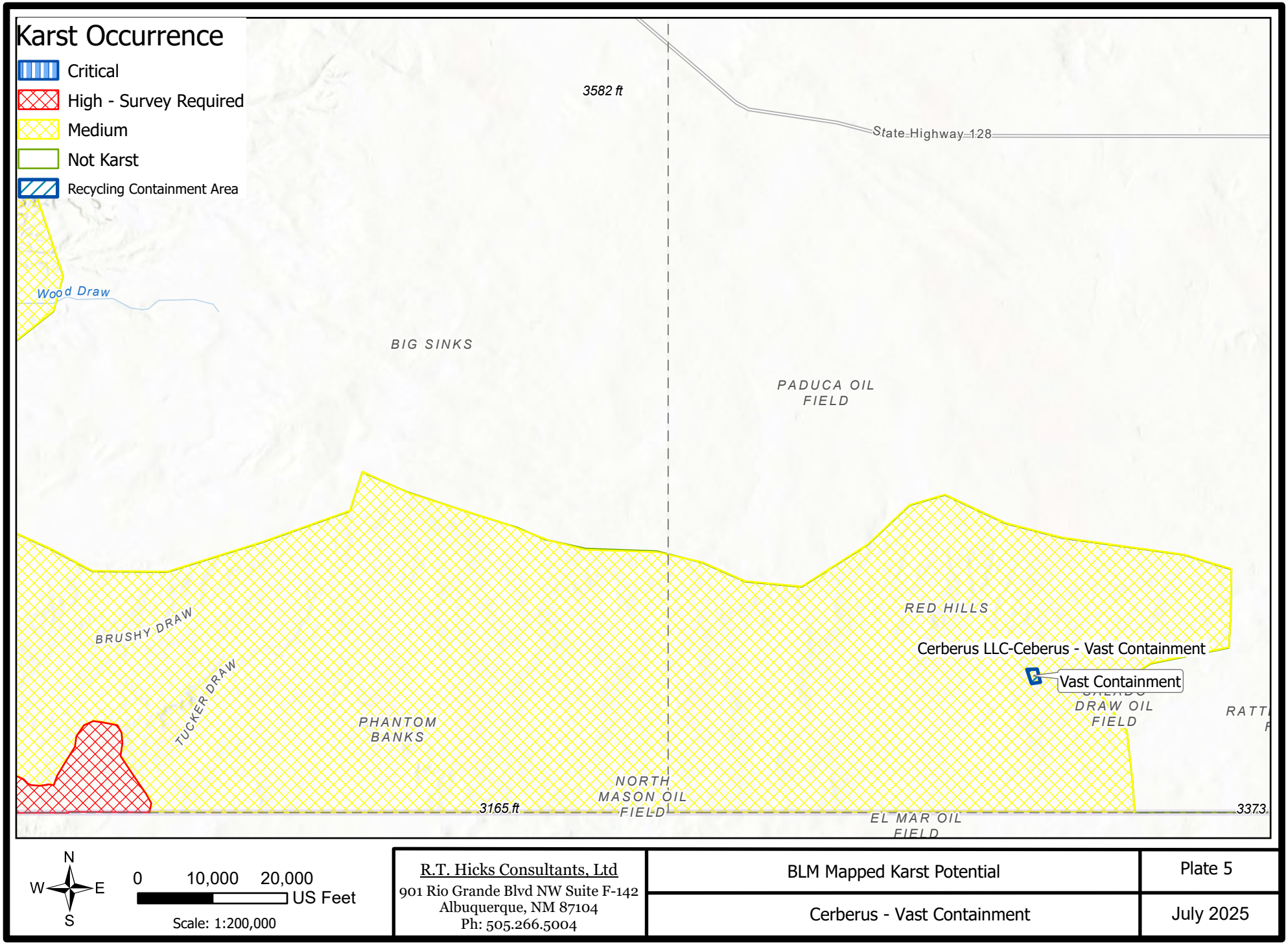
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearest Municipalities & Public Water Supplies	Plate 3
	Cerberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



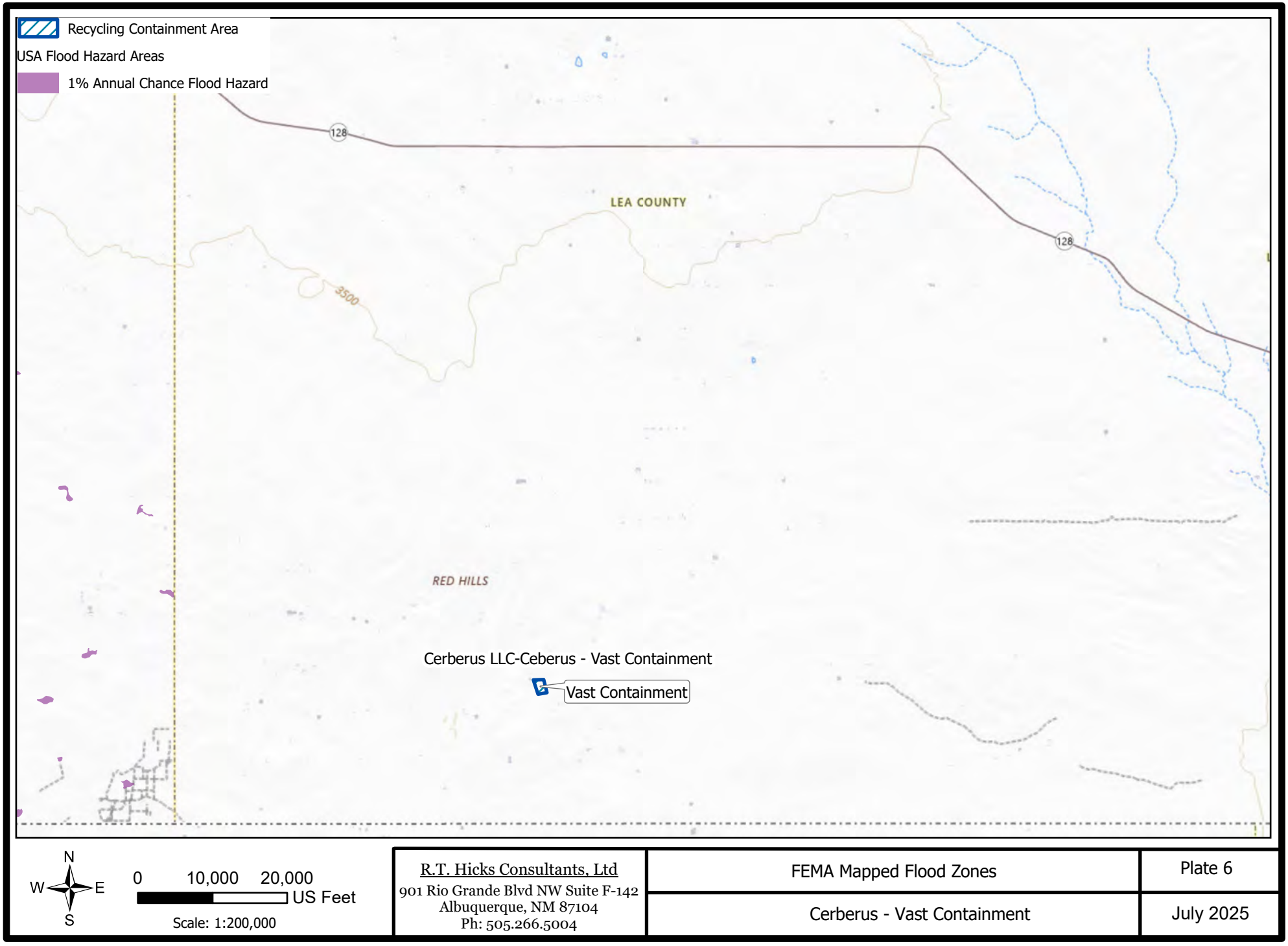
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Mines - Caliche Pits	Plate 4
	Cerberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



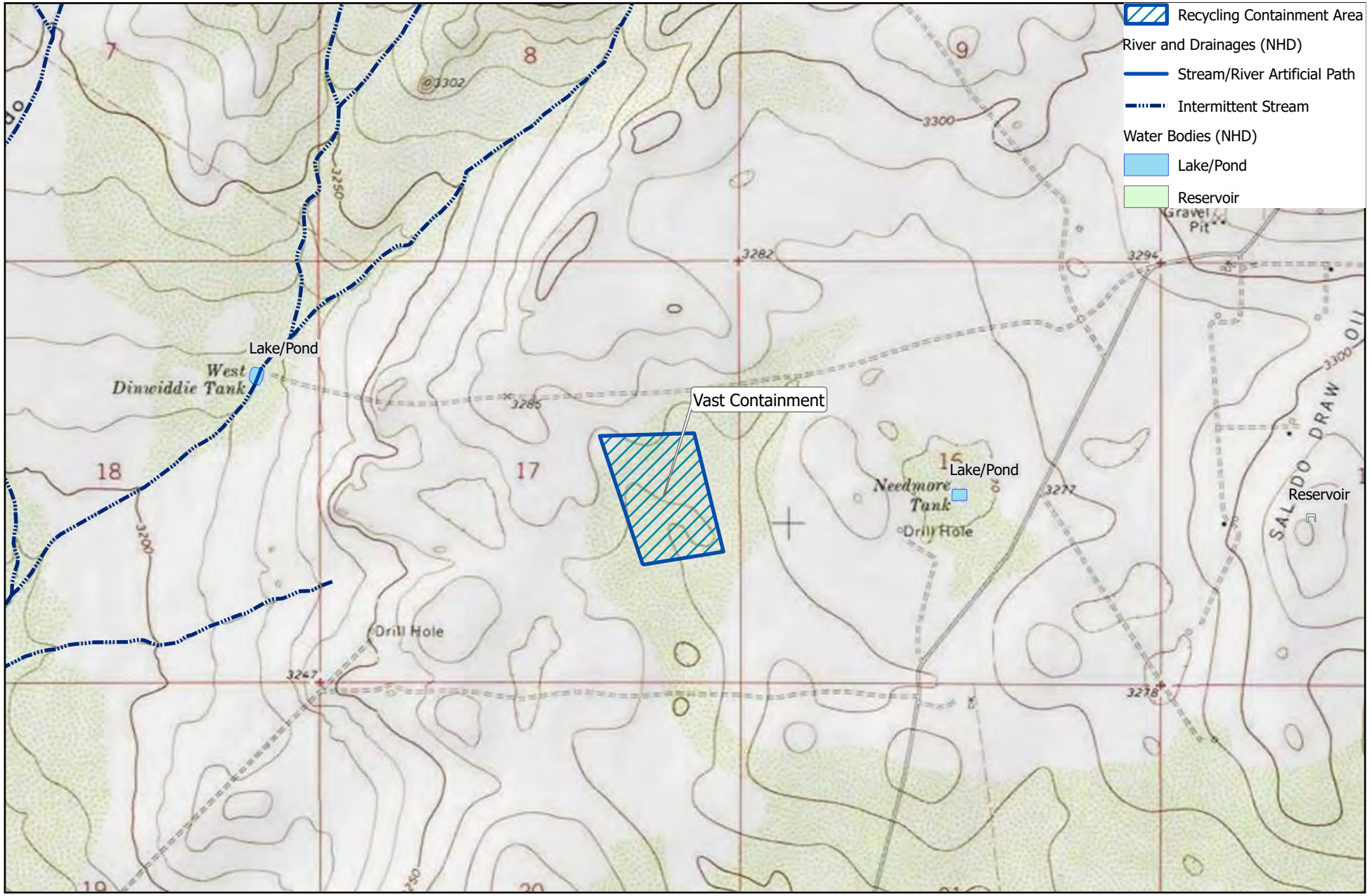
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	BLM Mapped Karst Potential	Plate 5
	Cerberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	FEMA Mapped Flood Zones	Plate 6
	Cerberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



N
W E
S

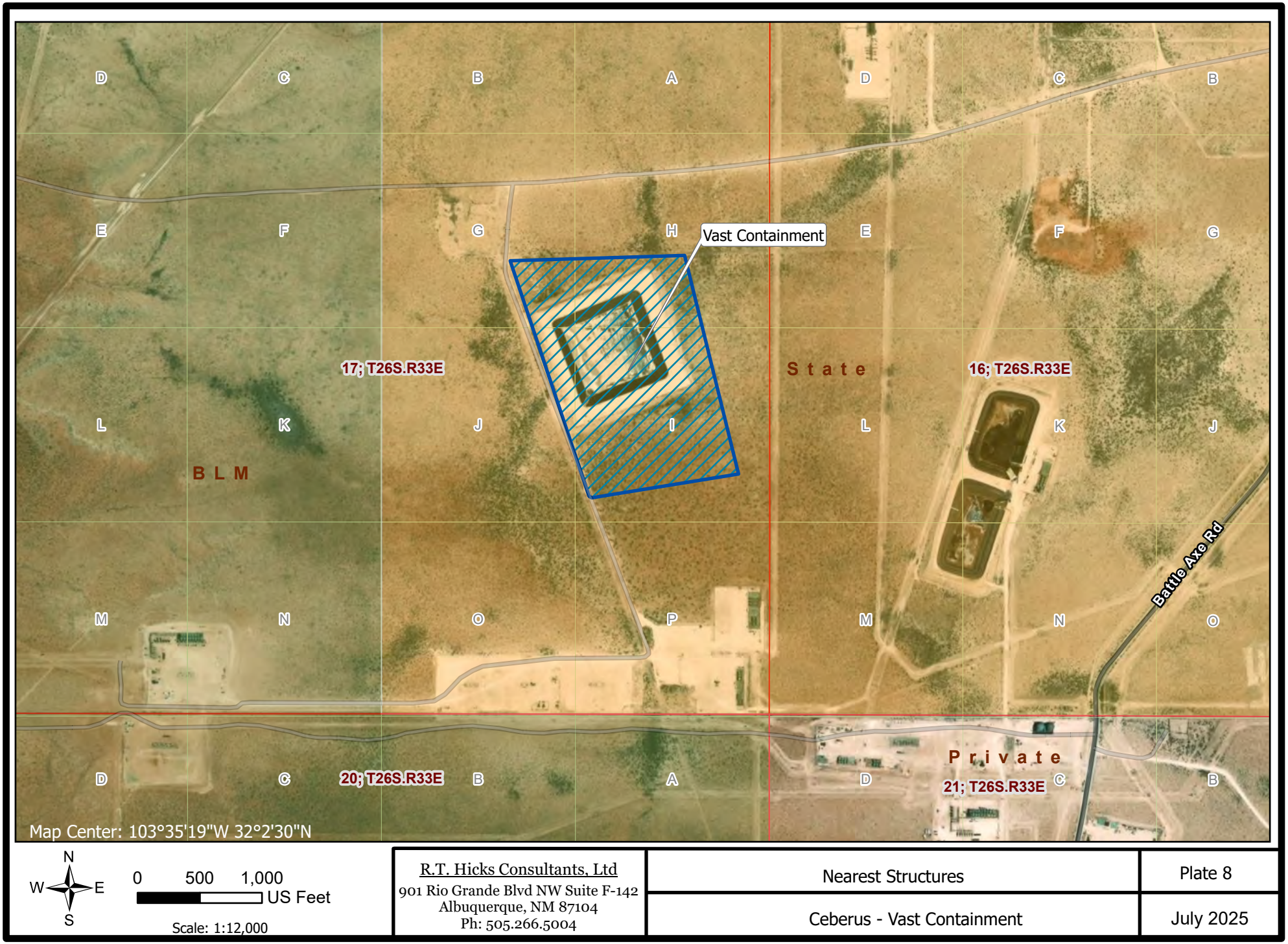
0 1,000 2,000 US Feet

Scale: 1:24,000

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

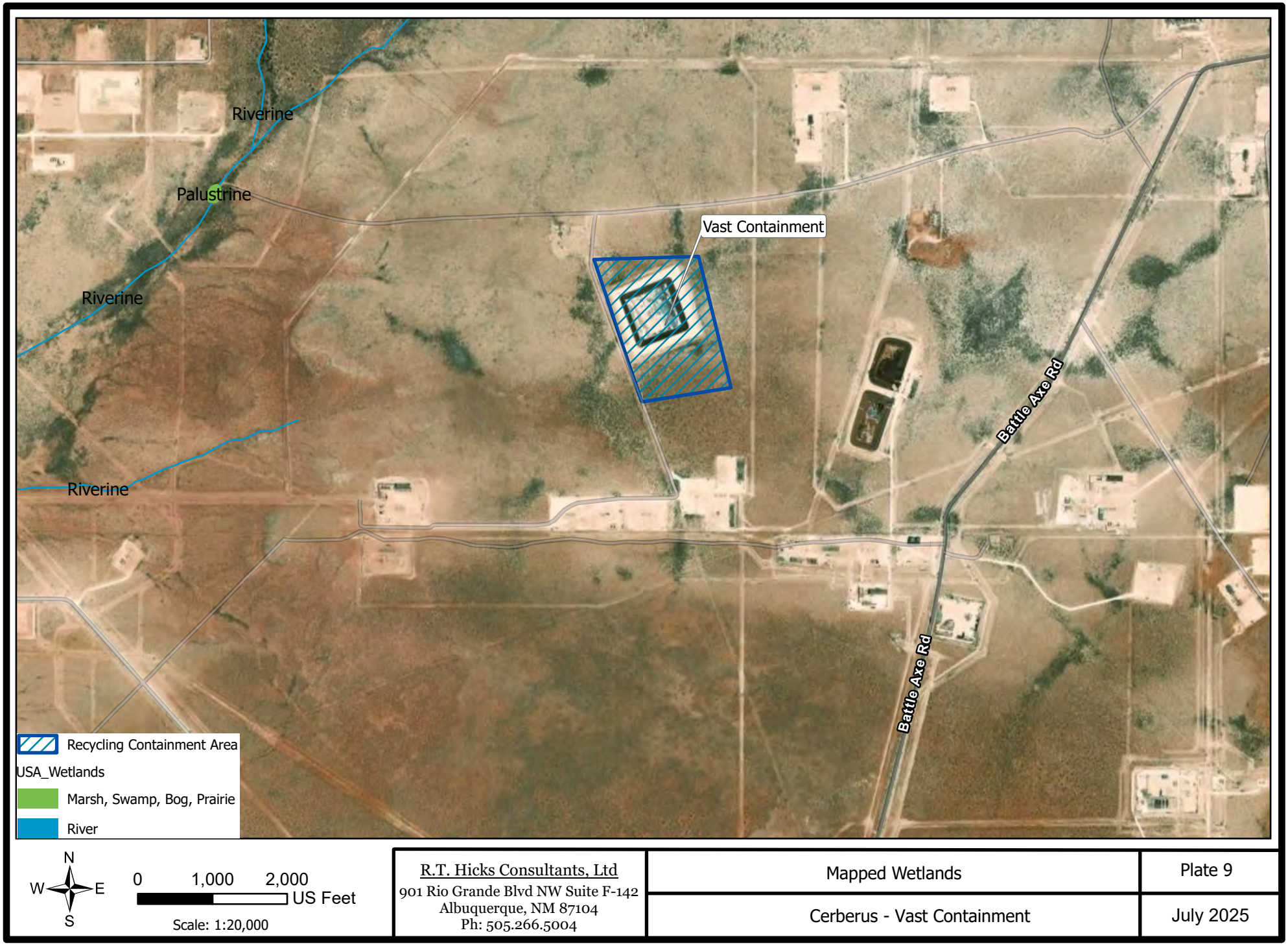
Mapped Surface Water	Plate 7
Cerberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearest Structures	Plate 8
	Ceberus - Vast Containment	July 2025

P:\CascadeCeberus-Vast\Cascade-Ceberus-VastContainment.aprx



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Mapped Wetlands	Plate 9
	Cerberus - Vast Containment	July 2025

WELL LOGS AND USGS DATA

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OSE DIT AUG 2 2021 PM4:44

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1 (MW-1)	n/a	C-4547

WELL OWNER NAME(S)	PHONE (OPTIONAL)
BTA Oil Producers	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
104 S. Pecos St.	Midland	TX	79701

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	3	14.34	N
	LONGITUDE	103	36	16.96	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

NE SE SE Sec. 07 T26S R33E

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
07/15/2021	07/15/2021	temporary well material	112	unknown

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 89.5

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	21	±8.5	Boring- HSA	--	--	--	--
21	112	±3.5	Boring- Air Rotary	--	--	--	--

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. C-4547	POD NO. 1	TRN NO. 698291	
LOCATION 26S-33E-07 4-4-2		WELL TAG ID NO. NA	PAGE 1 OF 2

OSE DIT AUG 2 2021 PM4:44

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	4	4	Caliche, Consolidated , White	Y ✓N	
4	44	40	Sand, Fine-grained, poorly graded, with caliche gravel, Redish Brown	Y ✓N	
44	51	7	Clay, Stiff, Dark Brown,	Y ✓N	
51	103	52	Sandstone, Fine-grained, poorly graded, Tan Brown	✓Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Temporary well materials removed and the soil boring plugged using tremie pipe to total depth and landed cement slurry of <6.0 gallons of water per 94 lbs sack of Portland TYPE I/II Neat Cement. See attached Plugging Record

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Shane Eldridge, Cameron Pruitt, Carmelo Trevino

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Jack Atkins — Jackie D. Atkins — 07/29/2021

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO. C-4547	POD NO. 1	TRN NO.	
LOCATION 26S-33E-07 4.4.2		WELL TAG ID NO. NA	PAGE 2 OF 2

2021-07-28_C-4547_POD1_OSE_Well Record and Log_mesa1-for sign

Final Audit Report 2021-07-29

Created:	2021-07-29
By:	Lucas Middleton (lucas@atkinseng.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA3aQOFUKeCXoHbozKpK1XeoMdI53lwclm

OSE DIT AUG 2 2021 PM4:44

"2021-07-28_C-4547_POD1_OSE_Well Record and Log_mesa1-for sign" History

Document created by Lucas Middleton (lucas@atkinseng.com)
2021-07-29 - 8:40:54 PM GMT- IP address: 69.21.248.123

Document emailed to Jack Atkins (jack@atkinseng.com) for signature
2021-07-29 - 8:41:43 PM GMT

Email viewed by Jack Atkins (jack@atkinseng.com)
2021-07-29 - 8:43:29 PM GMT- IP address: 64.90.153.232

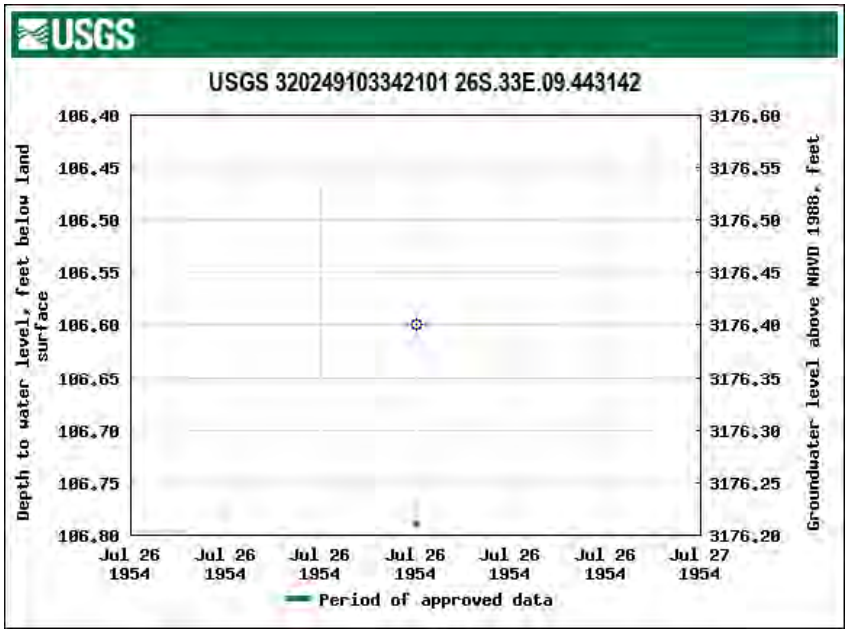
Document e-signed by Jack Atkins (jack@atkinseng.com)
Signature Date: 2021-07-29 - 8:44:00 PM GMT - Time Source: server- IP address: 64.90.153.232

Agreement completed.
2021-07-29 - 8:44:00 PM GMT

Adobe Sign

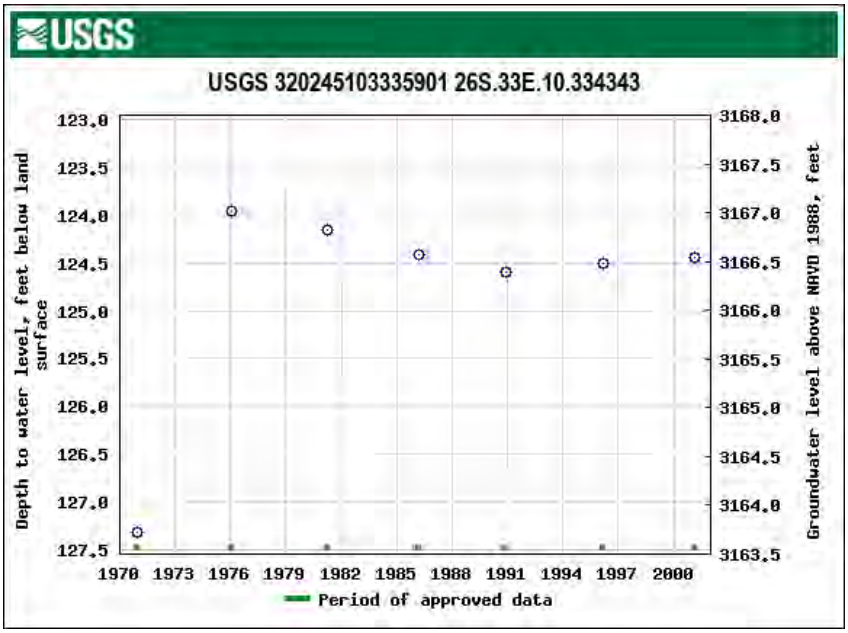
USGS 320249103342101 26S.33E.09.443142 AKA USGS-14364

Lea County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°02'49",
Longitude 103°34'21" NAD27
Land-surface elevation 3,283 feet above NAVD88
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.



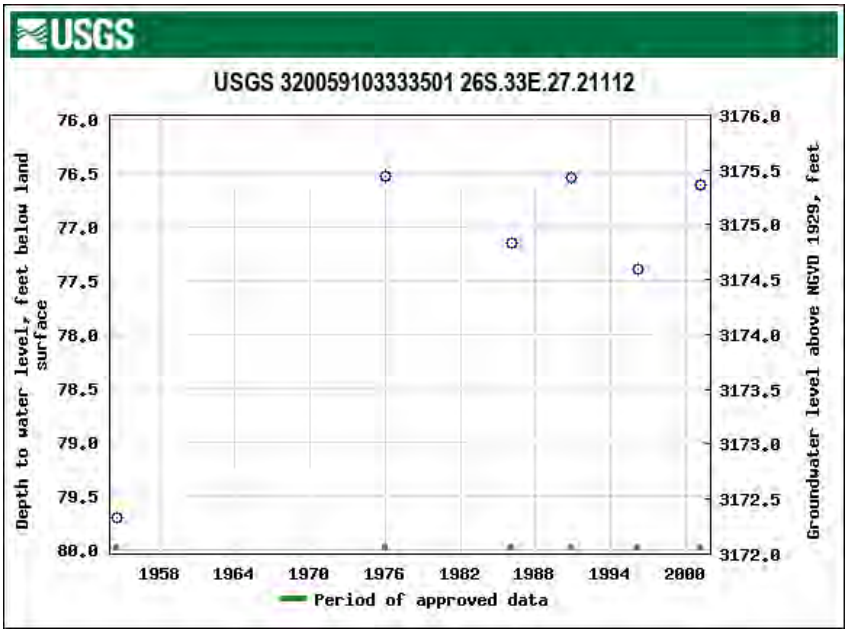
USGS 320245103335901 26S.33E.10.334343 AKA-USGS 14368

Lea County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°02'45",
Longitude 103°33'59" NAD27
Land-surface elevation 3,291 feet above NAVD88
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.



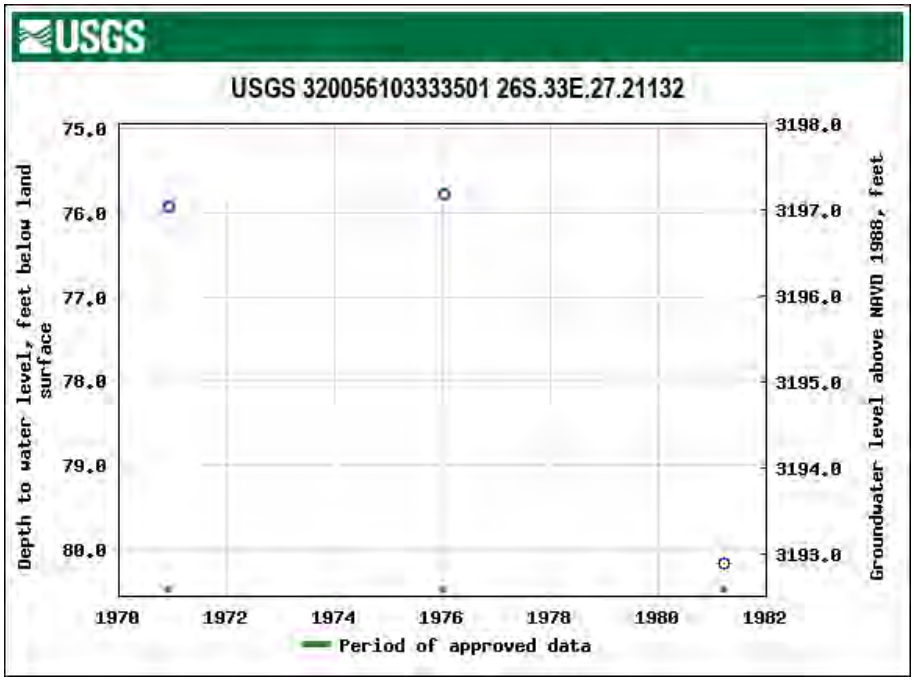
USGS 320059103333501 26S.33E.27.21112 AKA USGS-14030

Lea County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°01'16.0",
Longitude 103°33'33.9" NAD83
Land-surface elevation 3,252.00 feet above NGVD29
The depth of the well is 200 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.
.



USGS 320056103333501 26S.33E.27.21132 AKA USGS-14044

Lea County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°00'56",
Longitude 103°33'35" NAD27
Land-surface elevation 3,273 feet above NAVD88
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.



SITE PHOTOGRAPHS

Satellite image showing location of photo stops presented below and existing Vast freshwater frac pond


Stop 1 – Approx. 0.33 mi. west of Vast Pond: View east with Vast pond on horizon on left, showing nature of surface aeolian sand and vegetation 32.040060, -103.595200

Stop 2- Vast pond entrance, view north 32.042010, -103.590150

Stop 2 – View south from entrance to Vast pond, taken from same location as above 32.042010, -103.590150

Stop 3 - Near northwest corner of project area; view east with current pond at top-right corner of image). Recent rains left evidence of surface drainage in the right-foreground. 32.044890, -103.591520

Stop 4 – Facing north, approx. 520 ft north of northeast corner of Vast pond; Desiccation cracks and drainage pattern evident in foreground (recent rains) 32.046040, -103.588510

Stop 4 - Same location as above looking south: drainage pattern becomes less evident south, toward Vast pond (bottom-right) 32.046040, -103.588510

Satellite image depicting location of photo stop 5 in relation to stops 1-4 and existing Vast freshwater frac pond

Stop 5 – East wall of former quarry that is currently a production pad off Battle Axe Road about 1.5 miles south-southeast of the project area. Chinle Formation sandstone boulders are in the foreground and the wall of the former quarry in the background is poor-grade caliche. We know that the Chinle sandstone is not in-situ. However, it is unlikely that they were placed here from a distant source. We believe that the Chinle Formation is near the surface here or close to this former quarry.
32.020840, -103.581750

APPENDIX CAVE KARST SURVEY AND GEOLOGIC REGIME OF PROJECT AREA

Cave and Karst Survey Report

Project: Cerberus LLC, Vast Pond Re-permitting Project
Section 17, T26S, R33E, Part of the S/2 NE Quarter and N/2 SE Quarter
Eddy County, NM

To: Bobbi Jo Crain
Cascade Services
3403-B E. County Road 44
Midland, TX 79705

Phone: (210) 632-8670 Mobile

Email: bobbijo@cascadeservicesllc.com

Prepared by: Richard A. Bridges
subTerra Consulting

Date: Revised January 3, 2026

Cave and Karst Survey Method:

The area of the surface Cave and Karst Survey (CKS) for this report is the proposed Cerberus LLC, Vast Pond Re-permitting Project - Section 17, T26S, R33E, Part of the S/2 NE Quarter and N/2 SE Quarter, Eddy County, NM. The area to be checked was furnished to us in two (2) .pdf files, “CONCHO VAST.pdf” and “vast Fp_ pit mapping report.pdf”, by Bobbi Jo Crain of Cascade Services, on May 20, 2025. The Cerberus LLC, Vast Pond was further identified by the Lat/Long coordinates, N 32.04387 W -103.58876 contained in these .pdf files.

The Cerberus LLC, Vast Pond is an existing fresh water pond that is proposed to be converted to a new use, see Photos # 1, 3, 5, 7, 8, 10, 12, 13 and 15. As an existing facility, we could not perform a Surface Karst Survey under the Cerberus LLC, Vast Pond itself, therefore the client wanted an area surrounding the existing Cerberus LLC, Vast Pond surveyed for karst. The GPS tracks of this Field Surface Karst Survey in Section 17, T26S, R33E, Part of the S/2 NE Quarter and N/2 SE Quarter Eddy County, NM are shown on Figures 1 & 2 as a CYAN Line. The outer area of the existing Cerberus LLC, Vast Pond is approximately 950’ N-S by 880’ E-W and the inner pond area is 411,793 square feet, according to the “CONCHO VAST.pdf” file. The client wanted us to conduct a surface karst CKS that went beyond the existing boundaries of the Cerberus LLC, Vast Pond sufficiently to

clear the surrounding area for karst features, see Photos #2, 4, 6, 9, 11 and 14. We conducted a surface karst survey of the area shown on Figures 1 & 2, thoroughly covering the Cerberus LLC, Vast Pond Re-permitting Project. This resulted in a surface CKS search area that contained 3.8 miles of field karst survey tracks (Cyan Lines) for the Cerberus LLC, Vast Pond Re-permitting Project, all set against the background of a satellite image of the surface, see Figures 1 & 2. This Field Surface Karst Survey covered an area of approximately 6,700,000 square feet surrounding the Cerberus LLC, Vast Pond, approximately 16.27x the surface area of the existing pond.

As requested by Bobbi Jo Crain of Cascade Services, subTerra conducted this surface CKS of the Cerberus LLC, Vast Pond Re-permitting Project on May 20, 2025. This CKS covered the area shown by our GPS tracks (CYAN) on Figures 1 & 2, looking for surface expressions of cave and karst features (sinkholes, swallets and cave entrances), but in no way analyzed anything in the sub-surface.

In December of 2025, George Jennings, Senior Geologist, of Cascade Services requested that subTerra conduct an Aerial Survey of the Cerberus LLC, Vast Pond Re-permitting Project. Using a combination of high resolution Orthomosaic imagery from Square Root Services of Hobbs NM and Google Earth images, see Figure 1a, George Jennings and subTerra jointly conducted this Aerial Karst Survey on January 2, 2026 via a Microsoft Teams connection.

Figure 1a, shows the Cerberus LLC, Vast Pond, a 200 m Aerial Karst Survey boundary around it (RED line), 25 m Karst Survey Corridors (GREEN lines) and subTerra's GPS tracks (CYAN line) from our May 20, 2025 Field Karst Survey.

Using the imagery layers discussed above, George Jennings created karst survey corridors nominally 25 m wide across the Project area. These were used to carefully and thoroughly examine the Project area for surface karst features. The 25 m wide corridors were chosen because they are the new 2026 BLM standards for Karst Surveys.

There were no paper maps of the Cerberus LLC, Vast Pond Re-permitting Project site furnished by the client. This survey was conducted solely on the .pdf files and the Lat/Long coordinates, N 32.04387 W -103.58876, furnished by the client in the .pdf files. Our GPS equipment was set on the map datum standard of NAD 83 while we conducted the CKS.

Location of the Cerberus LLC, Vast Pond Re-permitting Project – Karst Survey Area:

The GREEN Flags, shown on Figure 3, at the corner locations of the Cerberus LLC, Vast Pond Re-permitting Project CKS Borders are based on GPS Waypoints at the approximate corner locations and in NO WAY should be interpreted as having been derived from a civil

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

survey of the premises nor to represent exact locations. They are for estimating the general geographic locations and area covered in this CKS.

Cerberus LLC, Vast Pond Re-permitting Project - Section 17, T26S, R33E, Part of the S/2 NE Quarter and N/2 SE Quarter Eddy County, NM

Cerberus LLC, Vast Pond CKS Area NW corner - N32° 02.741' W103° 35.635'

Cerberus LLC, Vast Pond CKS Area NE corner - N32° 02.773' W103° 35.263'

Cerberus LLC, Vast Pond CKS Area SE corner - N32° 02.513' W103° 35.150'

Cerberus LLC, Vast Pond CKS Area SW corner - N32° 02.366' W103° 35.451'

Findings:

After extensive searching and careful observation, **NO Surface Karst Features** (i.e. sinkholes, swallets or cave entrances) were found within the limits of the Field Surface Karst Survey of the Cerberus LLC, Vast Pond Re-permitting Project area on the May 20, 2025.

After extensive searching and careful observation, **NO Surface Karst Features** (i.e. sinkholes, swallets or cave entrances) were found within the limits of the Aerial Karst Survey of the Cerberus LLC, Vast Pond Re-permitting Project area conducted on the January 2, 2026.

The typical terrain within the area covered by this CKS is shown in Fifteen (15) accompanying Photos #1 to 15.

Conclusions and Recommendations:

The following recommendations are needed for this CKS area:

Karst features exist in the general area of this CKS, as the BLM High Karst Area is approximately 3.9 miles WSW from the Project area, see Figure 4. Since karst features are within the vicinity of this project, caution and due diligence should be exercised when working in the area.

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

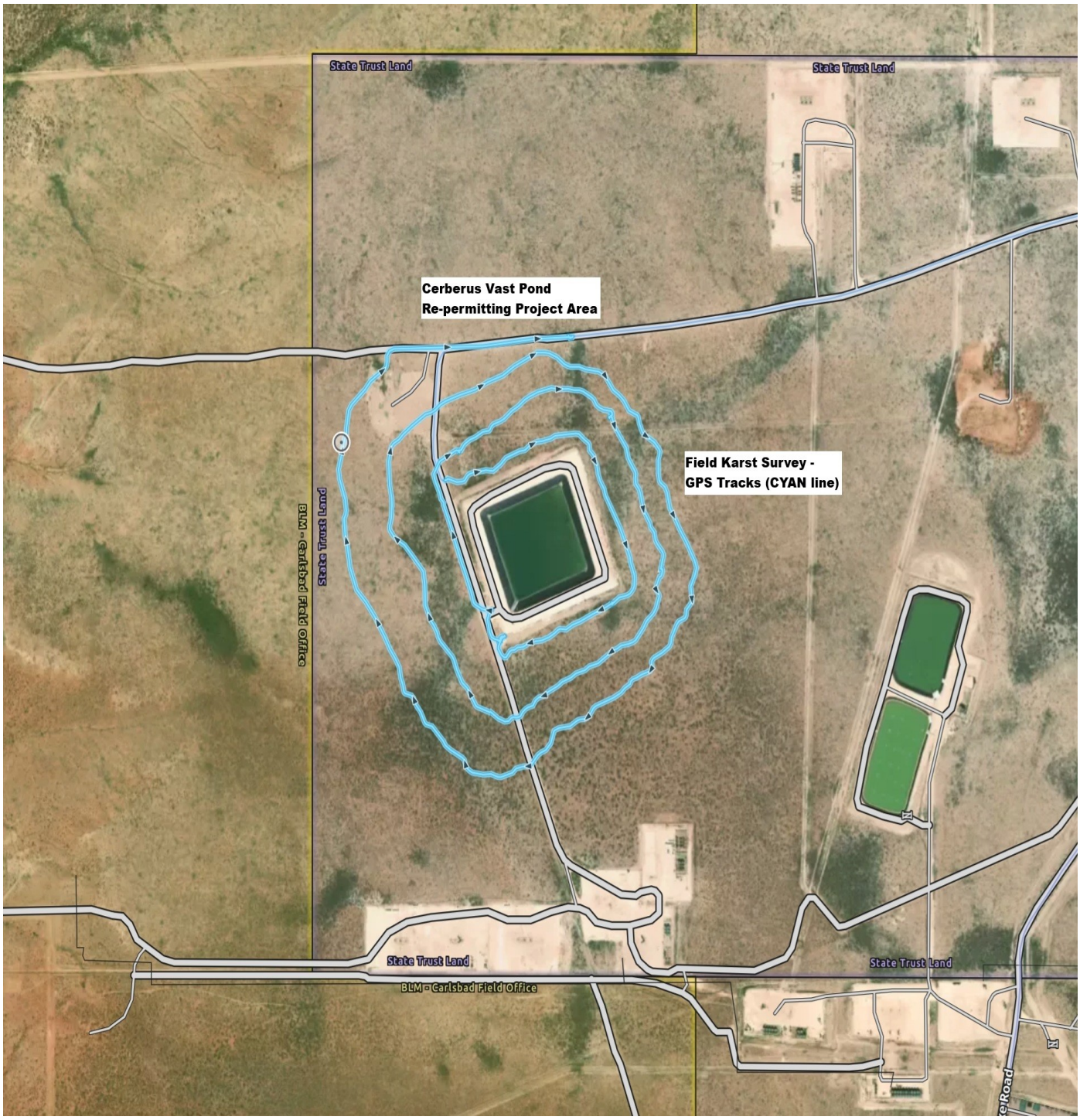
caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

This CKS in NO way has investigated anything in the subsurface. Karst features exist in the general area of this CKS and we cannot predict what may lie below the surface.

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

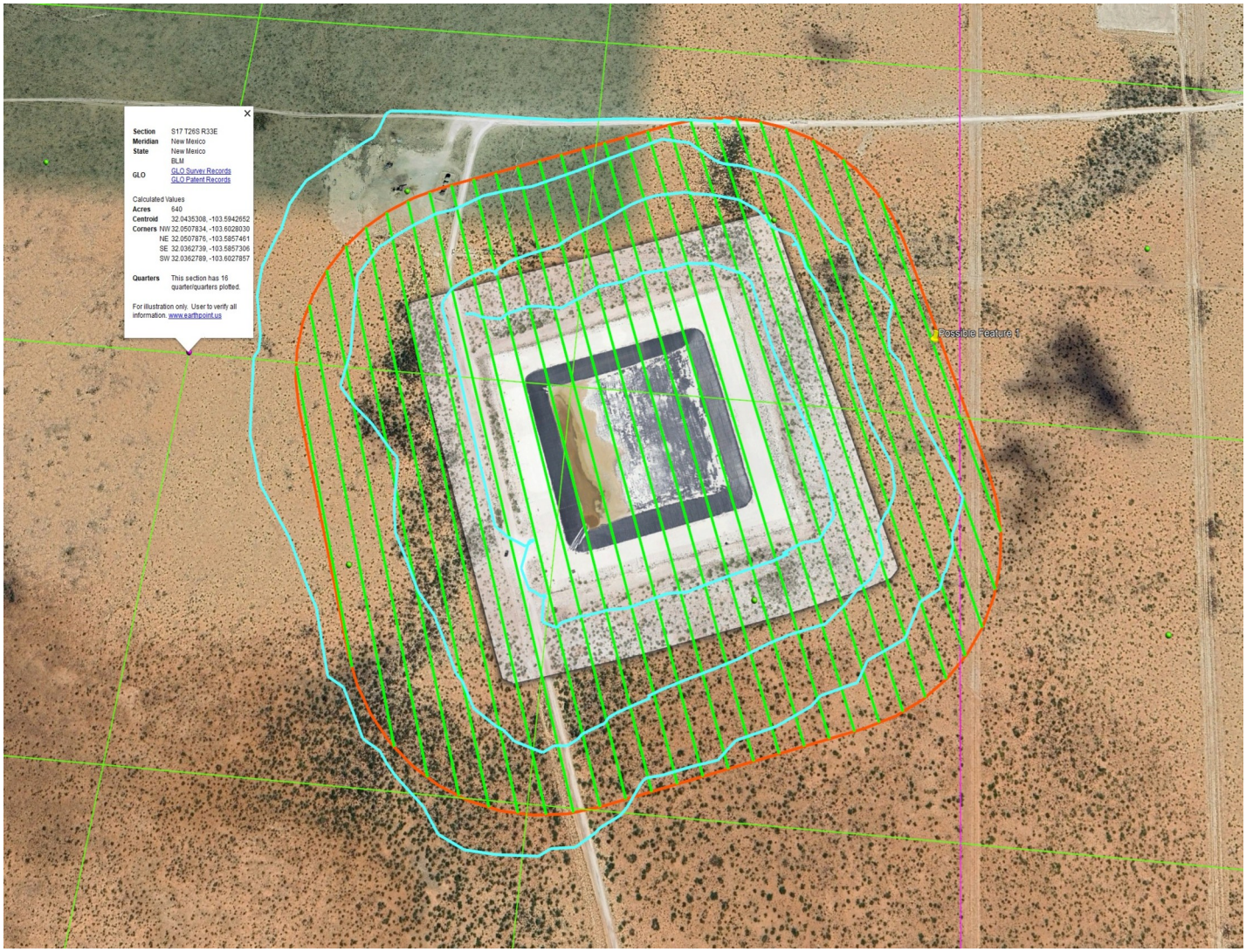
Figure 1 – Cerberus, LLC Vast Pond Re-permitting Project Area with Karst Survery GPS Tracks (CYAN Line)



subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

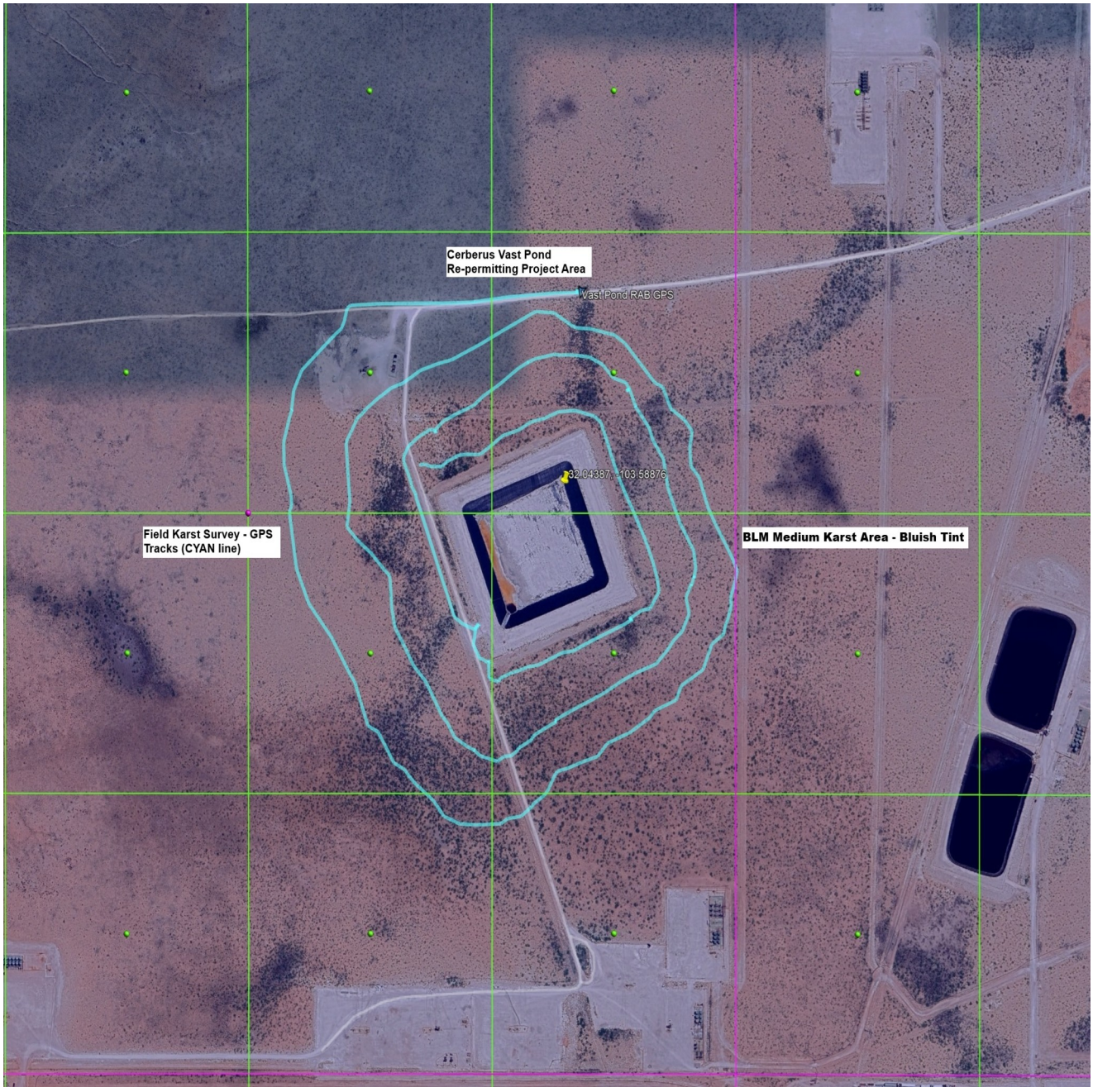
Figure 1a - Cerberus, LLC Vast Pond Re-permitting Project Area, Aerial Survey with Field Karst Survery GPS Tracks from May 2025



subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

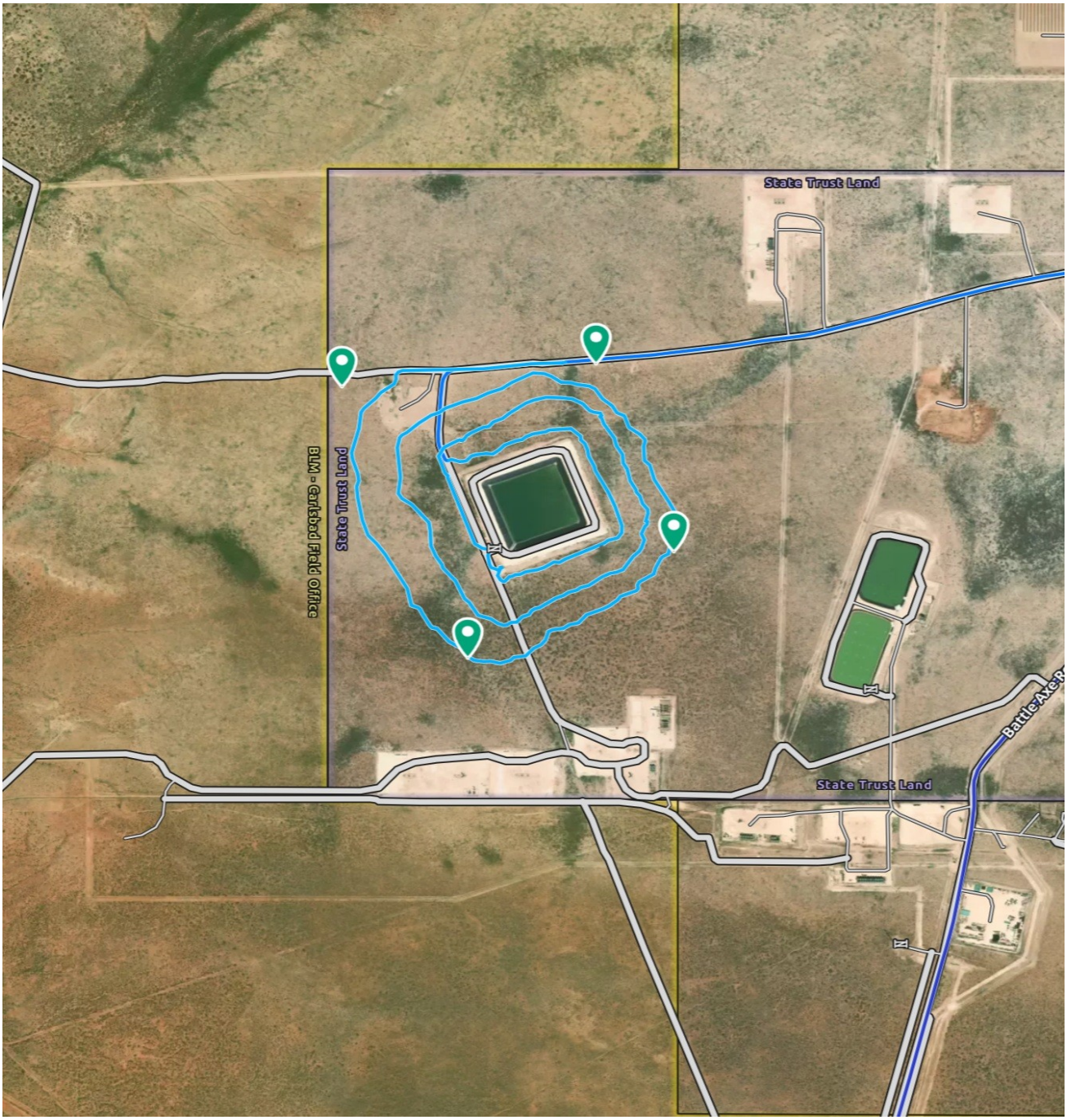
Figure 2 - Cerberus LLC, Vast Pond Re-permitting Project Area with Karst Survery GPS Tracks (CYAN Line)



subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

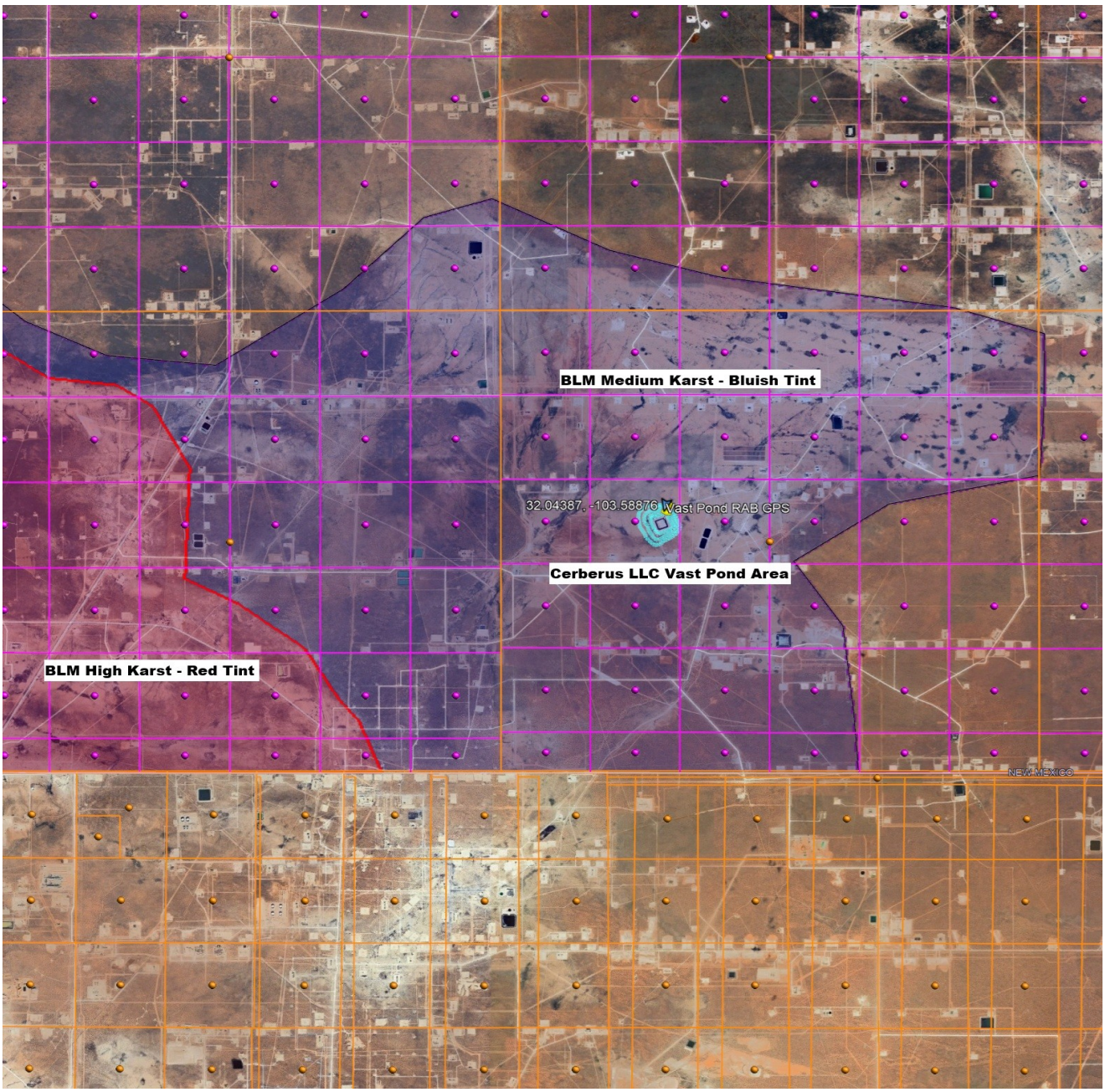
Figure 3 - Cerberus LLC, Vast Pond Re-permitting Project Area Karst Survery with Green Corner Flags



subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Figure 4 - Cerberus LLC, Vast Pond Relationship to BLM High and Medium Karst Areas



subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 1 - SW Corner of Vast Pond, looking NNE

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 2 - Typical terrain near SW Corner Vast Pond, looking WSW

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 3 - NW corner of Vast Pond

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 4 - NW corner of Vast Pond, looking NNW

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 5 - Away from the NW Corner of Vast Pond, looking SSE

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 6 - Typical terrain along N wall of Vast Pond, looking ENE

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 7 - Away from N wall of Vast Pond, looking SSE

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 8 - W wall of Vast Pond looking NW

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 9 - Along W wall of Vast Pond, looking WSW

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 10 - NE corner of Vast Pond, looking SSE

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 11 - Typical terrain near NE corner of Vast Pond, looking ENE

1

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 12 - SE Corner of Vast Pond looking N

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 13 - SE Corner of Vast Pond, looking SSW

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 14 - Typical terrain near SE Corner of Vast Pond, looking SSW

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

Photo 15 - Away from NW Corner of Vast Pond, looking SSE

subTerra Consulting
1055 N, 750 W
Monroe, UT 84754

caver1_2001@yahoo.com
(575) 361-1272 C
(575) 361-8636

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

Aerial Cave Karst Surveys v. Subsurface Geologic Evidence

It is true that BLM mapping of low karst potential or not karst does not guarantee the absence of karst features. Equally true, BLM's mapping of medium karst does not guarantee the presence of karst features. Also true is the statement that karst designation by BLM is not site-specific.

A survey/inventory of cave/karst features using aerial imagery and topography is an excellent method to determine the presence of near surface karst features. The presence of surface karst features is good evidence that the area of a proposed Rule 34 containment could be unstable.

Hicks Consultants maintains that a geologic examination conducted by an experienced and competent geologist provides equal or better protection of instability caused by karst. Appropriate subsurface data can support a conclusion that an area surrounding and including a Rule 34 containment does not, and will not, contain karst features that could cause instability.

For the Vast containment project area and the surrounding environs, Hicks Consultants concludes that the probability that subsurface karst structures could cause instability resulting in a lack of integrity of the proposed containment is so small as to be nil. Below we present data and logic to support this conclusion.

First, we direct OCD's attention to Plate 2b of this submission that shows exposed upper Triassic Chinle Formation (Trcu) at project area. The red bed claystone and cemented sandstone of the Chinle are not soluble as are the deeper, karst-forming evaporites and limestones of the Permian Rustler Formation. The most authoritative geologic publication of this area (Nicholson & Clebsch, 1961[1]), states on pages 34-36 that the Chinle Formation in southeast Lea county can exceed a thickness of 1,000 feet in southeastern Lea County and thins to the west due to Tertiary erosion. At the Vast site, the "upper Chinle," as mapped by Nicholson and Clebsch, must be at least 500 feet thick.

In this area, the Permian Quartermaster Formation (formally called Dewey Lake or Pierce Canyon red beds) lie between the Triassic Chinle and Permian Rustler and are also red bed claystone with lesser amounts of fine-grained sandstone. In Nash Draw in Eddy County, the Quartermaster (aka Pierce Canyon red beds) is 200-250 feet thick[2] and will be about the same at the Vast project.

This simple evaluation results in at least 700 feet of clastic, non-soluble rock between ground surface and the soluble evaporative sequence of the Rustler Formation. These data are not sufficient to support a conclusion that the area is or is not an unstable area, but these data suggest that additional evaluation is worthwhile.

---

[1] https://geoinfo.nmt.edu/publications/water/gw/6/GW6.pdf

[2] https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://pubs.usgs.gov/bul/1141b/report.pdf&ved=2ahUKEwilgdqKl9eKAxXnLEQIHVoWE64QFnoECB8QAQ&usg=AOvVaw2uRbFvCLrKOMe0Ng-LCKD3

Second, Plate 1 shows the OSE boring/well location where subsurface data are available. This log is presented in Appendix *USGS Data and Well Logs*. The lithologic descriptions from the OSE files vary in quality and must be interpreted as a group of wells by a geologist familiar with the area. The data from C-4547 show 4 feet of soluble caliche at the surface that is underlain by 40-feet of clastic, non-soluble alluvium. The top of the Chinle Formation is 44 feet below surface. This evidence demonstrates that, apart from surface caliche, clastic Triassic and Permian rocks underlie the proposed containment to a depth of at least 600 feet. The data also suggest that the soluble Rustler formation, a karst forming unit, does exist beneath the proposed containment at 600 feet or deeper.

Excellent subsurface data typically exists within a mile or two of a containment and the Vast containment is no exception. Subsurface data from oil wells is readily available. Based upon the map below, we selected three oil wells to estimate the depth to the top of the Rustler Formation – the shallowest karst forming unit. These wells are identified below by the last 5 digits of their API number.

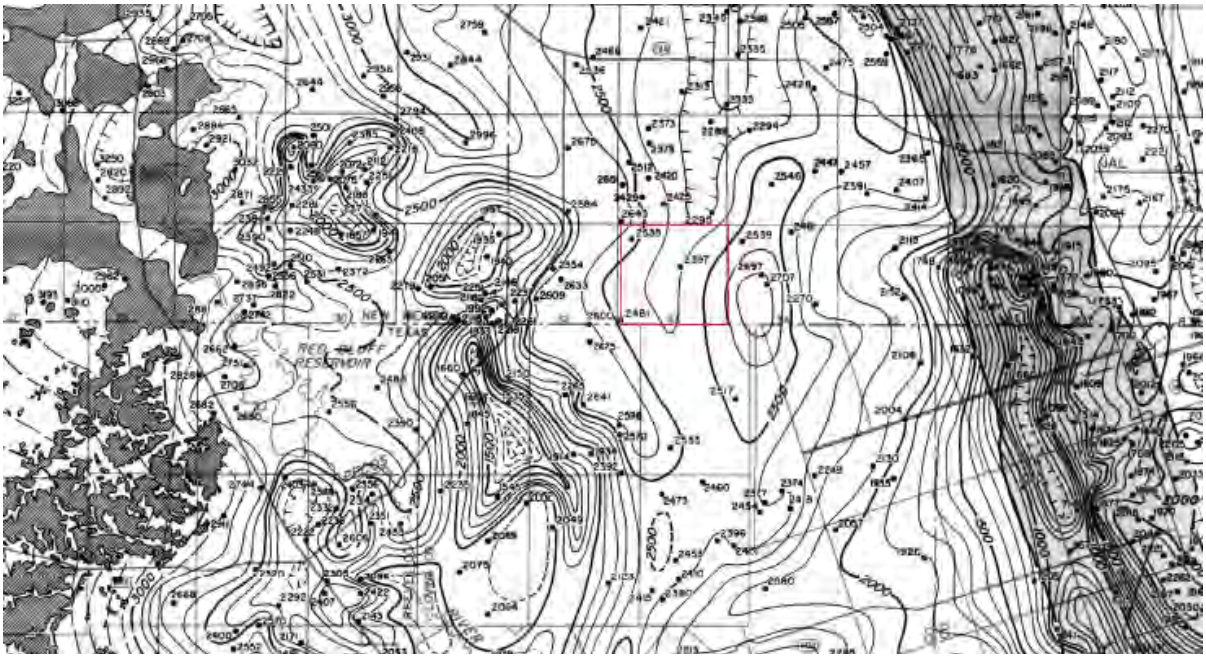
1. Well 43655, about 2000 feet south, records the depth to Rustler as 792 feet
2. Well 42507 is 4000 feet southeast and records the depth to Rustler as 819 feet
3. Well 43404 is about 3000 feet northeast and the Rustler top is 845 feet

A more accurate estimate of the depth to the uppermost soluble rock is 800 feet plus/minus 30 feet.

Another data set available to determine the depth to soluble rock and thus karst potential/instability of areas mapped by the BLM as medium karst potential is the 1976 publication *Structure Of The Permian Ochoan Rustler Formation Southeast New Mexico And West Texas*[3], a portion of which is reproduced below. This map provides the elevation of the top of the Rustler Formation, which as stated in the report, is used as a marker bed within the Delaware Basin because it is easily recognized in mud logs, drilling logs, and geophysical logs due to the change in character from clastic sediments (above the Rustler) to the evaporite facies

3 https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://geoinfo.nmt.edu/publications/maps/resource/7/&ved=2ahUKEwj775yFuLyKAxUtHjQIHZwuIe0QFnoECBgQAQ&usg=AOvVaw3lz0tVMREZNY3Ng8mOKxf6

that characterizes the upper Rustler. At the Vast location, which is in the west-center area of the red square (T26S, R33E) in the map below, the top of the Rustler contour of 2400 feet ASL lies within the area of interest. Using this data, the thickness of non-soluble clastic Permian and Triassic strata at the Vast site is (3265-2400=) 865 feet.



We believe that an OCD or BLM geologist and/or a karst expert listed on the BLM Carlsbad Field Office Approved Third-Party Cave/Karst Contractors can conclude that more than 800 feet of non-soluble clastic sediments that overlie the karst-forming evaporites and limestones of the Rustler Formation cause an extremely low probability of unstable ground due to karst threatening the integrity of the Vast containment.

We recommend that OCD karst experts confer with their counterparts at BLM and a geotechnical design engineer familiar with stability issues to:

- define the minimum thickness of clastic bedrock and/or Tertiary/Quaternary alluvium that would eliminate the potential of instability of an area due to underlying karst-forming strata and
- determine if the 1976 publication plus data from nearby wells provides the data required to determine the thickness of clastic strata overlaying the uppermost karst forming units.

Submit To Appropriate District Office
Two Copies
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

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

HOBBS OCD
NOV 06 2017
RECEIVED

Form C-105
Revised April 3, 2017

1. WELL API NO. 30-025-43655
2. Type of Lease ☒ STATE ☐ FEE ☐ FED/INDIAN
3. State Oil & Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

4. Reason for filing:

☒ **COMPLETION REPORT** (Fill in boxes #1 through #31 for State and Fee wells only)

☐ **C-144 CLOSURE ATTACHMENT** (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13.K NMAC)

5. Lease Name or Unit Agreement Name: Vast State
6. Well Number: 20H

7. Type of Completion:
☒ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER

8. Name of Operator: COG Operating LLC
9. OGRID: 229137
10. Address of Operator: 2208 W. Main Street, Artesia, NM 88210
11. Pool name or Wildcat: Sanders Tank; Upper Wolfcamp

12.Location	Unit Ltr	Section	Township	Range	Lot	Feet from the	N/S Line	Feet from the	E/W Line	County
Surface:	P	17	26S	33E		410	South	573	East	Lea
BH:	A	17	26S	33E		200	North	357	East	Lea

13. Date Spudded	14. Date T.D. Reached	15. Date Rig Released	16. Date Completed (Ready to Produce)	17. Elevations (DF and RKB, RT, GR, etc.)
4/12/17	5/8/17	5/12/17	9/12/17	3254' GR

18. Total Measured Depth of Well	19. Plug Back Measured Depth	20. Was Directional Survey Made?	21. Type Electric and Other Logs Run
17059'	16895'	Yes	CNL, Sonic, Laterolog, Resisitivity

22. Producing Interval(s), of this completion - Top, Bottom, Name: 12587-16870' Wolfcamp

23. **CASING RECORD** (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
10 3/4"	45.5#	938'	13 1/2"	575 sx	
7 5/8"	29.7#	11833'	9 7/8"	1574 sx	
5 1/2"	23#	0-11813	6 3/4"	1160 sx	
5"	18#	11813-17056'	6 3/4"		

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 7/8"	11800'	11790'

26. Perforation record (interval, size, and number)
12587-16870' (1276)
16910-16920' (60)

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
12587-16870'	Acdz w/87,234 gal 7 ½%; Frac w/8,655,042# sand & 10,485,468 gal fluid

28. **PRODUCTION**

Date First Production	Production Method (*Flowing, gas lift, pumping - Size and type pump*)	Well Status (*Prod. or Shut-in*)
9/13/17	Flowing	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
9/13/17	24	15/64"		154	187	826	

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (*Corr.*)
3500#	3300#		154	187	826	

29. Disposition of Gas (*Sold, used for fuel, vented, etc.*): Sold
30. Test Witnessed By: John Mraz
31. List Attachments: Surveys, Logs
32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.
33. Rig Release Date:
34. If an on-site burial was used at the well, report the exact location of the on-site burial:
Latitude Longitude NAD83

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature: Stormi Davis Printed Name: Stormi Davis Title: Regulatory Analyst Date: 11/1/17

E-mail Address: sdavis@concho.com

KZ

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well and not later than 60 days after completion of closure. When submitted as a completion report, this shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 11, 12 and 26-31 shall be reported for each zone.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico	
T. Anhy		T. Canyon		T. Ojo Alamo	T. Penn A"
T. Salt	1163'	T. Strawn		T. Kirtland	T. Penn. "B"
B. Salt	4670'	T. Atoka		T. Fruitland	T. Penn. "C"
T. Yates		T. Miss		T. Pictured Cliffs	T. Penn. "D"
T. 7 Rivers		T. Devonian		T. Cliff House	T. Leadville
T. Queen		T. Silurian		T. Menefee	T. Madison
T. Grayburg		T. Montoya		T. Point Lookout	T. Elbert
T. San Andres		T.		T. Mancos	T. McCracken
T. Glorieta		T.		T. Gallup	T. Ignacio Otzte
T. Paddock		T.		Base Greenhorn	T. Granite
T. Blinebry		T.		T. Dakota	
T.Tubb		T. Rustler	792'	T. Morrison	
T. Drinkard		T. Bone Spring Lm	9039'	T.Todilto	
T. Abo		T. 1st Bone Spring	9994'	T. Entrada	
T. Wolfcamp		T. 2nd Bone Spring	10578'	T. Wingate	
T. Penn		T. 3rd Bone Spring	11705'	T. Chinle	
T. Cisco (Bough C)		T. Wolfcamp	12137'	T. Permian	

OIL OR GAS SANDS OR ZONES

No. 1, from.....to..... No. 3, from.....to.....
No. 2, from.....to..... No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....
No. 2, from.....to.....feet.....
No. 3, from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology		From	To	Thickness In Feet	Lithology

Submit To Appropriate District Office
Two Copies
District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

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

HOBBS OCD
MAR 21 2017
RECEIVED

Form C-105
Revised August 1, 2011

1. WELL API NO. 30-025-43404
2. Type of Lease ■ STATE ☐ FEE ☐ FED/INDIAN
3. State Oil & Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

4. Reason for filing:

■ **COMPLETION REPORT** (Fill in boxes #1 through #31 for State and Fee wells only)

☐ **C-144 CLOSURE ATTACHMENT** (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13.K NMAC)

5. Lease Name or Unit Agreement Name: Braswell 16 State
6. Well Number: 709H

7. Type of Completion: ■ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER

8. Name of Operator: EOG Resources, Inc.
9. OGRID: 7377
10. Address of Operator: P.O. Box 2267 Midland, TX 79702
11. Pool name or Wildcat: WC-025 G-09 S263327G Upper WC

12.Location	Unit Ltr	Section	Township	Range	Lot	Feet from the	N/S Line	Feet from the	E/W Line	County
Surface:	D	16	26S	33E		270	North	740	West	Lea
BH:	M	16	26S	34E		264	South	353	West	Lea

13. Date Spudded	14. Date T.D. Reached	15. Date Rig Released	16. Date Completed (Ready to Produce)	17. Elevations (DF and RKB, RT, GR, etc.)
10/22/16	11/12/16	11/15/16	2/18/17	3280' GR

18. Total Measured Depth of Well	19. Plug Back Measured Depth	20. Was Directional Survey Made?	21. Type Electric and Other Logs Run
16945' MD -12257' TVD	16809	Yes	None

22. Producing Interval(s), of this completion - Top, Bottom, Name
12496' - 16809' Wolfcamp

23. **CASING RECORD** (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
10-3/4	40.5	1042	14-3/4	746 C	
7-5/8	29.7	11430	8-3/4	600 H, 2076 C	
5-1/2	23.0	16926	6-3/4	575 H	

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET

26. Perforation record (interval, size, and number)
12496' - 16809', 0.35", 1182 holes

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
12496-16809'	10,640,680 lbs proppant;
	188,533 bbls load fluid

28. **PRODUCTION**

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
02/18/17	Flowing	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
3/7/17	24	Open		2675	4630	3761	1730

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
	476					46.0

29. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold
30. Test Witnessed By

31. List Attachments: C-102, C-103, C-104, directional survey

32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.

33. If an on-site burial was used at the well, report the exact location of the on-site burial:
Latitude Longitude NAD 1927 1983

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Stan Wagner Printed Name Stan Wagner Title Regulatory Specialist Date 3/16/17

E-mail Address

KZ

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well and not later than 60 days after completion of closure. When submitted as a completion report, this shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 11, 12 and 26-31 shall be reported for each zone.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico	
T. Anhy	Rustler 845'	T. Canyon	Bell Canyon 4965'	T. Ojo Alamo	T. Penn A"
T. Salt	1215'	T. Strawn		T. Kirtland	T. Penn. "B"
B. Salt	4690'	T. Atoka		T. Fruitland	T. Penn. "C"
T. Yates		T. Miss		T. Pictured Cliffs	T. Penn. "D"
T. 7 Rivers		T. Devonian		T. Cliff House	T. Leadville
T. Queen		T. Silurian		T. Menefee	T. Madison
T. Grayburg		T. Montoya		T. Point Lookout	T. Elbert
T. San Andres		T. Simpson		T. Mancos	T. McCracken
T. Glorieta		T. McKee		T. Gallup	T. Ignacio Otzte
T. Paddock		T. Ellenburger		Base Greenhorn	T.Granite
T. Blinebry		T. Gr. Wash		T. Dakota	
T.Tubb		T. Delaware Sand	4910'	T. Morrison	
T. Drinkard		T. Bone Springs	9035'	T.Todilto	
T. Abo		T.	1st BS Sand 9945'	T. Entrada	
T. Wolfcamp	12025'	T.	2nd BS Sand 10515'	T. Wingate	
T. Penn		T.	3rd BS Sand 11565'	T. Chinle	
T. Cisco (Bough C)		T.		T. Permian	

OIL OR GAS SANDS OR ZONES

No. 1, from.....to..... No. 3, from.....to.....

No. 2, from.....to..... No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....

No. 2, from.....to.....feet.....

No. 3, from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology		From	To	Thickness In Feet	Lithology

HOBBS OCD
APR 10 2017
RECEIVED

NMOCD
Hobbs

Form 3160-4
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No. NMNM02965A

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr.
Other

6. If Indian, Allottee or Tribe Name

7. Unit or CA Agreement Name and No.

2. Name of Operator MEWBOURNE OIL COMPANY / Contact: JACKIE LATHAN E-Mail: jlathan@mewbourne.com

8. Lease Name and Well No. EL MAR 21 A3CN FED COM 1H

3. Address HOBBS, NM 88241

3a. Phone No. (include area code) Ph: 575-393-5905

9. API Well No. 30-025-42507-00-S1

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface NENW 190FNL 1965FWL ✓

At top prod interval reported below NENW 707FNL 1988FWL

At total depth SESW 337FSL 2284FWL

10. Field and Pool, or Exploratory RED HILLS-UP BONE SPRING SHALE

11. Sec., T., R., M., or Block and Survey or Area Sec 21 T26S R33E Mer NMP

12. County or Parish LEA

13. State NM

14. Date Spudded 04/22/2015

15. Date T.D. Reached 05/14/2015

16. Date Completed ☐ D & A ☒ Ready to Prod. 10/01/2016

17. Elevations (DF, KB, RT, GL)* 3274 GL

18. Total Depth: MD 14395 TVD 9953

19. Plug Back T.D.: MD 14377 TVD 9953

20. Depth Bridge Plug Set: MD TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CCL CNL CBL&GR

22. Was well cored? ☒ No ☐ Yes (Submit analysis)
Was DST run? ☒ No ☐ Yes (Submit analysis)
Directional Survey? ☐ No ☒ Yes (Submit analysis)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 H-40	48.0	0	945		800	235	0	
12.250	9.625 N-80	40.0	0	4836		1300	464	0	
8.750	5.500 P-110	17.0	0	14352		1200	639	0	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	9800							

25. Producing Intervals / 26. Perforation Record

	Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A)	BONE SPRING	10250	14352	10250 TO 14352	0.000	1218	OPEN
B)							
C)							
D)							

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
10250 TO 14352	8,204,376 GALS SLICKWATER CARRYING 4,598,600# 100 MESH SAND & 2,274,320# 40/70 WHITE SAND

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
10/01/2016	10/07/2016	24	→	169.0	247.0	2380.0	45.8	0.79	GAS LIFT

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
23/64	1000	1890.0	→	169	247	2380	1462	POW

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status
			→					

ACCEPTED FOR RECORD
(FORM 3160-4, SUBMITTED) DAVID R. GLASS
MAR 28 2017

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #354207 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

DAVID R. GLASS
PETROLEUM ENGINEER

RECLAMATION DUE:
APR 01 2017

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*
SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
BONE SPRING	10250	14352	OIL, WATER & GAS	RUSTLER	819
				TOP OF SALT	1195
				BASE OF SALT	4329
				DELAWARE	4921
				BELL CANYON	5054
				CHERRY CANYON	6041
				BRUSHY CANYON	7564
				BONE SPRING	9109

32. Additional remarks (include plugging procedure):
Additional csg ran.

12.25 hole, 9.625 J55 csg 36# set @ 123' to 3024'
12.25 hole, 9.625 N80 & J55 csg 40# set @ 3024' to 4836'. Cmt w/1300 sks cmt. Slurry vol 464 bbl.

Logs will be sent by mail.

33. Circle enclosed attachments:

1. Electrical/Mechanical Logs (1 full set req'd.)
2. Geologic Report
3. DST Report
4. Directional Survey
5. Sundry Notice for plugging and cement verification
6. Core Analysis
7 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #354207 Verified by the BLM Well Information System.
For MEWBOURNE OIL COMPANY, sent to the Hobbs
Committed to AFMSS for processing by DUNCAN WHITLOCK on 03/13/2017 (17DW0008SE)

Name *(please print)* JACKIE LATHAN Title AUTHORIZED REPRESENTATIVE

Signature (Electronic Submission) Date 10/11/2016

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fradulent statements or representations as to any matter within its jurisdiction.

**** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ****

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Thursday, January 22, 2026 9:24 AM
To: wditto@cerberuslcc.com; Bobbi Jo Crain; gjennings@CascadeServicesLLC.com
Subject: FVV2602229361 VAST CONTAINMENT
Attachments: C-147 FVV2602229361 VAST CONTAINMENT 01.22.2026.pdf

FVV2602229361 VAST CONTAINMENT

Good morning, Mr. Ditto.

The NMOCD has reviewed the recycling containment permit application and related documents, submitted by [333499] Cerberus Land and Cattle Company, LLC on 01/05/2026, Application ID **539864**, for FVV2602229361 VAST CONTAINMENT in I-17-26S-33E, Lea County, New Mexico. The form C-147 and related documents is approved with the following conditions of approval:

- The purpose of this permit is for oil and gas activities regulated under the NMAC 19.15.34.3 STATUTORY AUTHORITY: 19.15.34 NMAC is adopted pursuant to the Oil and Gas Act, Paragraph (15) of Section 70-2-12(B) NMSA 1978, which authorizes the division to regulate the disposition of water produced or used in connection with the drilling for or producing of oil and gas or both and Paragraph (21) of Section 70-2-12(B) NMSA 1978 which authorizes the regulation of the disposition of nondomestic wastes from the exploration, development, production or storage of crude oil or natural gas.
- [333499] Cerberus Land and Cattle Company, LLC shall construct, operate, maintain, close, and reclaim FVV2602229361 VAST CONTAINMENT in compliance with 19.15.34 NMAC.
- FVV2602229361 VAST CONTAINMENT is approved for five years of operation from the date of permit application of 01/05/2026. FVV2602229361 VAST CONTAINMENT permit expires on 01/05/2031. If [333499] Cerberus Land and Cattle Company, LLC wishes to extend operations past five years, an annual permit extension request must be submitted using form C-147 through OCD Permitting by 12/05/2030.
- FVV2602229361 VAST CONTAINMENT consists of one (1) earthen containment with a total capacity of 1,080,741.00 bbl.
- Per NMAC 19.15.34.15.A.(1) operators without existing financial assurance pursuant to NMAC 19.15.8 shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost. The total closure cost estimated of permit FVV2602229361 VAST CONTAINMENT in the amount of $500,087.00 meets the requirements of NMAC 19.15.34.15.A. The financial assurance should be mailed to: **EMNRD - Oil Conservation Division, Administration & Compliance Bureau**. **Attn: Bond Administrator 1220 S. St. Francis Drive| Santa Fe, NM 87505**.
- [333499] Cerberus Land and Cattle Company, LLC shall notify OCD when construction of FVV2602229361 VAST CONTAINMENT commences.
- [333499] Cerberus Land and Cattle Company, LLC shall notify OCD when recycling operations commence and cease at FVV2602229361 VAST CONTAINMENT.
- A minimum of 3-feet freeboard must be maintained at FVV2602229361 VAST CONTAINMENT, at all times during operations.
- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operation of the facility is considered ceased and notification of cessation of operations should be sent electronically to OCD Permitting. An extension to extend the cessation of operation, not to exceed six months, may be submitted using a C-147 form through OCD Permitting.
- [333499] Cerberus Land and Cattle Company, LLC shall submit monthly reports of recycling and reuse of produced water drilling fluids, and liquid oil field waste to OCD Permitting even if there is zero activity.

- [333499] Cerberus Land and Cattle Company, LLC shall inspect the recycling containment and associated leak detection systems weekly while it contains fluids. The operator shall maintain a current log of such inspections and make the log available for review by the division upon request.
- [333499] Cerberus Land and Cattle Company, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at FVV2602229361 VAST CONTAINMENT.

Please reference number FVV2602229361 VAST CONTAINMENT in all future communications.
Thank you.

Victoria Venegas • Senior Environmental Scientist
EMNRD - Oil Conservation Division
506 W. Texas Ave. Artesia, NM 88210
575.909.0269 | **Victoria.Venegas@emnrd.nm.gov**

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

CONDITIONS

Operator:	OGRID:
Cerberus Land and Cattle Company, LLC 8849 Larston st Houston, TX 77056	333499
	Action Number: 539864
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	• [333499] Cerberus Land and Cattle Company, LLC shall construct, operate, maintain, close, and reclaim FVV2602229361 VAST CONTAINMENT in compliance with 19.15.34 NMAC. • FVV2602229361 VAST CONTAINMENT is approved for five years of operation from the date of permit application of 01/05/2026. FVV2602229361 VAST CONTAINMENT permit expires on 01/05/2031. If [333499] Cerberus Land and Cattle Company, LLC wishes to extend operations past five years, an annual permit extension request must be submitted using form C-147 through OCD Permitting by 12/05/2030. • [333499] Cerberus Land and Cattle Company, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at FVV2602229361 VAST CONTAINMENT.	1/22/2026