| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Rule 34 Registration

April 2026

Bullfighter Recycle Containment & AST Facility

Section 33, Township 20S, Range 33E, Lea County

Volume 2

- C-147
- Closure Cost
- Liner Equivalency Demonstration
- Stamped Design Drawings
- Avian Deterrent System
- Design and Construction Plan
- Operation and Maintenance Plan
- Closure Plan

Photo taken near the center of the proposed Bullfighter Containment looking to the south. The area consists of eolian and piedmont deposits with vegetation typical of the area.

Prepared for:

Solaris Water Midstream, LLC

The Woodlands, TX

Prepared by:

Cascade Services LLC
Midland, Texas

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

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: SOLARIS WATER MIDSTREAM, LLC (For multiple operators attach page with information) OGRID #: 371643

Address: 9950 WOODLOCH FOREST DR STE 2800 THE WOODLANDS, TX 77380

Facility or well name (include API# if associated with a well): Bullfighter Recycle Containment and AST Facility

OCD Permit Number: _____ (For new facilities the permit number will be assigned by the district office)

U/L or Qtr/Qtr F,J,K,L,N,O Section 33 Township 20S Range 33E County: LEA

Surface Owner: ☑ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.

☑ **Recycling Facility:**

Location of recycling facility (if applicable): Latitude 32.52725 Longitude -103.67110 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 32.5265389 Longitude -103.6689083 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 AST: 40mil LLDPE (p), 30mil LLDPE (s)

☐ String-Reinforced AST: 40,000 bbls

Liner Seams: ☑ Welded ☐ Factory ☐ Other _____ Volume: 1,281,736 bbl Dimensions: L_____ x W_____ x D_____

☐ Recycling Containment Closure Completion Date:_____ See Design Drawings for Dimensions

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 $659,103.00 **(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. See Volume 3 for Variance Requests Previously Approved by OCD

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): Nick SHAW Title: REGULATORY MANAGER

Signature: Nick S Date: 4-9-2026

e-mail address: Nick.SHAW@WestonMidstream.com Telephone: 346 786 5122

11.
OCD Representative Signature: Victoria Venegas **Approval Date:** 05/06/2025

Title: Senior Environmental Scientist **OCD Permit Number:** FVV2612634174

- ☒ OCD Conditions
- ☒ Additional OCD Conditions on Attachment

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Closure Cost

Bullfighter In-Ground Containment Financial Assurance Cost Estimate

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

Bullfighter 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. Additional sampling for the AST location is estimated to be $2,500. The cost estimates are presented below.

Cascade Services All work elements required by Rule 34:	$633,103.00
RT Hicks Consultants Preparation of sampling results and closure report:	$7,500.00
AST Closure Costs Removal of AST and Liner and Disposal	$16,000.00
RT Hicks Consultants Assess soil for impacts	$2,500.00
Total Closure Cost:	$659,103.00

Cascade Services, LLC
952 Echo Ln Ste 130
Houston, TX 77024-2762
www.cascadeservicesllc.com

Estimate

ADDRESS
Western Midstream
9950 Woodloch Forest Dr Ste 2800
Woodlands, TX 77380

SHIP TO
Western Midstream
9950 Woodloch Forest Dr Ste 2800
Woodlands, TX 77380

ESTIMATE 2334
DATE 04/09/2026

CUSTOMER PROJECT NAME
Bullfighter Closure

PROJECT LOCATION COORDINATES
32.526662647, -103.668277497

DESCRIPTION	QTY	UNIT	RATE	AMOUNT
This is pricing a package to reclaim the single 1.5mm bbl produced water pond. 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.	91,404		2.00	182,808.00
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		3,000.00	3,000.00

Fence removal and disposal Fence estimated at 4,594 ft This includes removal of all posts, braces, wire, fabric, gates, and hardware.	4,594	4.00	18,376.00
Remove and dispose of all four layers. Textile, 40 mil, net, and 60 mil and 40 mil erosion control	2,829,960	0.15	424,494.00

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	633,103.00
TAX	0.00
TOTAL	**$633,103.00**

Accepted By

Accepted Date

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

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

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

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Recycling Containment Design Drawings

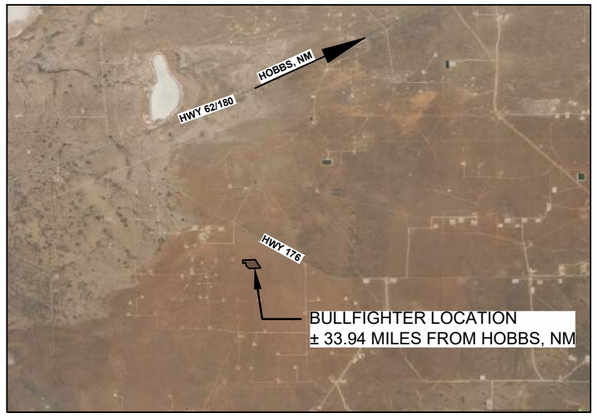
SquareRoot services
Engineering | Surveying
Materials Testing
7921 N. World Dr.
Hobbs, NM 88242
Squarerootservices.net
575-231-7347

CIVIL PLANS

WESTERN

BULLFIGHTER RECYCLE FACILITY

SECTION 33, TOWNSHIP 20 SOUTH, RANGE 33 EAST
N.M.P.M., LEA COUNTY, NEW MEXICO
N032° 31' 35.54" W103° 40' 8.07"



VICINITY MAP
N.T.S.

INDEX OF SHEETS		
SHEET	NAME	DESCRIPTION
1	C-100	COVER SHEET
2	C-101	GENERAL NOTES
3	SU-101	TOPOGRAPHIC SURVEY
4	CS-101	EXISTING SITE FEATURES
5	CS-102	CIVIL SITE PLAN
6	CS-103	MASTER LAYOUT
7	CS-104	DIMENSION SITE PLAN
8	CS-105	FENCE LAYOUT
9	CS-106	CONTAINMENT WEST TO EAST P&P
10	CS-107	CONTAINMENT NORTH TO SOUTH P&P
11	CS-108	VOLUME QUANITITES
12	CS-501	LEAK DETECTION DETAILS
13	CS-502	LINER DETAILS
14	CS-503	FENCE DETAILS

nm811 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
04/13/2026

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.

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ENGINEERING SHEET:
GENERAL NOTES
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

REVISIONS

No.	DATE	DESCRIPTION

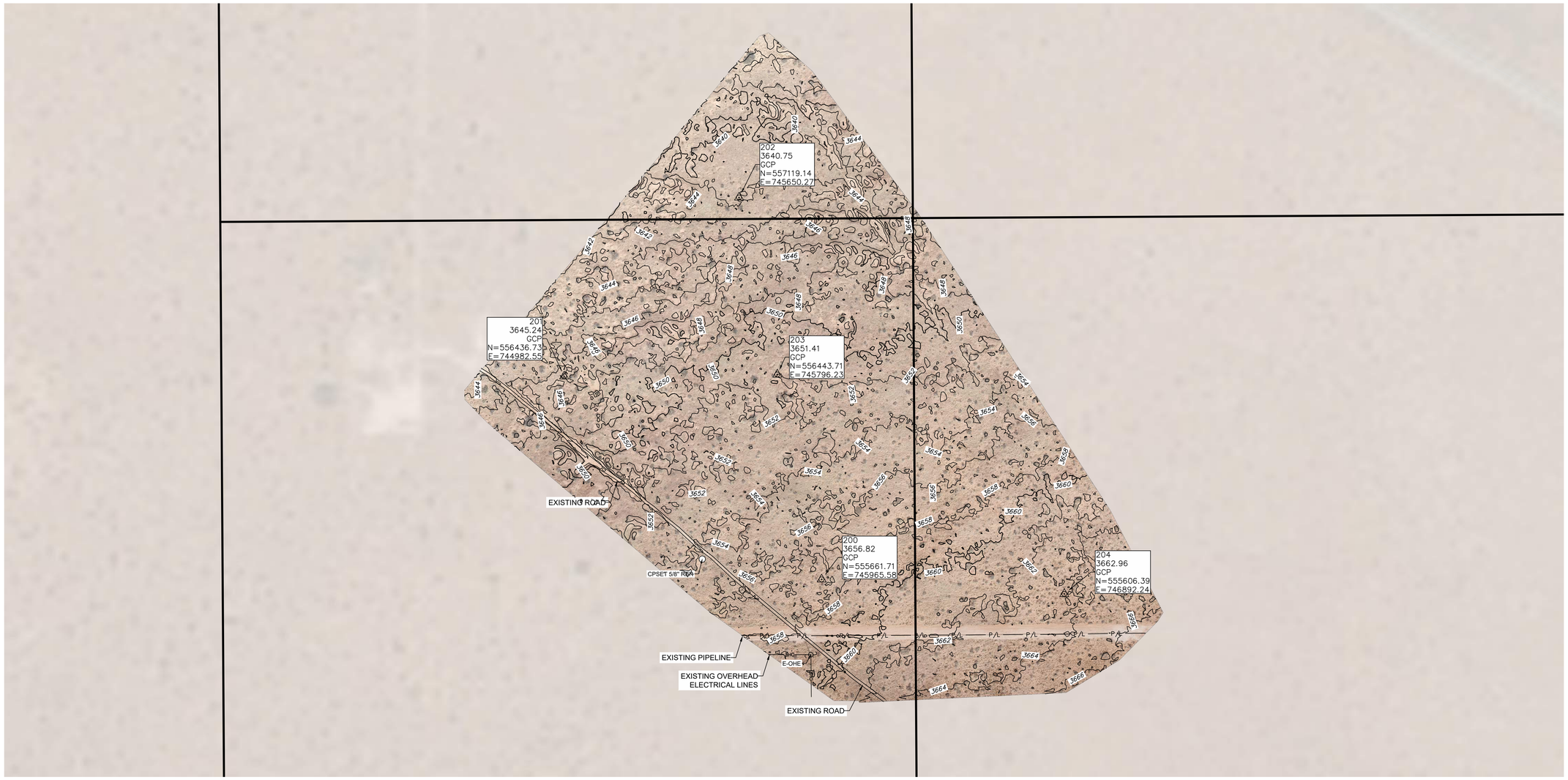
JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

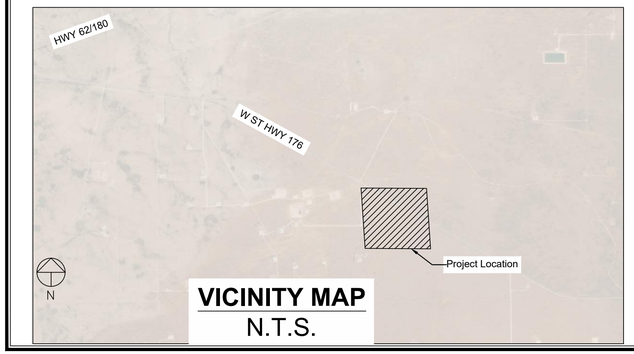
04/13/2026

SHEET:
2 of 14
C-101

TOPOGRAPHIC SURVEY

of BULLFIGHTER RECYCLE FACILITY





VICINITY MAP

N.T.S.

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

04/13/2026
Date

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.

UTILITY NOTE

UTILITIES DEPICTED WERE OBTAINED THROUGH EVIDENCE: FROM FIELD OBSERVATIONS, PLANS AND/OR REPORTS PROVIDED BY THE CLIENT, AND MARKINGS COORDINATED BY THE NEW MEXICO 811. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURE CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION MAY BE NECESSARY.

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.

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TYPE OF SURVEY:
TOPOGRAPHIC SURVEY

PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY

CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT SURVEYOR:
Jeremy Baker, PS

DRAWN BY:
C. Jimenez

GRAPHIC SCALE
0 200' 400'
SCALE: 1" = 200'
(IN FEET)

LEGEND

- 2601/21517 0.00 GCP N=390590.26 E=772336.31 — CONTROL POINT AS NOTED
- E-OHE — POWER POLE
- P/L — UNDERGROUND GAS
- OHE — OVERHEAD ELECTRIC
- MINOR CONTOUR (2FT)
- MINOR CONTOUR (2FT)
- EXISTING SECTION
- 3660 — CONTOUR ELEVATION

REVISIONS

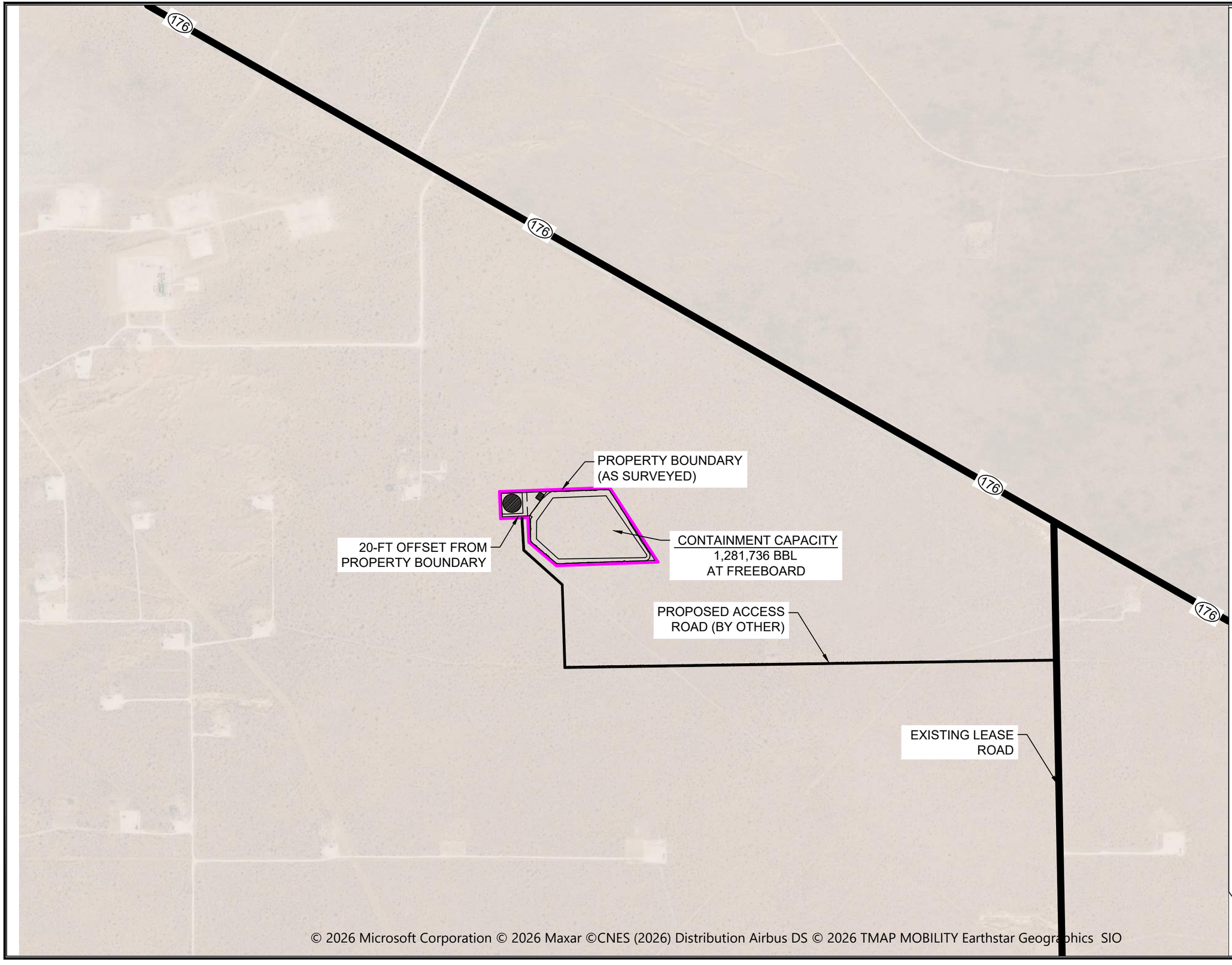
No.	DATE	DESCRIPTION

JEREMY E. BAKER NEW MEXICO 25773 PROFESSIONAL SURVEYOR

SHEET: 3 of 14

SU - 101

c:\Users\carlos.jimenez\onedrive - squarerootservices.net\srs project's files - projects\26026 cascades bullfighter\Survey\DWG\26026_260123_Topographic Exhibit.dwg 4/13/2026 5:00 PM



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ENGINEERING SHEET:
EXISTING SITE FEATURES OF

PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR

CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 500' 1000'
SCALE: 1" = 1000'
(IN FEET)

REVISIONS

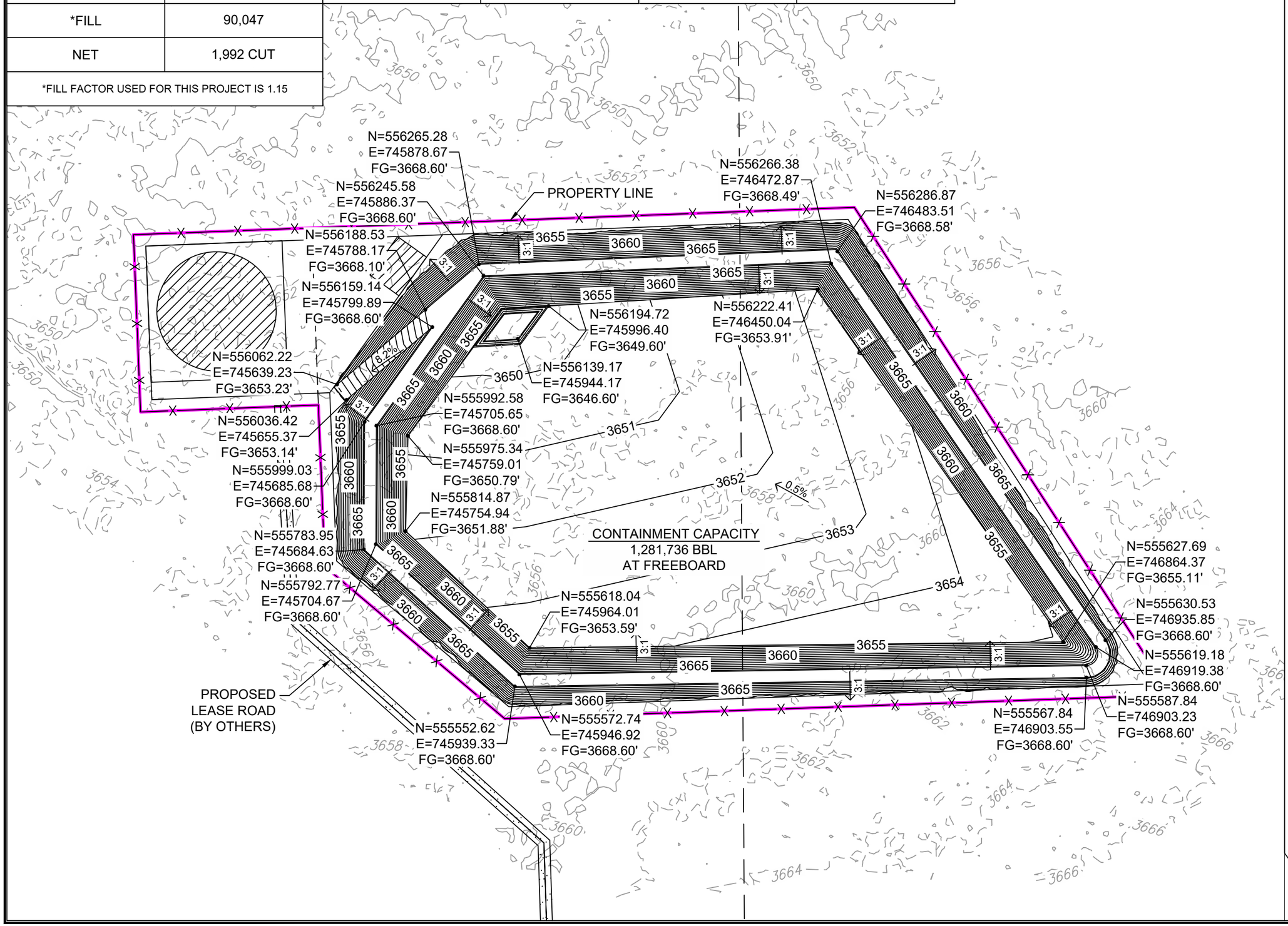
No.	DATE	DESCRIPTION

JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

04/13/2026

SHEET:
4 of 14
CS-102

EARTHWORK (CU.YD.)		LINER QUANTITIES (SQFT)		VOLUME QUANTITIES (BBL.)	
CUT	92,039	AMOUNT	662,529	FREEBOARD	1,281,736
*FILL	90,047				
NET	1,992 CUT				
*FILL FACTOR USED FOR THIS PROJECT IS 1.15					



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ENGINEERING SHEET:
CIVIL SITE PLAN
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 80' 160'
SCALE: 1" = 160'
(IN FEET)

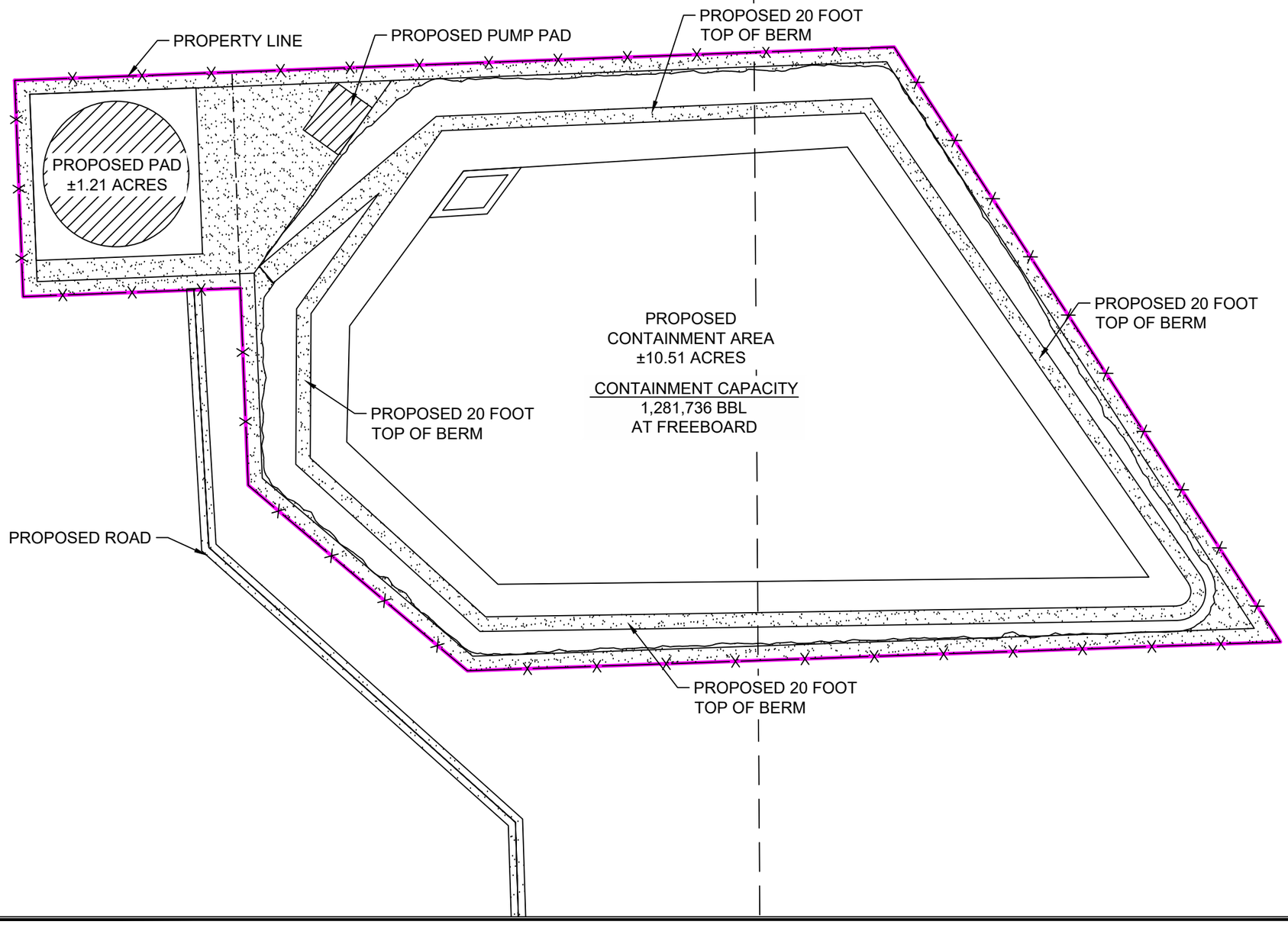
REVISIONS

No.	DATE	DESCRIPTION

JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

04/13/2026

SHEET:
5 of 14
CS-103



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ENGINEERING SHEET:

MASTER LAYOUT

OF

PROJECT NAME:

BULLFIGHTER RECYCLE FACILITY
FOR

CLIENT:

WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 80' 160'
SCALE: 1" = 160'
(IN FEET)

REVISIONS

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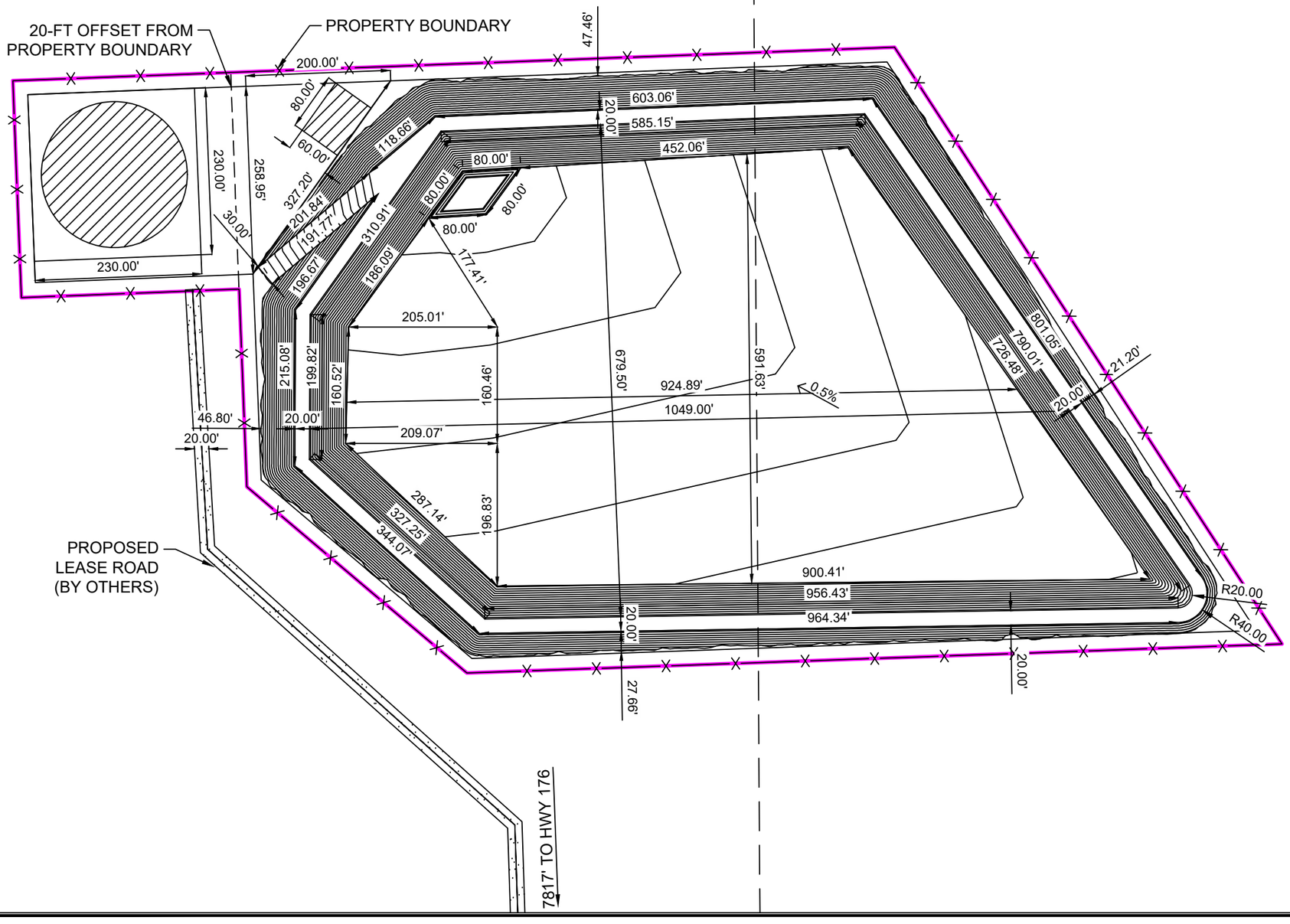
CS-104



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ENGINEERING SHEET:
DIMENSION SITE PLAN OF

PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY FOR

CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 80' 160'
SCALE: 1" = 160'
(IN FEET)

REVISIONS

No.	DATE	DESCRIPTION

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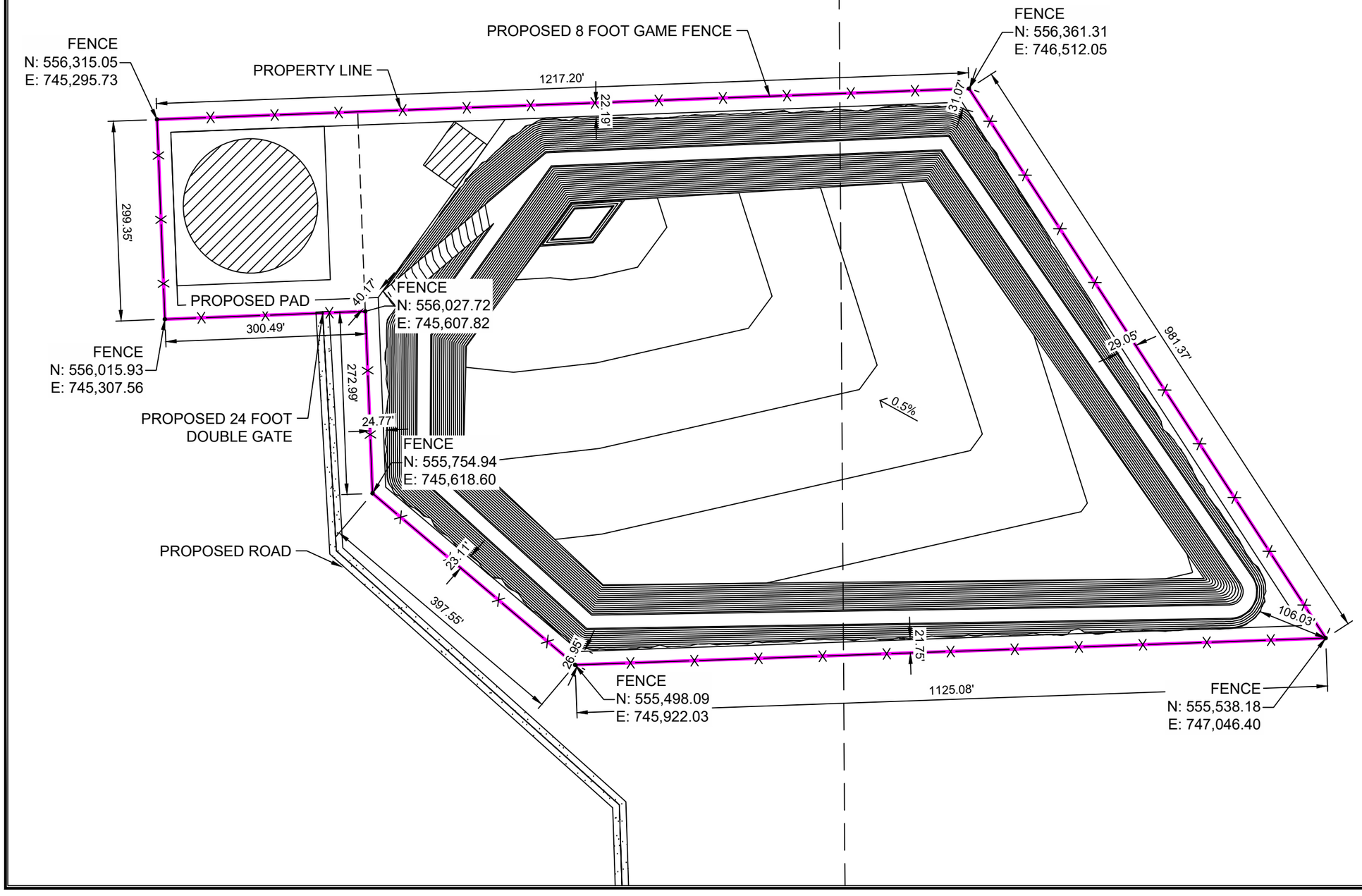
04/13/2026

SHEET:
7 of 14
CS-105

FENCE QUANTITIES	
FENCE LENGTH (LIN. FT)	4,595
AREA WITHIN FENCE (AC)	23.7
GATES	1



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ENGINEERING SHEET:
FENCE LAYOUT
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 80' 160'
SCALE: 1" = 160'
(IN FEET)

REVISIONS

No.	DATE	DESCRIPTION

JEREMY BAKER
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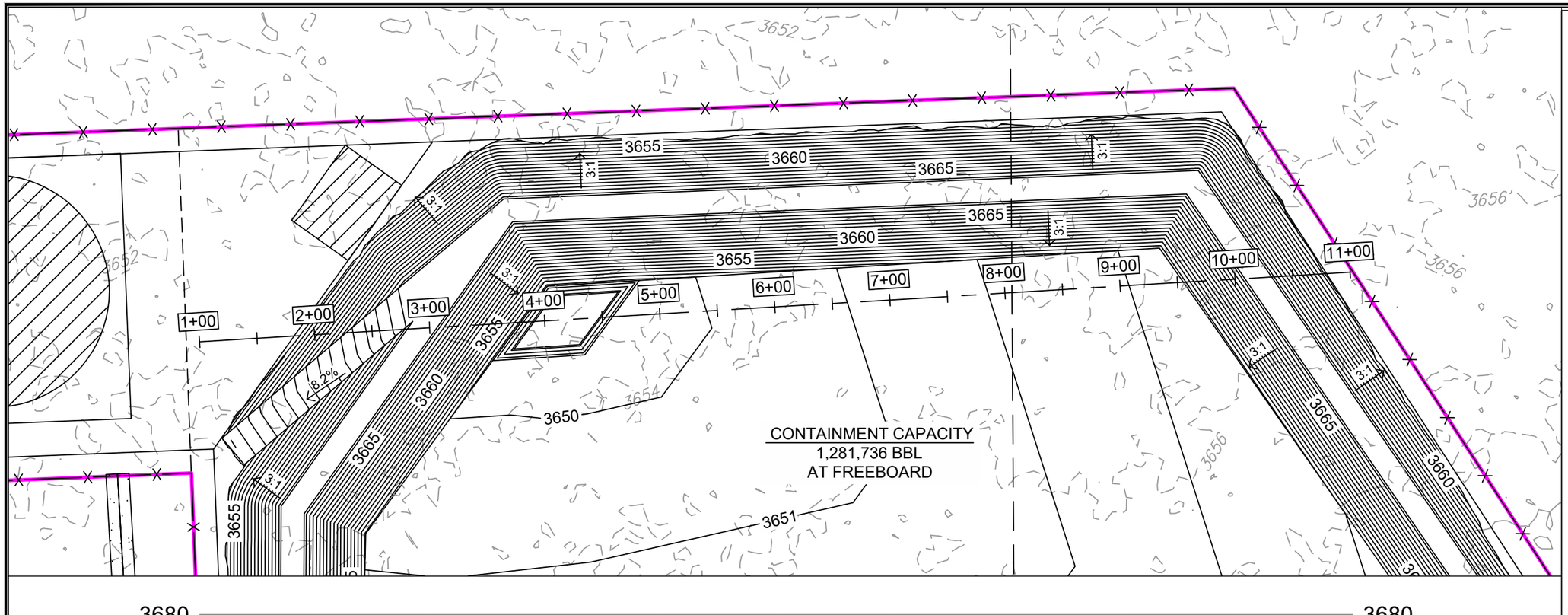
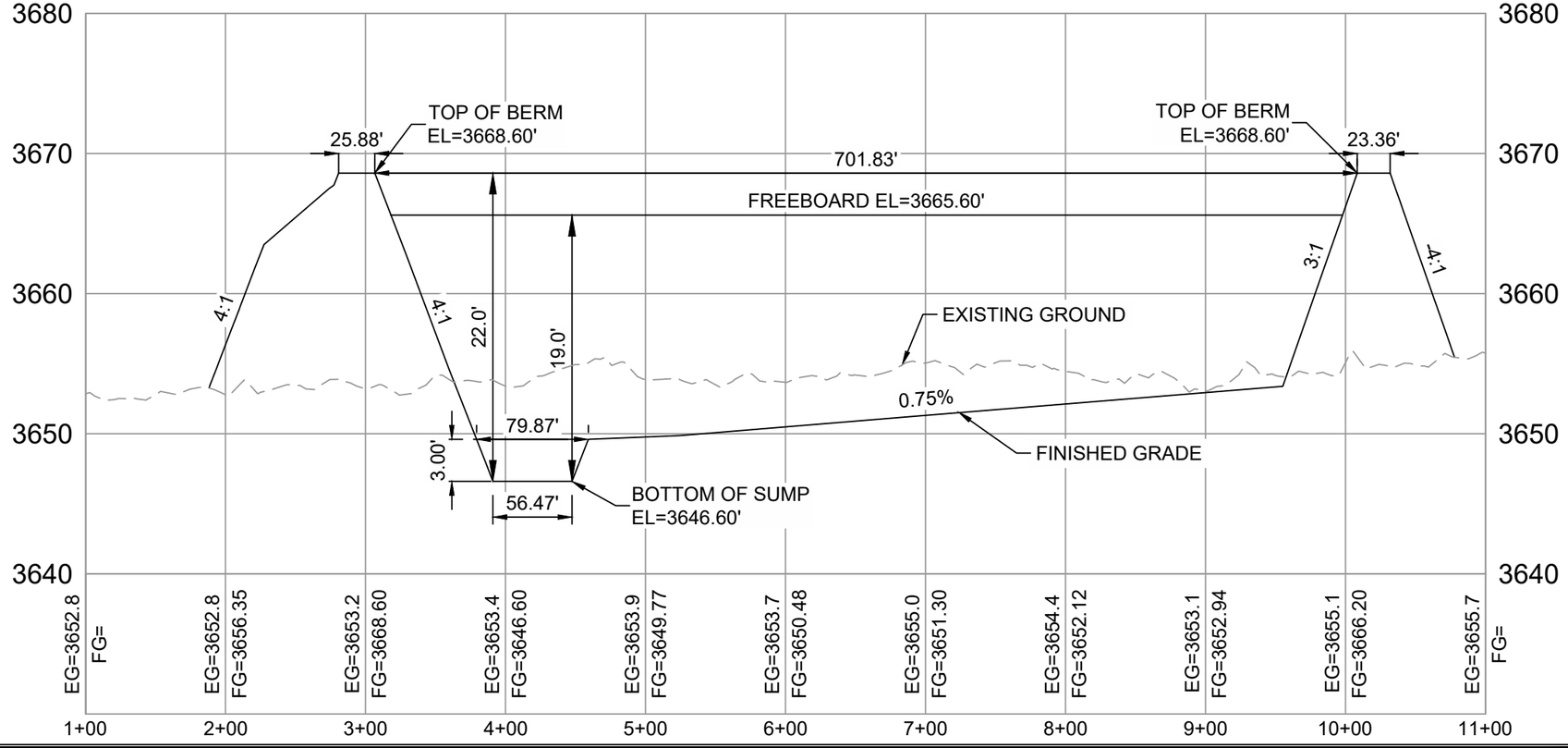
8 of 14
CS-105





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ENGINEERING SHEET:
CONTAINMENT WEST TO EAST P&P
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 50' 100'
SCALE: 1" = 100'
(IN FEET)
GRAPHIC SCALE
VERTICAL
0 5' 10'
SCALE: 1" = 10'
(IN FEET)

REVISIONS

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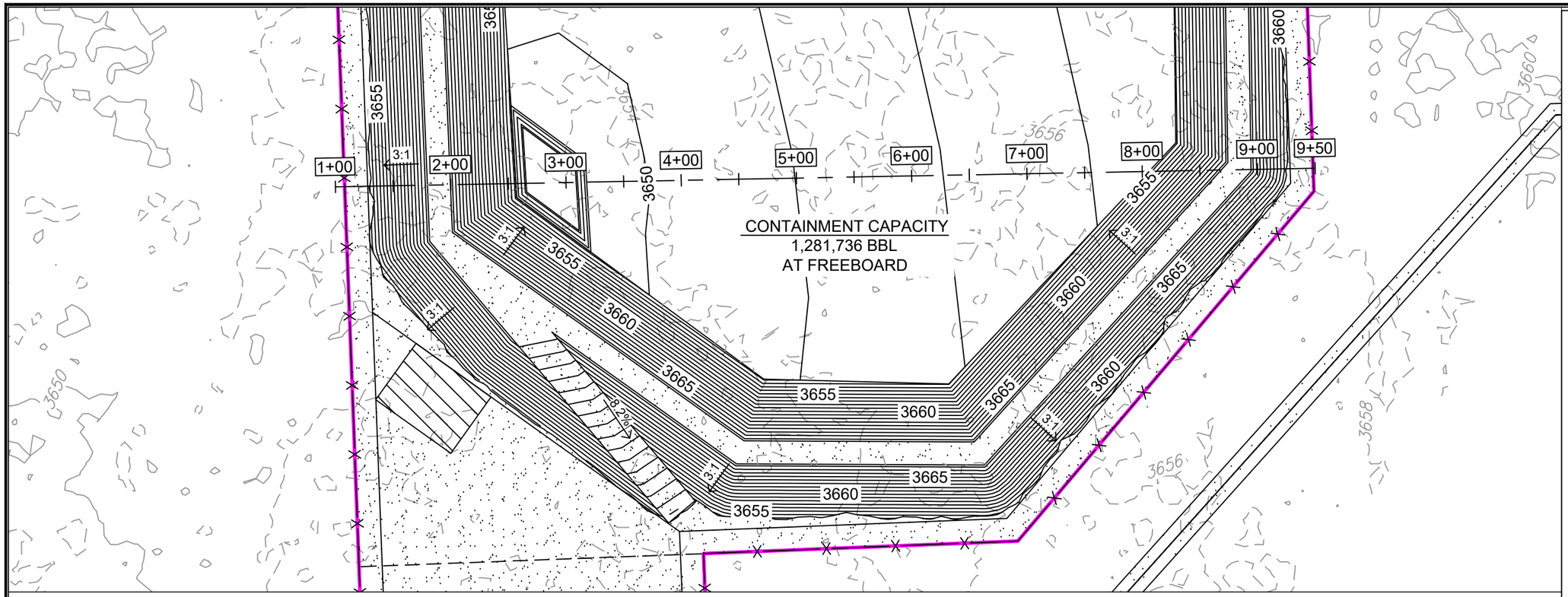
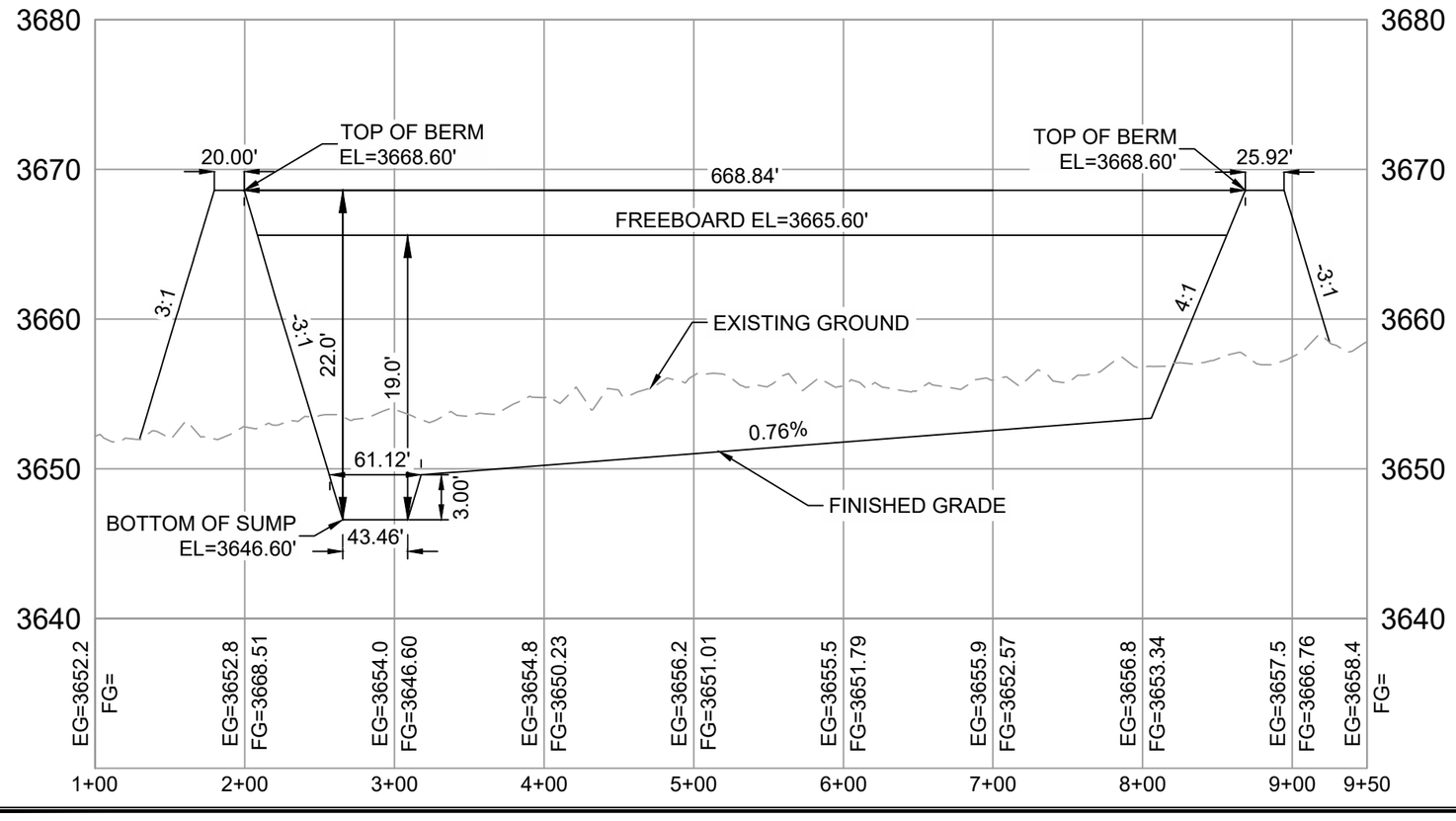
9 of 14
CS-106





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ENGINEERING
SHEET:
CONTAINMENT NORTH TO SOUTH P&P
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

GRAPHIC SCALE
HORIZONTAL
0 50' 100'
SCALE: 1" = 100'
(IN FEET)
GRAPHIC SCALE
VERTICAL
0 5' 10'
SCALE: 1" = 10'
(IN FEET)

REVISIONS

No.	DATE	DESCRIPTION

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SHEET:
10 of 14
CS-107

CONTAINMENT VOLUME

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 (%)	
3,668.60	0	22	0	-	-	0%	9,049,625	67,700,247	1,611,688	207.75	100%	
3,667.60	1	21	627,147	4,691,683	111,691	7%	8,422,479	63,008,564	1,499,996	193.35	93%	FREEBOARD
3,666.60	2	20	1,244,682	9,311,469	221,671	14%	7,804,943	58,388,778	1,390,017	179.18	86%	
3,665.60	3	19	1,852,679	13,859,893	329,952	20%	7,196,946	53,840,354	1,281,736	165.22	80%	MAX VOLUME
3,664.60	4	18	2,451,209	18,337,497	436,547	27%	6,598,416	49,362,751	1,175,141	151.48	73%	
3,663.60	5	17	3,040,345	22,744,821	541,468	34%	6,009,280	44,955,427	1,070,219	137.95	66%	
3,662.60	6	16	3,620,158	27,082,401	644,730	40%	5,429,468	40,617,847	966,958	124.64	60%	
3,661.60	7	15	4,190,720	31,350,776	746,344	46%	4,858,905	36,349,471	865,344	111.55	54%	
3,660.60	8	14	4,752,104	35,550,490	846,323	53%	4,297,521	32,149,758	765,364	98.66	47%	
3,659.60	9	13	5,304,381	39,682,077	944,681	59%	3,745,244	28,018,170	667,007	85.98	41%	STORAGE
3,658.60	10	12	5,847,624	43,746,078	1,041,429	65%	3,202,001	23,954,170	570,258	73.51	35%	VOLUME
3,657.60	11	11	6,381,905	47,743,033	1,136,582	71%	2,667,720	19,957,214	475,106	61.24	29%	
3,656.60	12	10	6,907,296	51,673,480	1,230,151	76%	2,142,330	16,026,768	381,537	49.18	24%	
3,655.60	13	9	7,423,868	55,537,958	1,322,149	82%	1,625,757	12,162,290	289,538	37.32	18%	
3,654.60	14	8	7,929,918	59,323,717	1,412,274	88%	1,119,707	8,376,530	199,414	25.70	12%	
3,653.60	15	7	8,383,596	62,717,681	1,493,071	93%	666,030	4,982,567	118,616	15.29	7%	
3,652.60	16	6	8,715,228	65,198,622	1,552,133	96%	334,397	2,501,625	59,554	7.68	4%	
3,651.60	17	5	8,917,401	66,711,075	1,588,139	99%	132,225	989,173	23,548	3.04	1%	FLOOR
3,650.60	18	4	9,013,466	67,429,736	1,605,248	100%	36,160	270,511	6,440	0.83	0%	VOLUME
3,649.60	19	3	9,038,782	67,619,129	1,609,756	100%	10,843	81,118	1,931	0.25	0%	
3,648.60	20	2	9,043,232	67,652,415	1,610,549	100%	6,394	47,833	1,139	0.15	0%	
3,647.60	21	1	9,046,815	67,679,221	1,611,187	100%	2,811	21,027	501	0.06	0%	SUMP
3,646.60	22	0	9,049,625	67,700,247	1,611,688	100%	0	0	0	0.00	0%	VOLUME

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ENGINEERING SHEET:
VOLUME QUANITITES
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

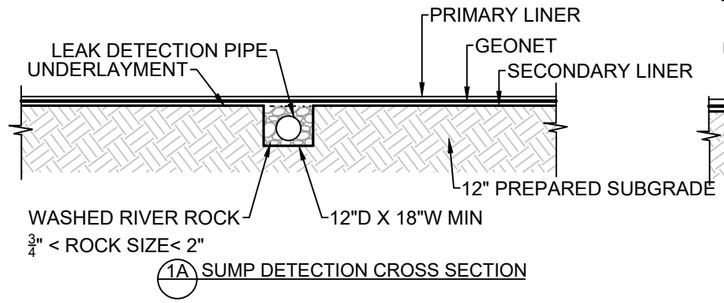
REVISIONS

No.	DATE	DESCRIPTION

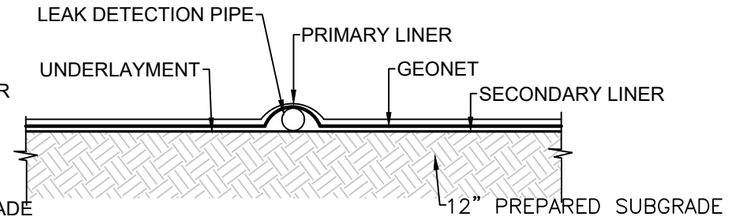
JEREMY BAKER
NEW MEXICO
16207
LICENSED PROFESSIONAL ENGINEER

04/13/2026

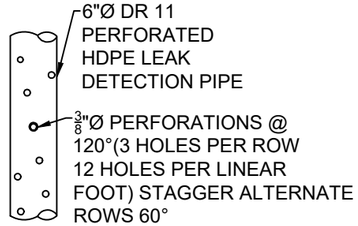
SHEET:
11 of 14
CS-108



1A SUMP DETECTION CROSS SECTION



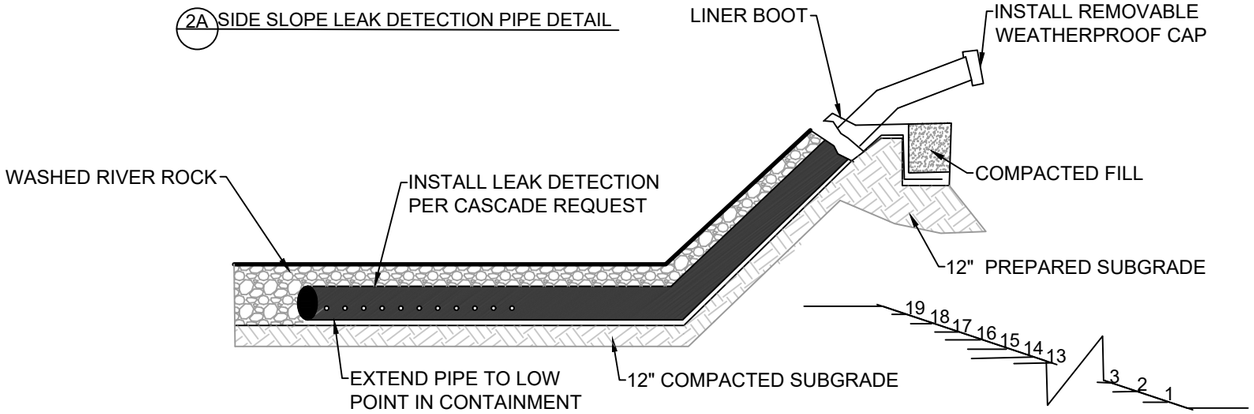
2A SIDE SLOPE LEAK DETECTION PIPE DETAIL



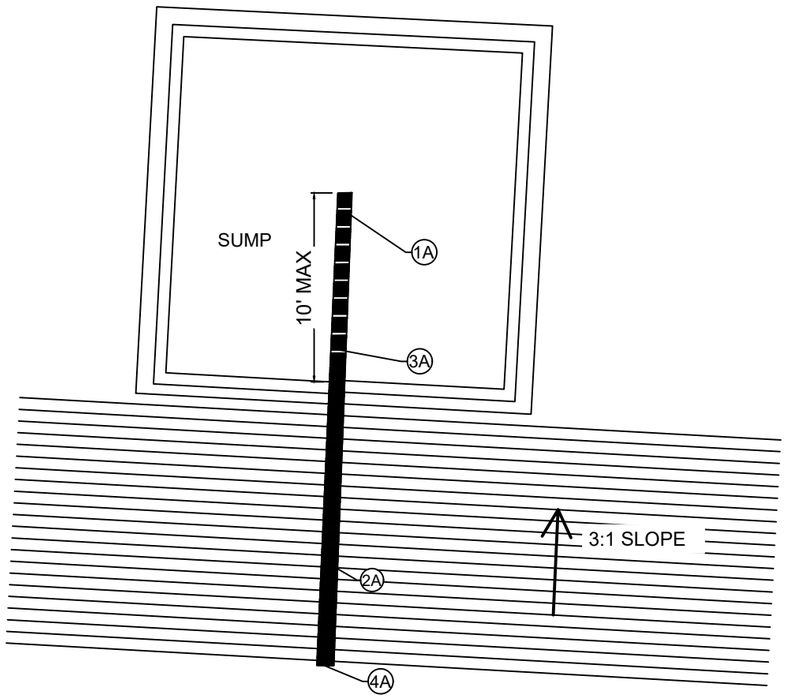
3A PERFORATED PIPE DETAIL

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.



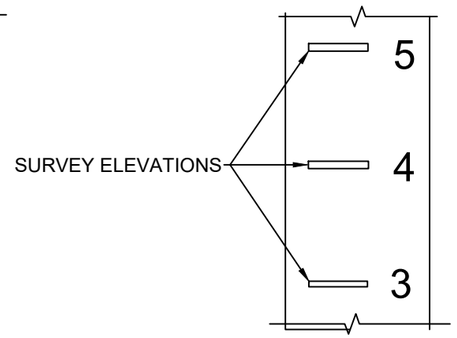
4A LEAK DETECTION/SAMPLING SYSTEM PROFILE



1 CONTAINMENT SUMP PLAN DETAIL

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

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/10 OZ GEOTEXTILE
CONTAINMENT	
BOTTOM OF POND	3,646.60'
BERM (ROAD CREST)	3,668.60'
LEAK DETECTION PIPING	6-IN DR11 X PERFORATED HDPE PIPE LEAK DETECTION PIPE

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ENGINEERING SHEET:
LEAK DETECTION DETAILS
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
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C. JIMENEZ

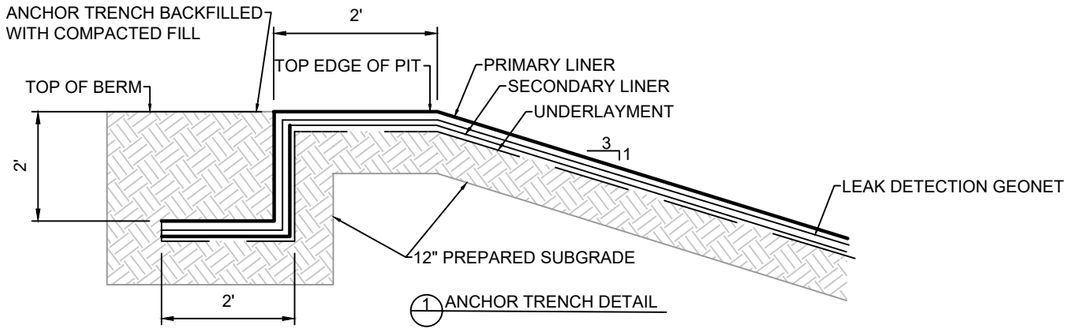
REVISIONS

No.	DATE	DESCRIPTION

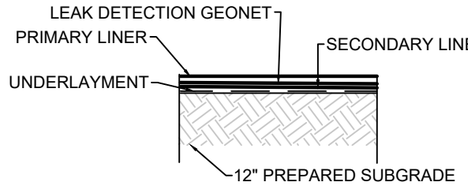
JEREMY BAKER NEW MEXICO 16207 LICENSED PROFESSIONAL ENGINEER

04/13/2026

SHEET:
12of 14
CS-501



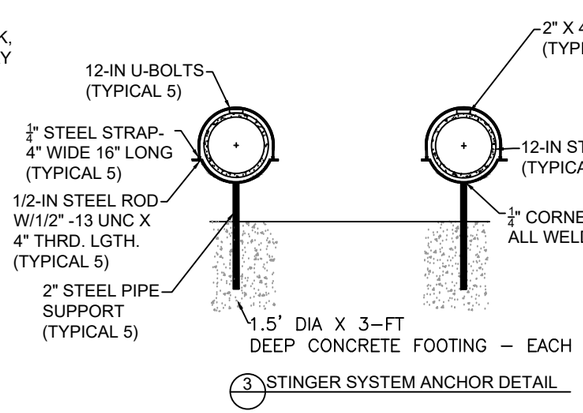
1 ANCHOR TRENCH DETAIL



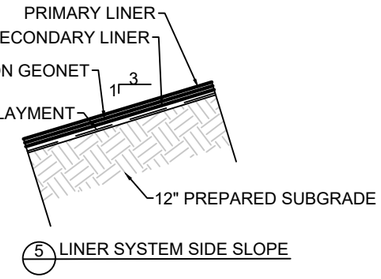
4 LINER SYSTEM FLOOR DETAIL

GENERAL NOTES:

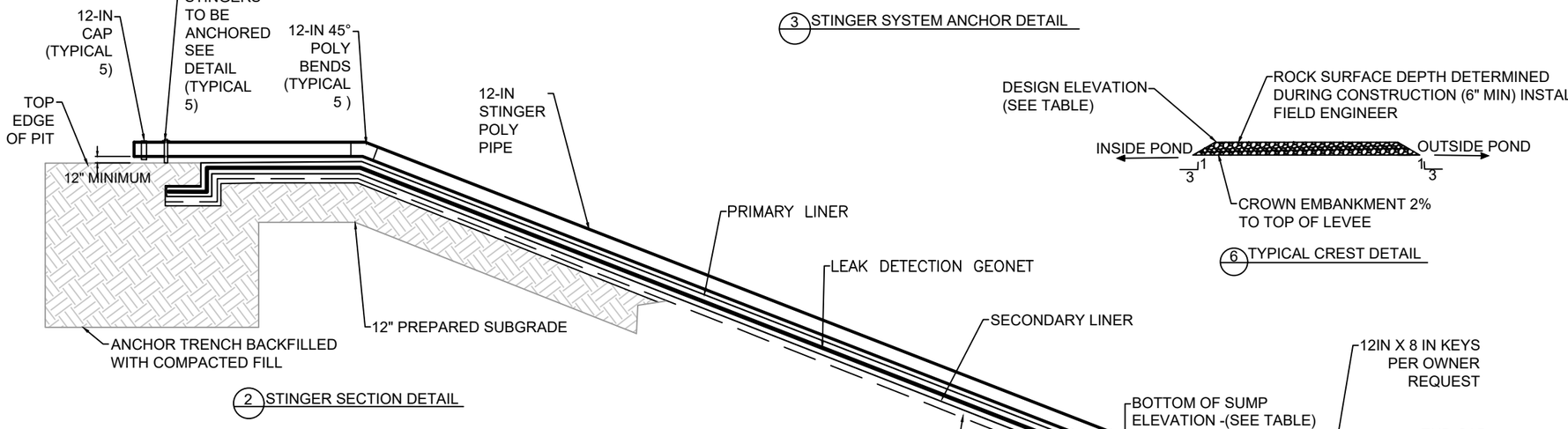
1. PREPARED SUBGRADE MEANS COMPACTED SMOOTH SUBGRADE FREE OF ROCK, ROOTS, WOOD DEBRIS, CONCRETE RUBBLE AND ANY SHARP OBJECTS THAT MAY PUNCTURE THE HDPE LINER, A MINIMUM COMPACTED DEPTH OF 12".
2. ALL INTERIOR SLOPES AND TOP OF BERMS TO BE SMOOTH DRUM ROLLED
3. ALL EMBANKMENT SLOPES SHALL HAVE A SLOPE (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



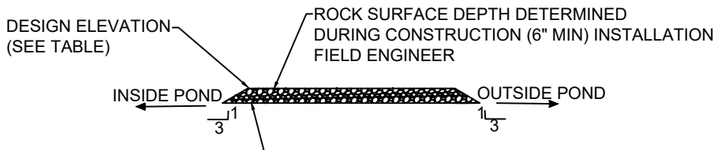
3 STINGER SYSTEM ANCHOR DETAIL



5 LINER SYSTEM SIDE SLOPE



2 STINGER SECTION DETAIL



6 TYPICAL CREST DETAIL

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

ENGINEERING SHEET:
LINER DETAILS
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

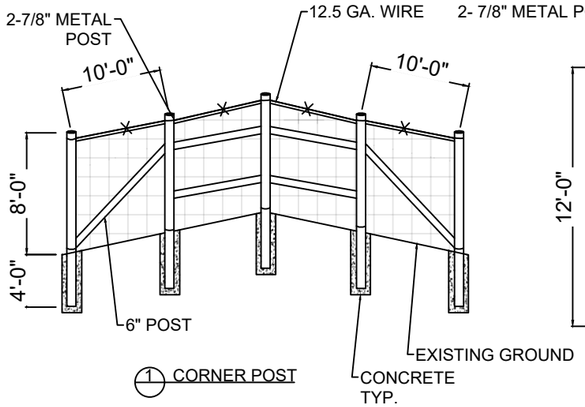
REVISIONS

No.	DATE	DESCRIPTION

JEREMY BAKER NEW MEXICO 16207 LICENSED PROFESSIONAL ENGINEER

04/13/2026

SHEET:
13 of 14
CS-502



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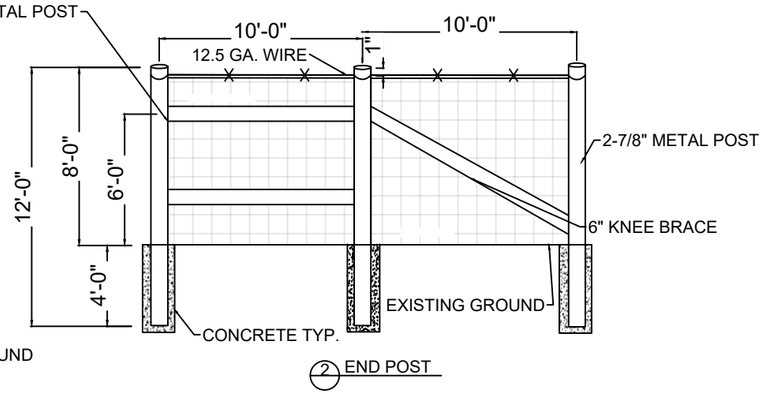
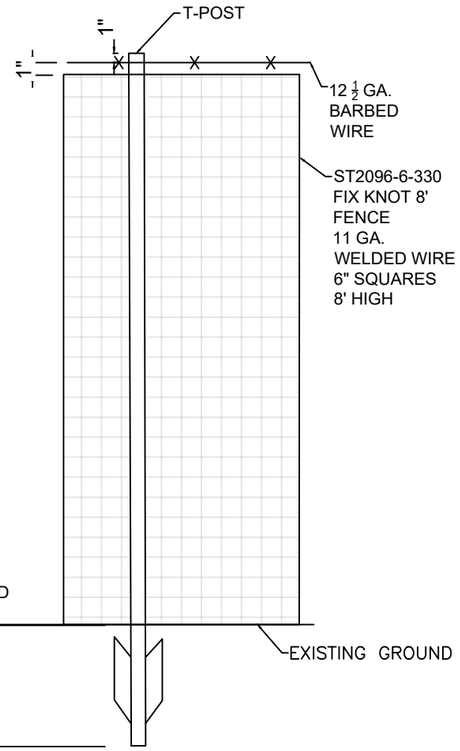
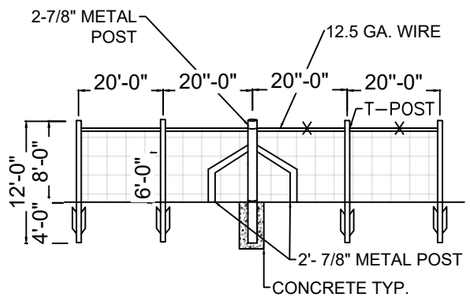


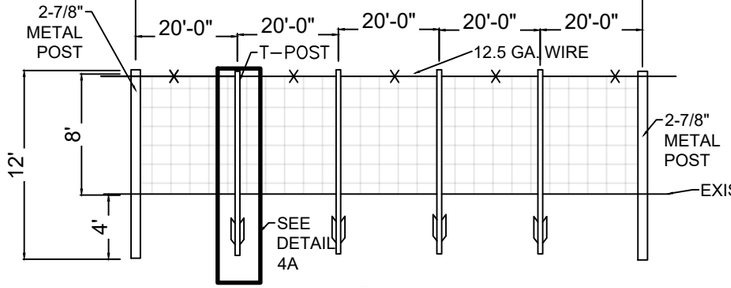
2 END POST



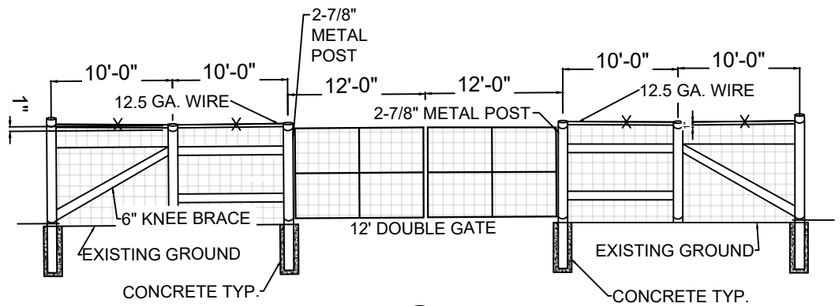
4A METAL POST



3 LINE BRACE POST



4 LINE POST



5 GATE POSTS

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Hobbs, NM 88242
Squarerootservices.net
575-231-7347

ENGINEERING SHEET:
FENCE DETAILS
OF
PROJECT NAME:
BULLFIGHTER RECYCLE FACILITY
FOR
CLIENT:
WESTERN

PROJECT NUMBER:
26026

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
C. JIMENEZ

REVISIONS

No.	DATE	DESCRIPTION

JEREMY BAKER NEW MEXICO 16207 LICENSED PROFESSIONAL ENGINEER

04/13/2026

SHEET:
14 of 14
CS-503

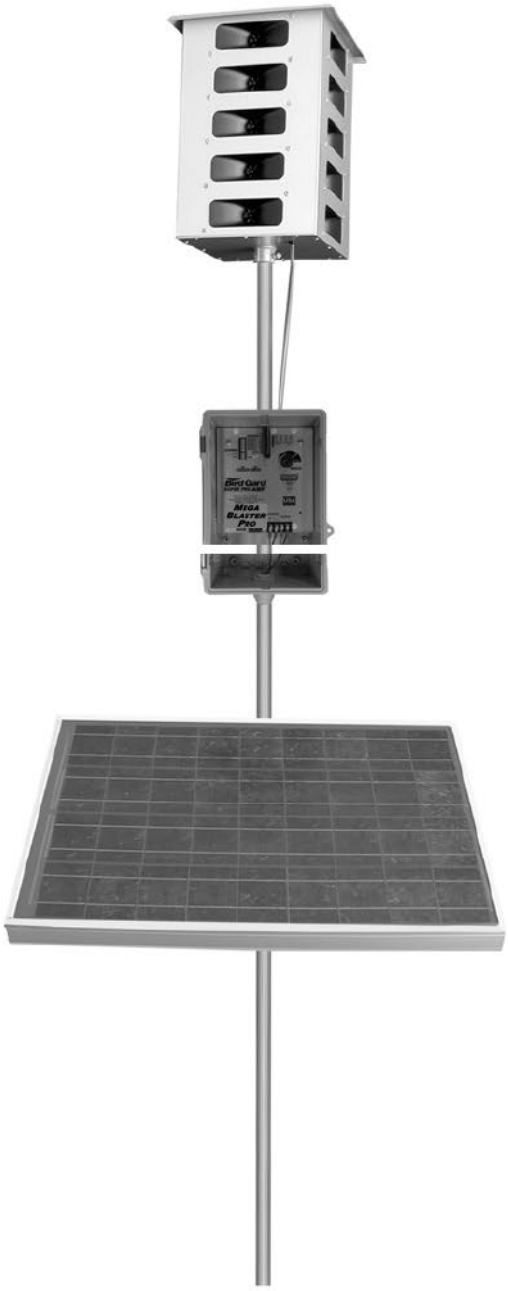
| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Avian Deterrent System

MEGA BLASTER PRO

BIRD-X

User's Manual



Overview

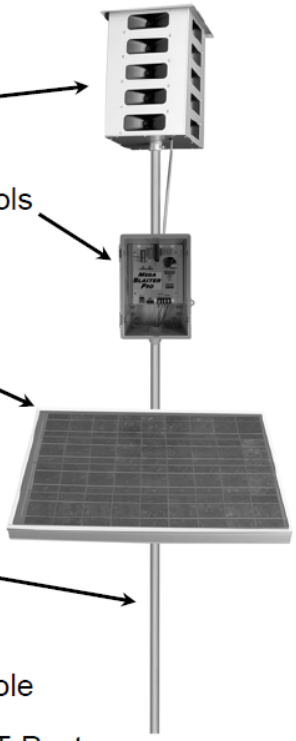
The Bird-X Mega Blaster Pro utilizes the innate power of the natural survival instincts of birds to effectively repel them. Digital recordings of distressed and alarmed birds, along with the sounds made by their natural predators are broadcast through high fidelity weather-resistant speakers over the 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

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Design and Construction Plan

Design and Construction Plan

This volume provides the stamped engineered drawings, liner equivalency, fencing plans, and avian deterrent plans for the containment that demonstrate the following design/construction specifications:

Earth Work

Purpose: Must confine produced water, prevent releases, avert overtopping from wave action or rainfall, and avoid run-on of surface water.

Foundation & Slopes:

- Containment floor sloped towards the sump in the corner(s).
- Firm, smooth base free of rocks/debris to protect liner.
- Inside levee slope: ≥2H:1V; outside slope: ≥3H:1V.
- Top wide enough for anchor trench and maintenance.
- Geotextile under liner as needed 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.

Run-on Prevention:

- Surround containment with berm, ditch, or diversion.

Liners & Leak Detection

Liner Requirements:

- Minimum: **Primary (upper) liner, Secondary (lower) liner, and leak detection system**.
- Anchor trench**: ≥18 inches** deep.

Liner Specs:

- Primary: **60-mil HDPE**
- Secondary: **40-mil HDPE** (as previously approved and demonstrated in the Liner Equivalency section)
- Meets or exceeds EPA SW-846 Method 9090A compatibility.

19.15.34.12 A

(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.

(7) [...] 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.
(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. 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.
(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.

(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 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.

(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.

Design and Construction Plan

Seams:

- Minimize seams; orient vertically (up/down slope).
- Factory weld preferred; field seams thermally welded.
- Overlap: 4–6 inches; no horizontal seams within 5 ft of slope toe.
- Qualified personnel required for welding/testing.

(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. 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.

Leak Detection System:

- Between liners: **200-mil geonet**
- Include drainage, collection, and removal system sloped for early detection.
- 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.

(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.

Discharge/Suction Protection:

All points of discharge into the lined earthen containment are configured to protect the liner from excessive hydrostatic force or mechanical damage during filling. The design ensures that, at any location where fluids are introduced or withdrawn, the liner remains safeguarded against potential impacts or abrasion. External discharge or suction lines do not penetrate the liner.

For hydraulic fracturing operations, fluid withdrawal is typically managed by stimulation contractors. Typically, lines are permanently installed within the containment and equipped with floats to prevent direct contact and abrasion of the liner system. If needed, the containment may include a permanent HDPE stinger, supported by a sacrificial liner or geotextile, to facilitate fluid withdrawal during operations.

- Protect liner from hydrostatic/mechanical damage.
- No external lines penetrating liner.

(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.

Topsoil Stockpiling

- Strip and stockpile topsoil for closure cover.

19.15.34.12 B: Stockpiling of topsoil
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.

Design and Construction Plan

Signage

- Upright sign: **≥12" × 24"**, letters **≥2" high**, posted on fence.
- Must include: **operator name, site location (quarter-quarter or unit letter, section, township, range), and emergency phone 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

In the spirit and letter of rule 19.15.34.12 D (1), the operator will install and maintain a chain-link / game fence rather than a barbed wire fence. This will more effectively deter unauthorized humans, feral pigs, deer, etc. from accessing the containment than "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". If required specifically by the OCD, barbed wire can be attached to the game fence as specified in rule 19.15.34.12 D (2).

- Fence to deter wildlife/human access; maintain in good repair.
- Gates locked when unattended.

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.

Wildlife Protection

The chain-link / game fence provides effective protection from stock and most terrestrial wildlife. However, if requested by the surface owner, the fence can include a one-foot-tall fine mesh at the base of the fence to exclude smaller animals (e.g. dune sagebrush lizard).

The Bird-X Mega Blaster Pro, configured with sound patterns appropriate for the Permian Basin environment, is the primary avian deterrent system. Containment areas will be routinely inspected for the presence of birds and personnel may discharge blank cartridges from a handgun, starter pistol, or shotgun to reinforce deterrence. Raptor decoys may also be placed on fencing or other suitable elevated locations.

- Avian deterrence system
- Monthly inspections; report dead wildlife within **30 days** to wildlife agency and division office.

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.

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Operation and Maintenance Plan

Operation and Maintenance Plan

Summary:

The operator will use the earthen containment to contain liquids and incidental solids (blow sand and minimal precipitates from the produced water). The operator will maintain the integrity of the liner system to prevent contamination of fresh water and protect public health and the environment.

The purpose of the lined earthen containment is to facilitate recycling, reuse, and reclamation of produced water sourced from oil and gas wells. While water for oil and gas operations is not needed, produced water will be discharged into wastewater injection wells or transferred to other recycling facilities via pipeline. The containment will not be used to dispose 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.

Operation Plan

A. Produced water from oil and gas wells will be received in a recycling facility as indicated on the C-147 form.
B. Unless specified otherwise, after treatment in the recycling facility, the water will then be transferred to the recycling containment.
C. Recycled water is then removed from the containment for use in oil and gas operations including drilling below the freshwater zones (beneath surface casing), hydraulic fracturing of the reservoir, and other oil and gas related uses as approved by the OCD.
D. When the maximum capacity of the containment is reached, no additional water will be transferred into the containment until compensatory space is first created via fluid removal, maintaining at least a 3 foot freeboard.
E. Accurate records will be maintained monthly and weekly in accordance with the OCD rules. The sources and disposition of all recycled water as well as weekly leak detection systems shall be made available for review by the division upon request.
F. Reports will be sent monthly to the OCD using the C-148 form to record the total volumes of produced and fresh

19.15.34.13 B (2)
(See Operational Standards below)

19.15-34-12 E
(See Operational Standards below)

19.15.34.12 E
19.15.34.9 E
19.15.34.9 F
(See Monitoring, Inspection and Reporting Plan below)

water (recorded separately) received and the total volume of water leaving the facility.

G. The containment will be considered to have ceased operations if less than 20% of the total fluid capacity is used every six months. The operator will report the cessation of operations to the division, and either request an extension (no longer than six months) or prepare for closure.

Operational Standards:

The containment will adhere to the following mandates:

1. **Remove any visible oil layer** from the containment surface.
2. **Maintain minimum three feet of freeboard**.
3. **Use headers/diverters or other hardware** to prevent liner damage during fluid injection or withdrawal.
4. **If the primary liner is damaged above fluid level**, **repair or replace within 48** hours or request an extension.
5. **If damage to the primary liner below fluid level** is confirmed through the leak detection system (see **"**Leak Detection, Fluid Removal, and Leak Reporting Plan" section below): begin and maintain fluid removal from the leak detection / pump-back system, Notify the district office within 48 hours, identify the location of the leak, and repair or if needed, replace the containment liner.
6. **Prevent surface water run-on** into containment.
7. **Keep an oil absorbent boom** or similar device on site for emergency containment.
8. **Report fluid releases** in a manner consistent with NMAC 19.15.29.
9. **Do not discharge or store hazardous waste** (as defined by 40 CFR 261 and NMAC 19.15.2.7.H.3) in the containment.
10. **Ensure all gates are closed and locked** when personnel are not onsite.
11. **Maintain the fences** in good repair.

19.15.34.13 C

A recycling containment shall be deemed to have ceased operations if less than twenty percent 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 division. The division may grant an extension to this determination of cessation of operations not to exceed six months.

19.15.34.13 B

(1) The operator shall remove any visible layer of oil from the surface of the recycling containment.
(2) The operator shall maintain at least three feet of freeboard at each containment.
(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.
(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.
(6) The containment shall be operated to prevent the collection of surface water run-on.
(7) The operator shall install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release.

19.15.34.8 A

(6) All releases from the recycling and re-use of produced water within the jurisdiction of the division shall be handled in accordance with 19.15.29 NMAC. If the release is detrimental to ground or surface waters, the responsible party must send a copy of the form C-141 to the New Mexico environment department, as applicable, in accordance with 19.15.29 NMAC.

19.15.34.10 B

[...] may not include any hazardous waste.

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.

Monitoring, Inspection and Reporting Plan:

Operators must inspect recycling containments and leak detection systems **weekly** while fluids are present and **maintain a log** available for division review.

Weekly inspections include:

- Recording the **fluid height**
- Recording evidence of **visible oil**
- Visually **inspecting** the containment's **exposed liners**
- **Inspecting berms** and other diversion means around the containment **for erosion and collection of surface water run-on**
- **Inspecting the leak detection system** integrity and **monitor for leakage**

Monthly inspections include:

- **Inspect** the containment **for dead migratory birds or other wildlife** and report any findings to the appropriate wildlife agency and to the division district office to facilitate further assessment and implementation of measures to prevent incidents from reoccurring.
- **Record and report** to the division the **total volumes of produced and fresh water (recorded separately) received and the total volume of water leaving the facility** using the C-148 form.
- **Record sources and disposition** of all recycled water.

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.

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.

Leak Detection, Fluid Removal, and Leak Reporting Plan

The leak detection system includes a monitoring riser pipe connected to the collection sump. All leak-detection piping and appurtenances shall be chemically compatible with produced-water constituents and designed to withstand structural loads, equipment operations, and thermal expansion/contraction without loss of integrity. Any fluid released from the primary liner flows to this sump, where fluid levels can be monitored.

Monitoring Water Levels Procedure

- Use a portable electronic water level meter to check for fluid in the monitoring riser pipe.
- If the containment base is sloped, obtaining accurate readings may require additional steps:
  - Push the probe to the bottom of the port using an electrician's wire snake.
  - Attach a small bailer or similar device to confirm water presence.
- The operator may use any effective method to obtain accurate readings.

Actions When Seepage Is Suspected

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 daily for one week** to confirm discovery of seepage.
2. **Simultaneously collect a water sample** from the monitoring riser pipe to verify seepage using electrical conductivity and chloride measurements.
3. **Notify NM OCD** of a confirmed positive detection within 48 hours (initial notification).
4. **Install a pump** in the monitoring riser pipe sump to remove fluids from the leak detection system until the liner is repaired or replaced.

19.15.34.13 A

(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.

5. **Remove all fluid above the damage or leak.**
6. **Dispatch a liner professional** to inspect the suspected leakage area during a “low water” monitoring event.
7. **Provide NM OCD a second report** describing inspection and/or repair within 20 days of the initial notification.

Repair and Inspection

- If the point of release is obvious during inspection, the liner professional will repair the loss of integrity.
- If the point of release cannot be determined, the liner professional will develop a plan to identify the leak location.
- Submit the inspection plan and schedule to NM OCD with the second report.
- Implement the plan upon OCD approval.

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Closure Plan

Closure and Site Reclamation Requirements for Recycling Containments

Overview and Timeline

- After ceasing operations:
  - **Remove all fluids within 60 days**.
  - **Close the containment within 6 months** of ceasing operations.
  - Extensions:
    - Up to **2 months** for fluid removal.
    - Up to **6 months** for closure.
- Any alternative use of the containment must be approved by the division.
- Closure design must conform to site needs; variances require division approval.

Excavation and Removal Closure Plan

1. **Fluid Removal**
   - Remove all fluids from the containment.
   - Dispose of liquids at a division-approved facility or reuse if permitted.
2. **Containment Cleanout**
   - Remove all solids, contents, and synthetic liners.
   - Transfer these materials to a division-approved facility.
3. **Soil Testing**
   - Collect a **minimum five-point composite sample** from soils beneath the containment, including stained or wet areas.
   - Analyze sample for contaminants listed in **Table I of 19.15.34.14**.
4. **Laboratory Results**
   - If **contaminant levels exceed Table I**:
     - Additional delineation may be required.
     - Operator must obtain division approval before proceeding.
   - If **contaminant levels are within limits**:
     - Backfill with clean, uncontaminated earthen material.

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 division district office may grant an extension for the removal of all fluids not to exceed two months. The division district office may grant an extension to close the containment not to exceed six months. If the operator wants to use the containment for a purpose other than recycling then the operator must have that use approved or permitted by the division in accordance with the appropriate rules.

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.

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.
(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.
(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.

Closure Plan

- OR submit a variance request for an alternative closure process.

Closure Documentation

- Within **60 days of closure completion**, submit **Form C-147** with:
  - Sampling results.
  - Details of backfilling, capping, or covering.
  - Certification that all information is correct and closure complies with division rules.

Reclamation and Re-vegetation

- Restore the site to:
  - A **safe and stable condition** blending with surrounding undisturbed area.
  - Or comply with federal, state trust, or tribal land requirements if they provide equal or better protection.
- Specific actions:
  - Replace topsoil and subsoil to original relative positions.
  - Contour for erosion control, long-term stability, and preservation of surface water flow patterns.
  - Reseed during the first favorable growing season after closure.
- Reclamation is complete when:
  - All ground-disturbing activities are finished.
  - Vegetative cover achieves:
    - **±50% of pre-disturbance life-form ratio**.
    - **≥70% total plant cover**, excluding noxious weeds.

Final Notification

- Notify the division when reclamation and re-vegetation are complete.

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.

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

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 of pre-disturbance levels and a total percent plant cover of at least seventy percent of pre-disturbance levels, excluding noxious weeds.

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.

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

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Rule 34 Registration

April 2026

Bullfighter Recycle Containment & AST Facility

Section 33 Township 20S Range 33E, Lea County

Volume 1

- Transmittal Letter
- Siting Criteria, Plates, & Appendices

Photo taken near the center of the proposed Bullfighter Containment looking to the south. The area consists of eolian and piedmont deposits with vegetation typical of the area.

Prepared for:

Solaris Water Midstream, LLC

The Woodlands, TX

Prepared by:

Cascade Services LLC
Midland, Texas

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

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

November 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: Solaris Water Midstream, LLC, Bullfighter Containment Registration
Section 33, Township 20S, Range 33E, Lea County

Dear Ms. Barr and Ms. Venegas:

We are pleased to submit a C-147 registration for the above-referenced project on behalf of Solaris Water Midstream, LLC.

Volume 1 contains:

- Transmittal Letter
- Siting Criteria Demonstration

Volume 2 contains:

- The C-147 Form
- Closure Cost
- Liner Equivalency Demonstration
- Stamped Design Drawings
- Avian Deterrent System
- Design and Construction Plan
- Operation and Maintenance Plan
- Closure Plan

Volume 3 contains:

- AST Design Sketch
- Stamped Design Drawings
- Design and Construction Plan
- AST Set Up SOP
- Operation and Maintenance Plan
- Closure Plan

- Variances and Equivalency Demonstrations

This package will be submitted to the OCD via the Online Portal. In compliance with 19.15-34-10 of the Rule, SOLARIS WATER MIDSTREAM, LLC provided a copy of this package to the surface owner's representative. If you have any questions or need additional information, please feel free to contact me. Thank you for your consideration.

Sincerely,
Cascade Services LLC

George R. Jennings III
Senior Geologist
gjennings@cascadeservicesllc.com
575-618-2103

Siting Requirements Demonstration

Depth to Groundwater

The data and evaluation presented below demonstrates that groundwater is at least 100 feet below the bottom of the Area of Interest (AOI) that includes the proposed Bullfighter Containment and groundwater is confined in the Triassic Chinle Formation.

Hydrogeology

Plate 1a shows six OSE borings, all of which did not encounter groundwater sufficient for completing a water supply well. No water supply wells appear on Plate 1a because none exist in the OSE database. Briefly, the driller's logs show

- All are documented dry to TD except for C-1151 that did not supply sufficient water to complete the boring as a well.
- The top of the Triassic Chinle is 20 to 90 feet below surface, depending on the quality of the driller in recording lithology.
- Dry Quaternary (or Tertiary) Alluvium overlies the Chinle Formation, which is the uppermost groundwater zone in this area.

Information relating to the elevation of the top of the Chinle at nearby wells is presented in the table below and in *Appendix Well Logs and USGS Data*. Understanding the elevation of the top of the Chinle is important because perched groundwater on the Chinle erosional surface is the only groundwater that could be impacted by leakage from the containment or a surface spill. Groundwater in the Chinle is confined, thus surface releases cannot overcome the water pressure in the Triassic strata.

Note that the driller's log of C-2030 suggests two possible elevations for the top of the Chinle.

OSE #	TD (ft)	Surface Elevation	Depth to Red Beds	Elevation Top of Chinle	Elevation Top Chinle GW Report 6
C-2082	105	2632	30	2602	3600
C-1151	832	3640	53	3587	3590
C-2063	105	3604	69	3535	3500 (?)
C-793	NO LOG				
C-2032	105	3730	20	3710	3710
C-2032	*105*	*3730*	*90*	*3640*	*3710*
C-1884	55	3770	>55	>3715	3710+/-

Plate 1b is at the same scale as Plate 1a and presents a portion of Plate 1 of Ground Water Report 6 (Nicholson and Clebsch, 1961), a classic and accurate report of the geology of southern Lea County. Plate 1b presents the elevation of the top of the "red beds" (Chinle Formation). We are not surprised that lithologic logs for four of the five wells match the top of the red beds presented in Plate 1a.

Groundwater Report 6 used cable tool drilling sample logs and electric logs of oil wells to map the top of the red beds. Professional geologists familiar with the geology of southern Lea County examined these logs to create Plate 1 of their report and we believe that the depth to the red beds at C-2032 is 20 feet, consistent with Mr. Nicholson and Clebsch, rather than our second guess of 90 feet below surface.

Based upon Plate 1b, the elevation of the top of the Chinle is about 3575 feet ASL, which corresponds to a depth of about 75 feet beneath the AOI. We contend this is a good estimate. The Chinle in this area is 200 feet or greater.

Groundwater

Plate 2a presents the most recent USGS data of groundwater elevation from wells and the surface geology from the New Mexico state geologic map. The mapped data and data described above show:

- Tertiary Ogallala Formation provides water to wells in the southeast corner of the map and the elevation of the water table is about 3750 feet asl (2015)
- The Triassic upper Chinle (Trcu) crops out along the northern and western boundary of the map.
- Saturated alluvium (Qp) associated with seepage from Laguna Gatuna (north center of map) and other nearby playas creates a localized water table groundwater zone with a water table elevation of about 3540 feet asl at the nearest well (west) from the Bullfighter Containment. The observed water levels are measured in the late 1970s and early 1980s.
- The well log of C-02063 provides evidence that groundwater was not encountered to a total depth of 105 feet and the top of the Chinle lies at a depth of 69 feet (elevation 3535).
- The elevation of the alluvial water table in the area varies by five feet over the 30+ years of record (1969-1991/1997). The well 4 miles west of the Bullfighter Containment exhibits an overall decline of the water table while groundwater elevation increased in USGS-1541 (3 miles north).

Plate 2b is a groundwater elevation map of Lea County from the Hydrogeologic Data East Side Roswell Range EIS Area[1]. We find the maps in this document useful and accurate for the early 1970s when the data were collected. Near the Bullfighter, this map estimates a groundwater elevation of about 3535+/-. Given our estimate of 3575 for the top of the Chinle beneath the Bullfighter Containment and the data presented in Plate 2b, the alluvium underlying the containment is dry. With respect to possible changes to groundwater elevation since the 1970s, USGS data of nearby wells shown in the Appendix USGS Data and Well Logs identify changes in elevation of less than 5 feet between 1969 and 1997.

From the data outlined above and common hydrogeologic knowledge of the nature of groundwater within the Chinle Formation, we conclude:

1. Alluvium overlying the Chinle Formation is saturated about 3 miles west and 4 miles north of the Bullfighter Containment. The elevation of this perched groundwater in the late 1970s and early 1980s was about 3540 feet and has remained relatively constant to present.
2. At C-2063 the alluvium and underlying Chinle are unsaturated to a depth of 105 feet.
3. In this area of Lea County, groundwater in the Chinle is confined.
4. The top of the Chinle red beds beneath the Bullfighter Containment is about 3575 feet ASL, about 40 feet higher than the water table elevation of the saturated alluvium 3 miles west and about 70 feet higher than groundwater to the north.
5. The alluvium below the Bullfighter Containment is dry as is the upper portion of the Chinle.
6. Groundwater beneath the Bullfighter Containment is more than 100 feet deep and resides in confined Chinle groundwater zones.

Nearby Municipalities and Public Water Supplies

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

The AOI is not located with any incorporated municipal boundaries or with a defined municipal fresh water well field. The closest incorporated municipality is Monument, about 26 miles northeast. The closest public groundwater supply is at the WIPP site about 15 miles to the southwest.

[1] https://archive.org/download/collectionofhydr00unse/collectionofhydr00unse.pdf

Nearby Subsurface Mines

The AOI is not within an area overlying a subsurface mine.

Plate 4 maps ½ mile buffers around the potash mine tunnels. The nearest ½ mile buffer lies about 2.7 miles west of the AOI. In an email correspondence on 2025-11-25, Mr. James S. Rutley with the BLM indicated that the AOI is "3 miles east of the nearest mine and 1.5 miles east of the nearest federal potash lease". As shown on Plate 4, the closest mine on the USGS topographic map is an abandoned gravel pit located ~0.7 miles to the southwest.

Nearby Unstable Areas

The AOI is not located within an unstable area

Plate 5 shows a satellite image with the Bureau of Land Management's Carlsbad Field Office designated Karst Potential Areas. The basemap is a recent satellite image from Google.

The AOI is in "Not Karst" area, with the closest "Medium Karst" area located just over one mile to the west. Moreover, the AOI is underlain by about 75 feet Quaternary Alluvium and, more than 200 feet of non-soluble sediments of the Chinle Formation.

As shown in the photo on the title page of the report and in the satellite photo in Plate 5, the area consists primarily of brushy eolian dunes and piedmont deposits. The site visit yielded no indication of the presence of surface karst features.

Nearby 100-year Floodplains

The AOI is not located within a 100-year floodplain.

Plate 6 shows the National Flood Hazard Layer 100-year floodplain map superimposed on a basemap (© OpenStreetMap contributors).

The nearest mapped 100-year floodplain is located ~13.5 miles to the southwest.

Nearby Surface Water

The AOI Is not 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).

The closest mapped surface water body is a small, constructed stock tank about 1.5 miles to the northeast (see Plate 7). The closest mapped watercourse is in the southeast corner of the map that drains Hat Mesa prior to infiltrating and ending. This small arroyo is about 2.9 miles southeast.

Nearby Permanent Residences or Structures

There are no permanent residences, schools, hospitals, institutions, or churches within 1000 ft of the AOI.

Plate 8 shows a recent satellite photograph with a PLSS overlay. The only structures in the area are related to oil field operations, and are no residences, schools, hospitals, institutions, or churches.

Nearby Springs and Freshwater Wells

The AOI is not within 500 feet of a spring or fresh water well used for domestic or stock watering purposes.

Plate 1 identifies all the water wells in the USGS and NMOSE databases, their identification numbers, database, and most recent recorded groundwater elevation. No water wells are located within 500 ft of the proposed pond.

Plate 7 identifies all mapped watercourses, playas, lakes and springs. No springs are mapped in Plate 7. With respect to next order tributaries of mapped watercourses, none exist within the setback distance of 200 feet.

Nearby Wetlands

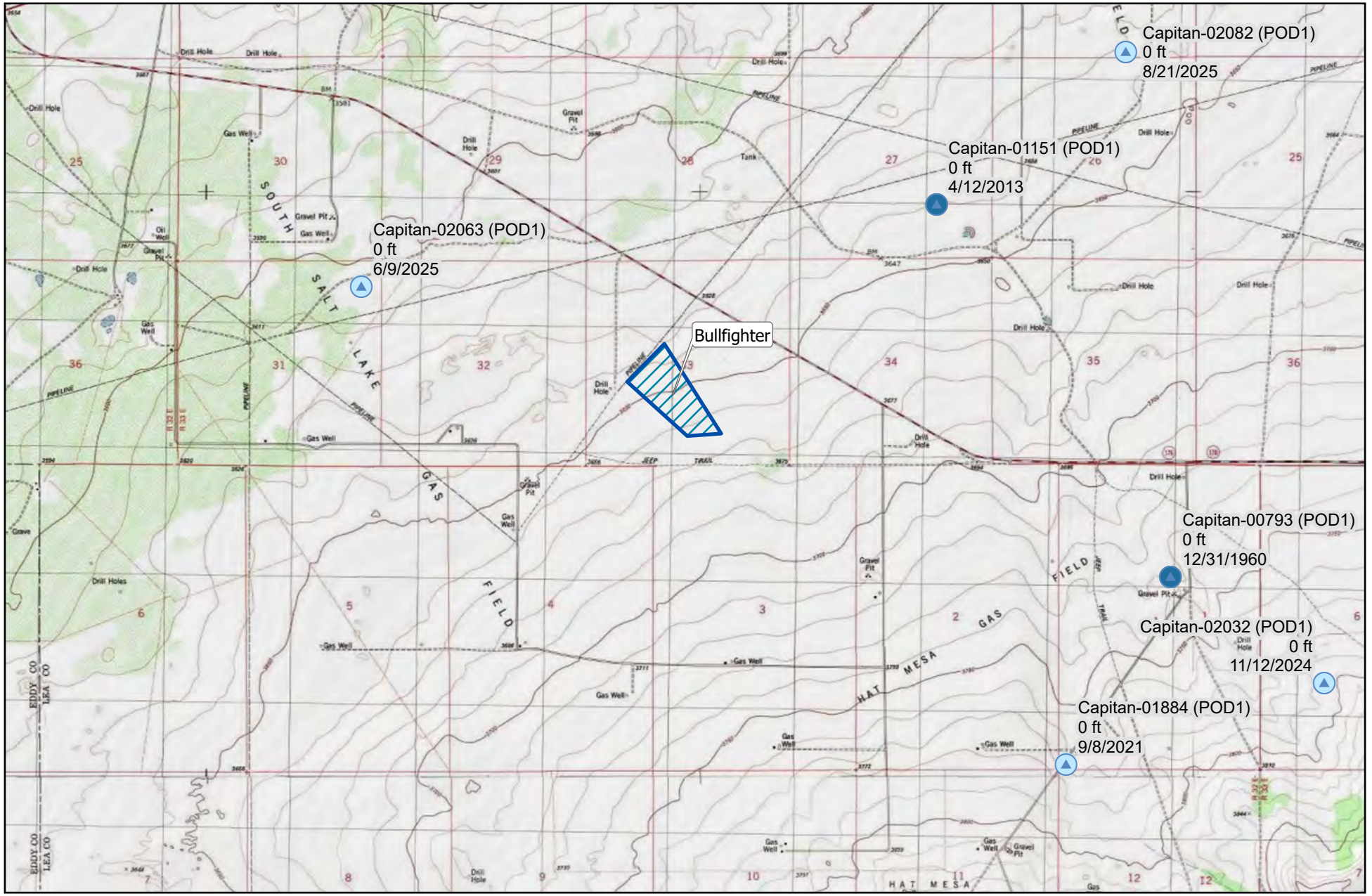
The AOI is not within 500 feet of a wetland.

Plate 9 is a recent aerial photograph that identifies 3 wetlands mapped by the USFWS. The mapped wetland located ~1.2 miles to the northwest of the AOI is a localized playa. The playa lake is typically dry and our inspection (of similar playas in the area and our examination of Google Earth images) demonstrate that these features do not meet the OCD definition of a wetland. The mapped wetland located ~1.5 miles to the northeast is a small, constructed cow pond. The mapped wetland to the southeast lies in an abandoned quarry and was not inspected during the site visit.

\

Siting Requirements Demonstration Plates

P:\Cascade Bullfighter\Solaris Water Midstream - Bullfigter.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 1a
	Solaris Water Midstream - Bullfighter Containment	January 2026

OSE Water Wells (DTW/Date)

Well Depth (ft)

- <=150
- 151-350
- 351-500
- 501-1000
- <1000
- Other

USGS Gauging Station (GW Elev, Date)

- Alluvium/Bolsom
- Alluvium/Bolsom, Obstruction was encountered in the well (no water level was recorded).
- Alluvium/Bolsom, Site had been pumped recently.
- Alluviu/Bolsom, Site was being pumped.
- Chinle
- Santa Rosa
- Not Defined
- <Null>, Site was being pumped.

Misc. Water Wells (Well ID, DTW)

- No Data
- <= 150
- 151 - 350
- 351 - 500
- > 500

NM_Geology

- Qe, Quaternary-Eolian Deposits,Qe, Quaternary-Eolian Deposits
- Qe/Qp, Quaternary-Eolian Piedmont Deposits
- Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits
- Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits
- Qpl, Quaternary-Lacustrine and Playa Deposits,Qpl, Quaternary-Lacustrine and Playa 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**	
	Solaris Water Midstream - Bullfighter Containment	April 2026

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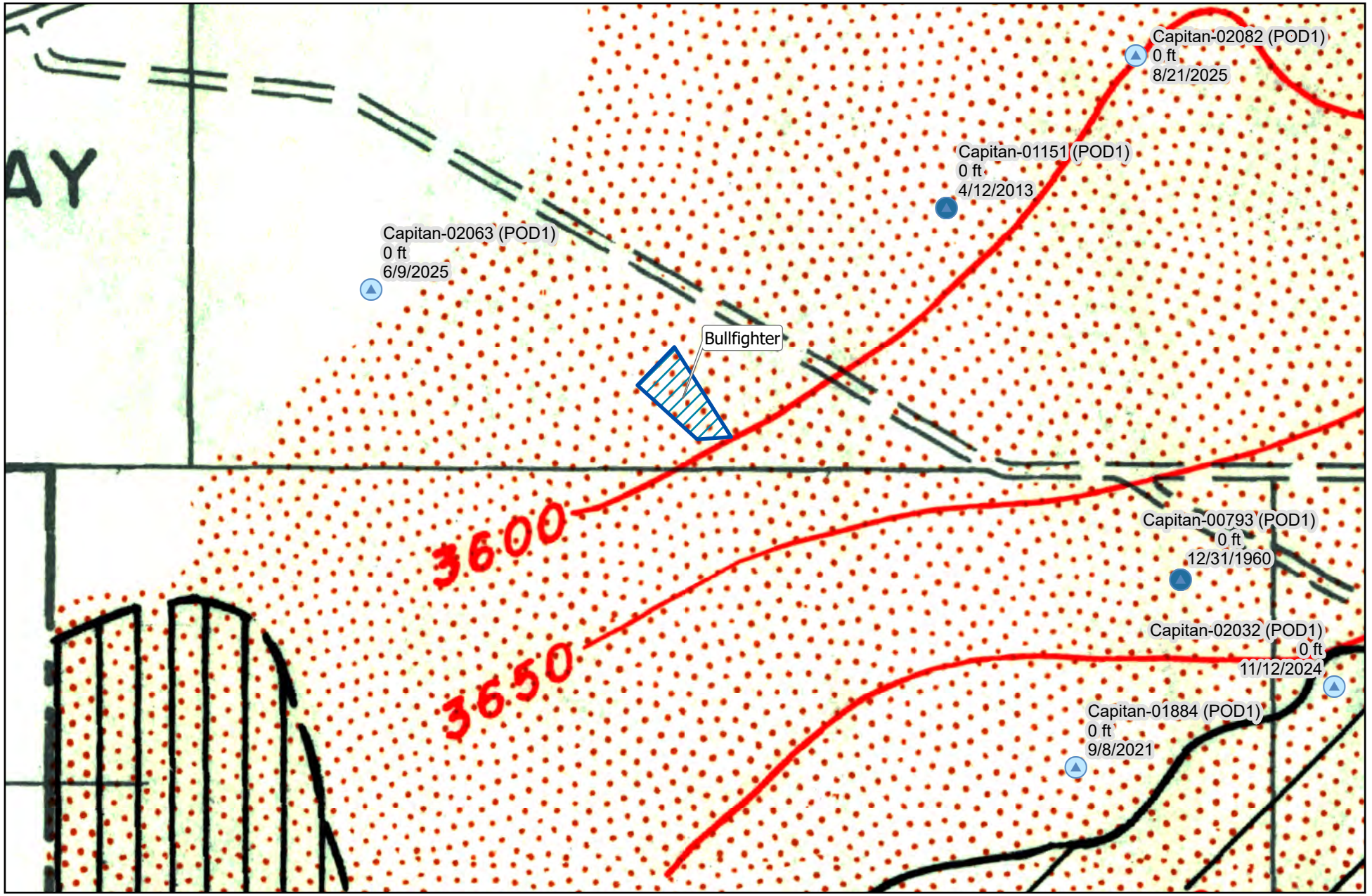


R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

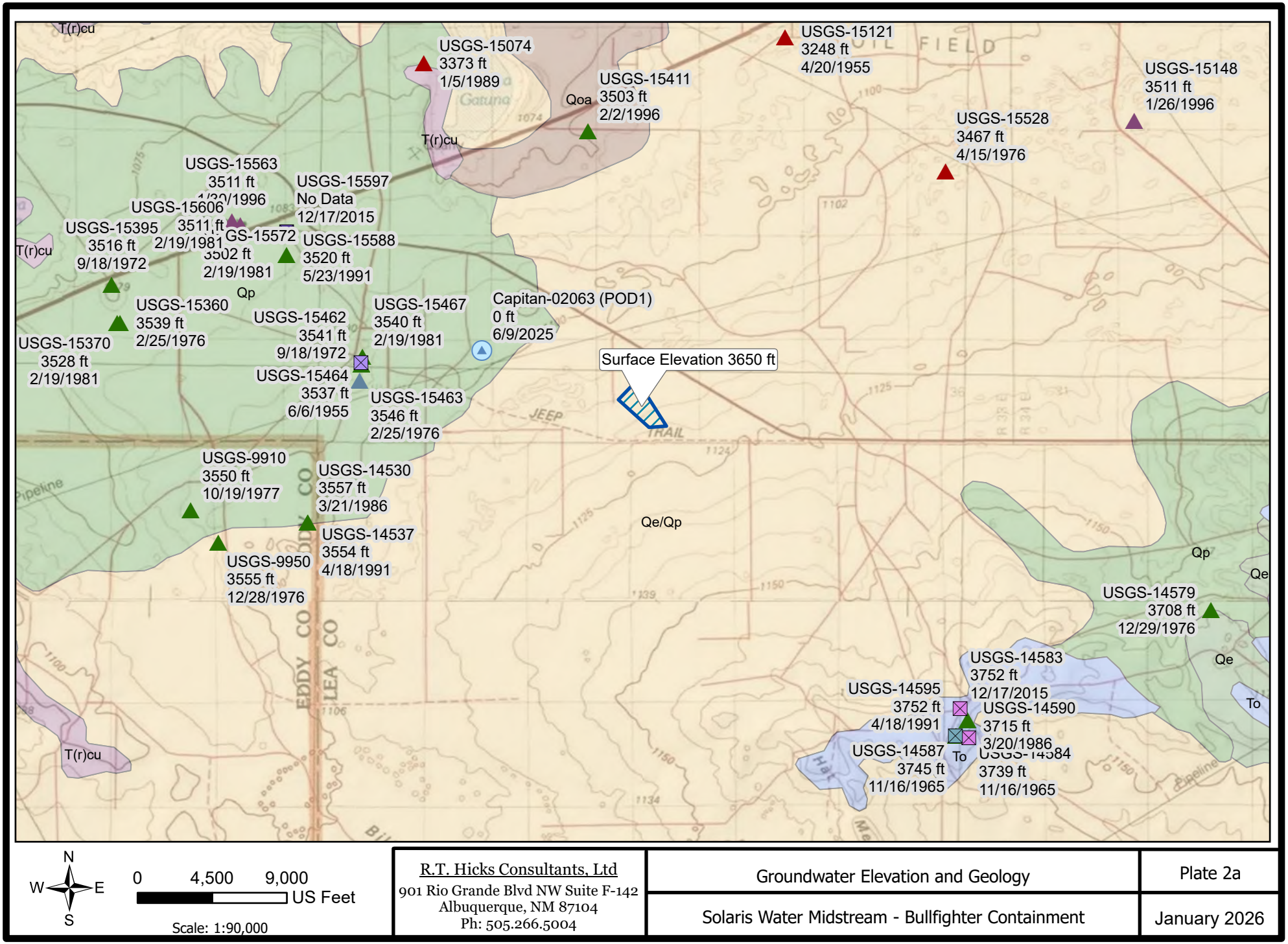
Nearby Wells and Borings with Depth to Water

Plate 1b

Solaris Water Midstream - Bullfighter Containment

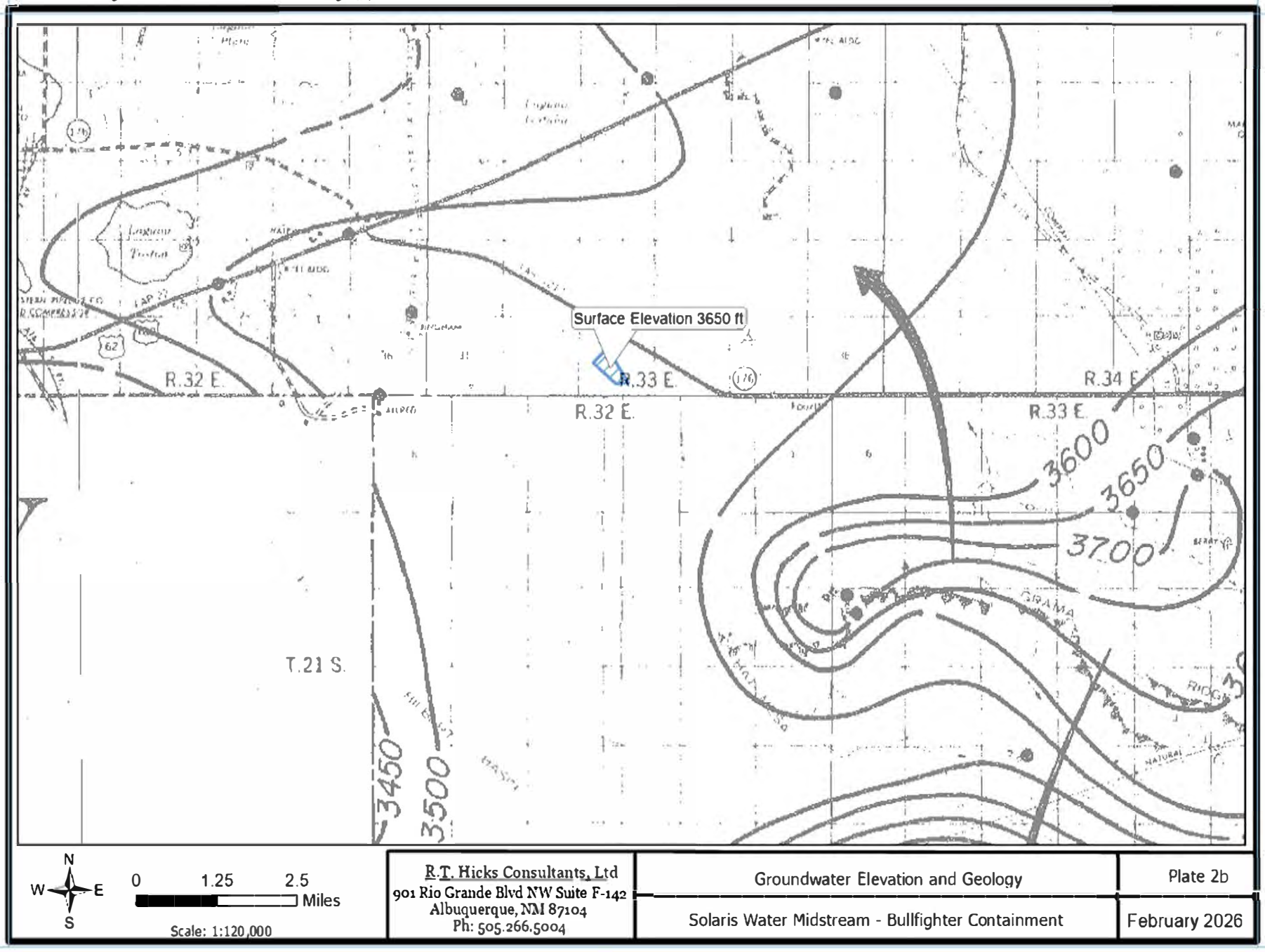
January 2026

P:\Cascade Bullfighter\Solaris Water Midstream - Bullfigter.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
	Solaris Water Midstream - Bullfighter Containment	January 2026

P:\Cascade Bullfighter\Solaris Water Midstream - Bullfigter.aprx



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Albuquerque, NM 87104
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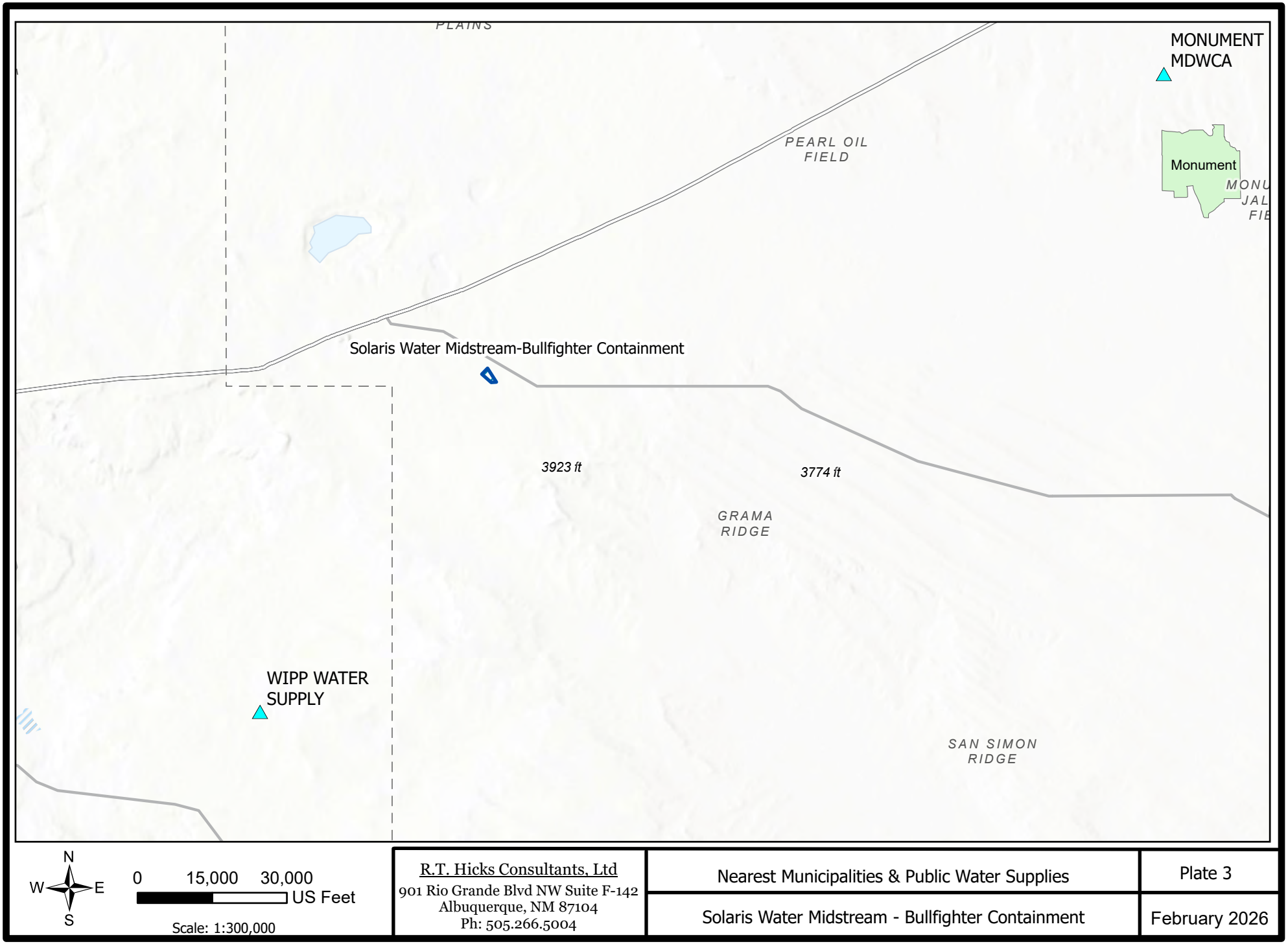
Groundwater Elevation and Geology

Plate 2b

Solaris Water Midstream - Bullfighter Containment

February 2026

P:\Cascade Bullfighter\Solaris Water Midstream - Bullfigter.aprx



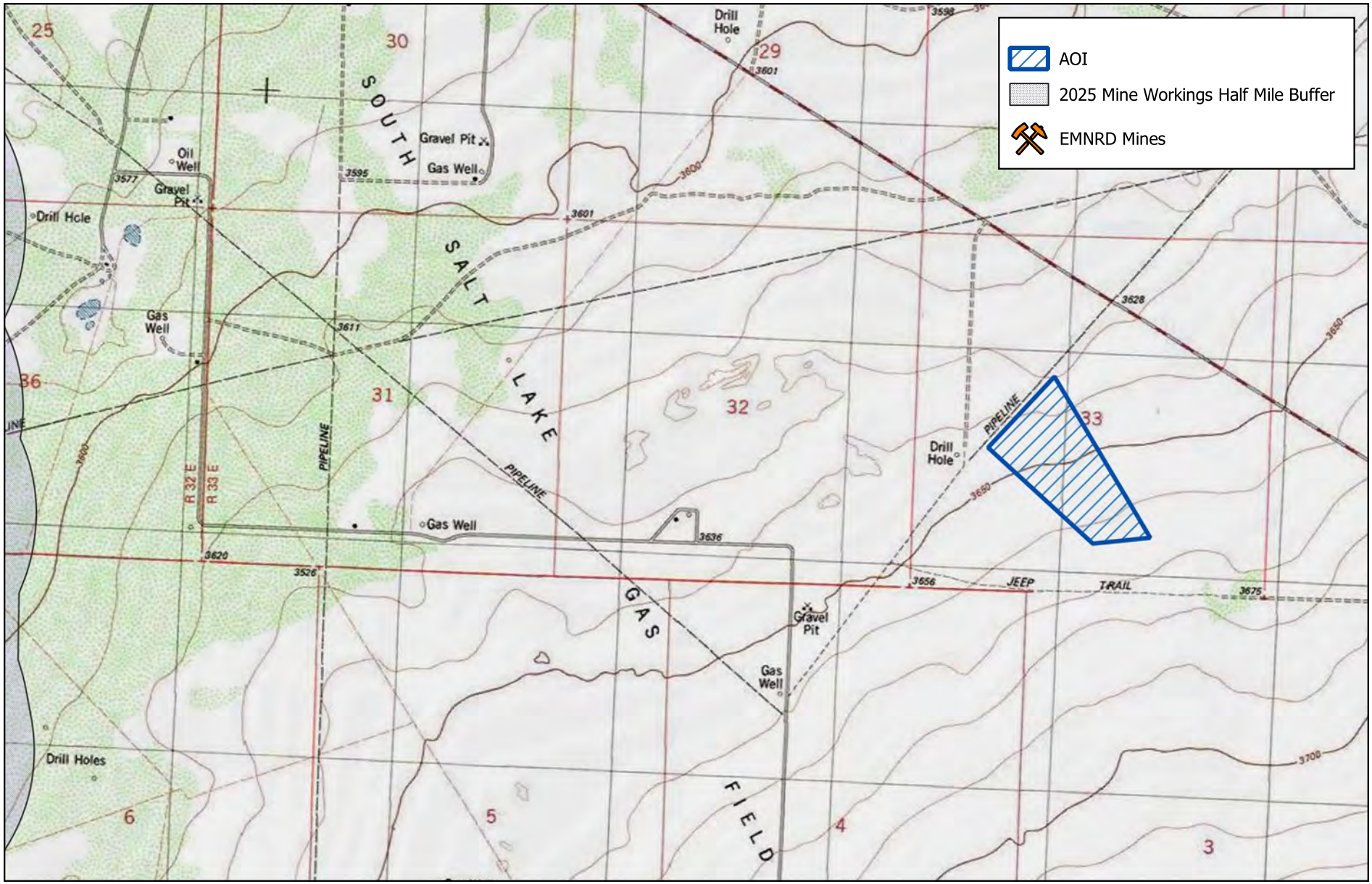
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearest Municipalities & Public Water Supplies

Plate 3

Solaris Water Midstream - Bullfighter Containment

February 2026

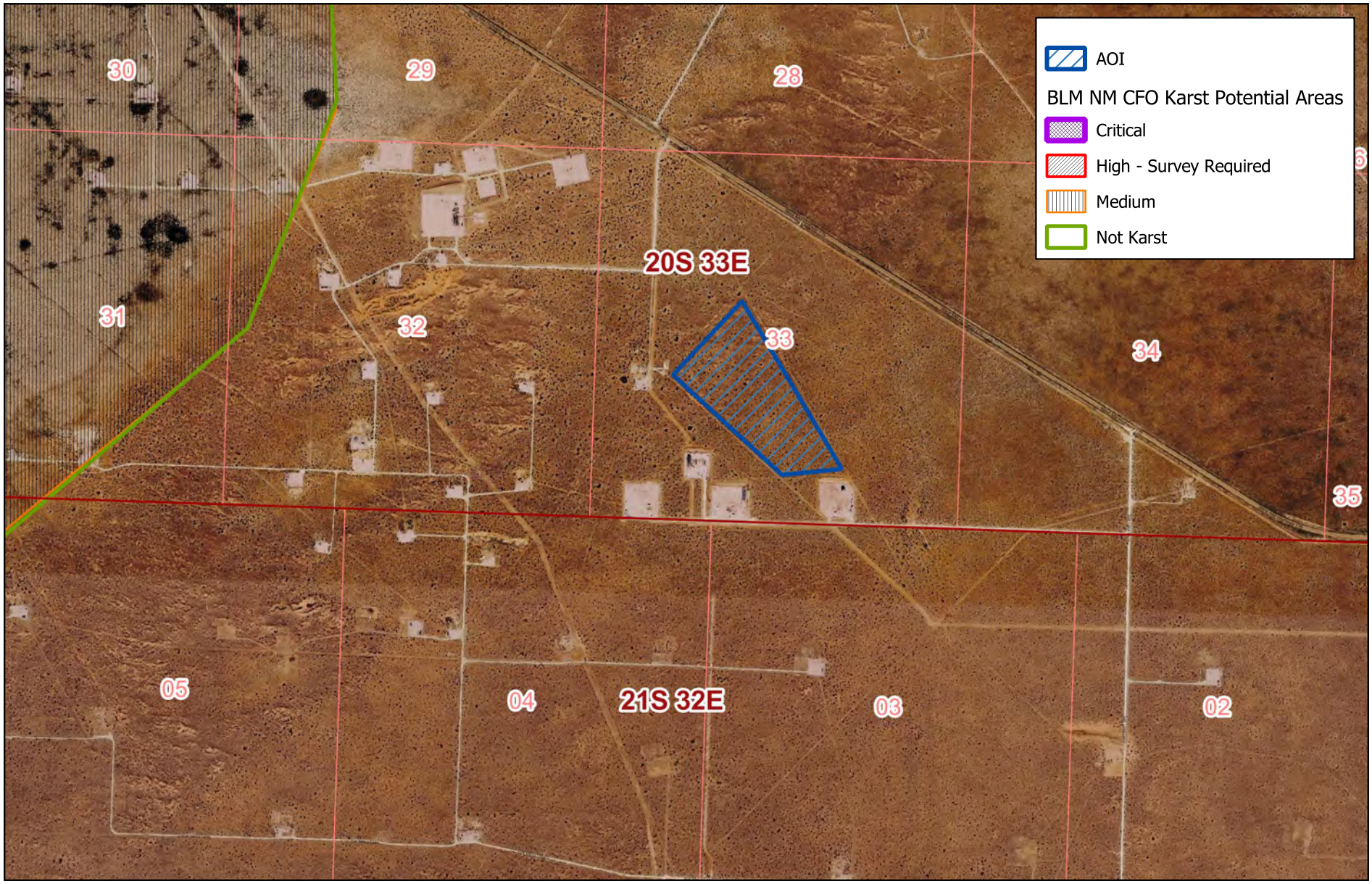


N
W E
S

2,000 4,000 ft

Scale 1:25,000

CASCADE SERVICES 952 Echo Lane, Suite 130 Houston, Texas 77024	Nearby Subsurface Mines	Plate 4
	Solaris Water Midstream Bullfighter Containment	April 2026



N
W E
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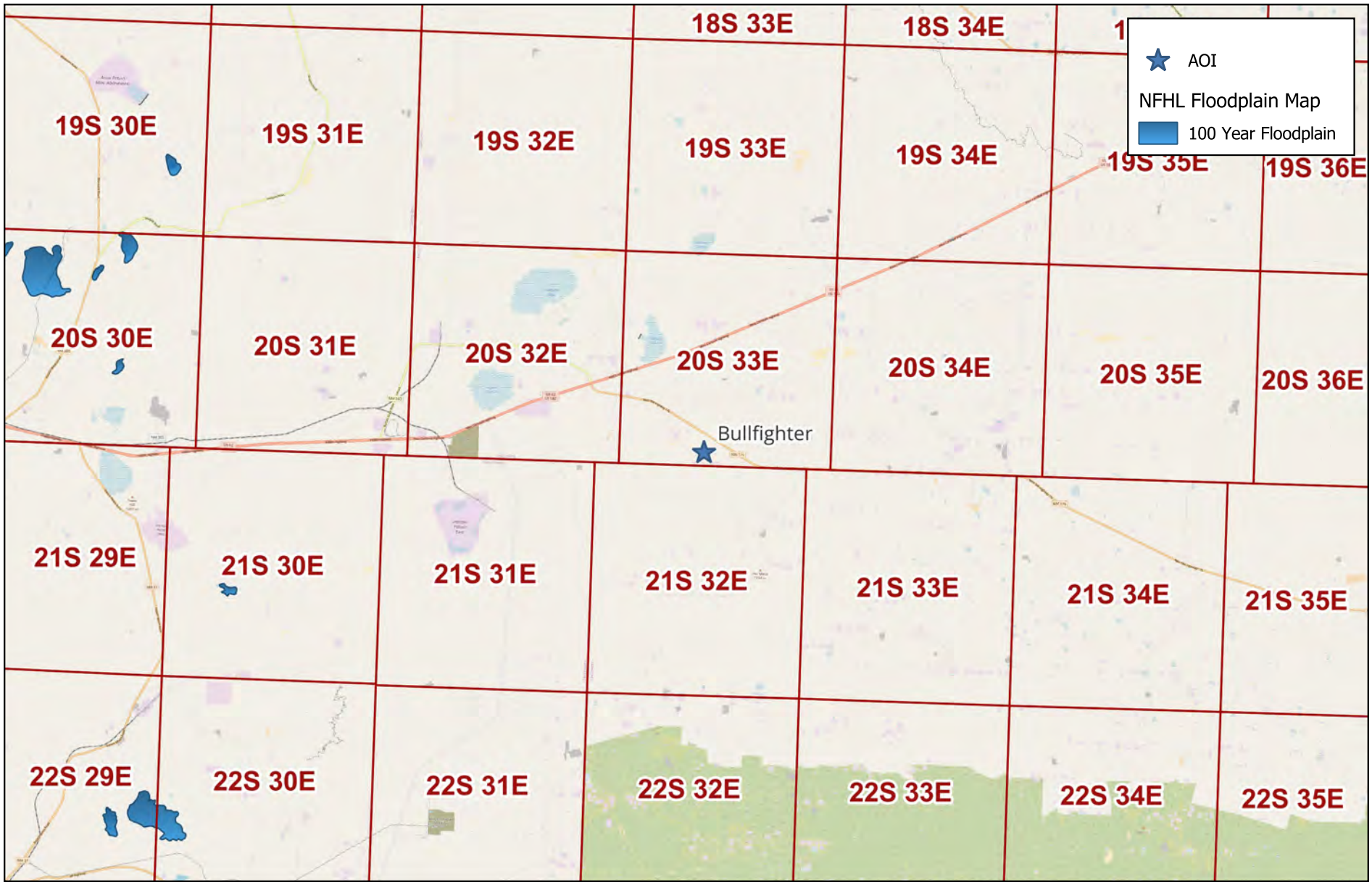
1,000 2,000 ft

Scale 1:24,000

CASCADE SERVICES

952 Echo Lane, Suite 130
Houston, Texas 77024

Karst Potential	Plate 5
Solaris Water Midstream Bullfighter Containment	April 2026



N
W E
S

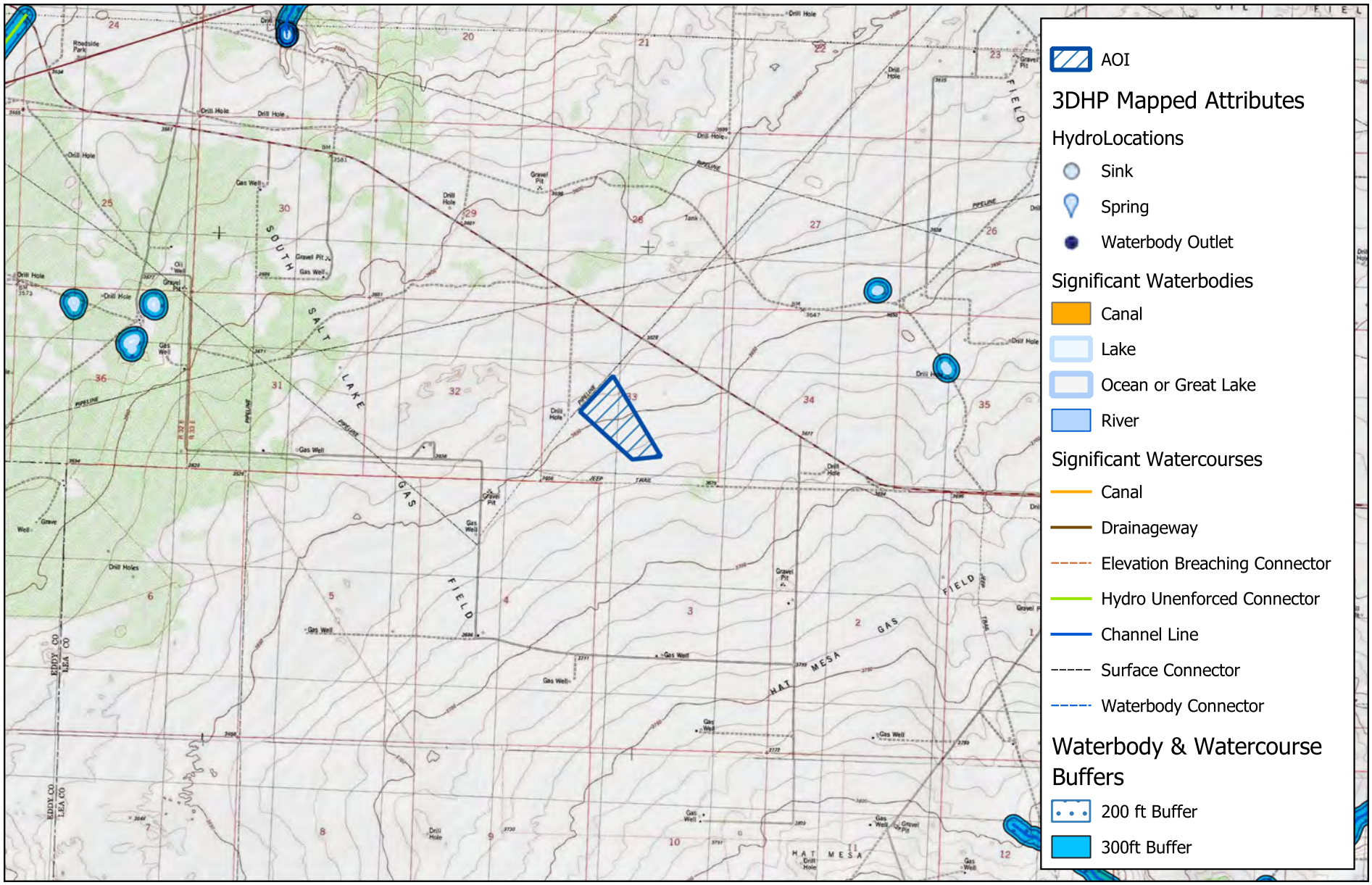
20,000 40,000 ft

Scale 1:250,000

CASCADE SERVICES

952 Echo Lane, Suite 130
Houston, Texas 77024

100 Year Floodplain	Plate 6
Solaris Water Midstream Bullfighter Containment	April 2026



CASCADE SERVICES

952 Echo Lane, Suite 130
Houston, Texas 77024

Watercourse, Wetland, and Spring Setbacks	Plate 7
Solaris Water Midstream Bullfighter Containment	April 2026

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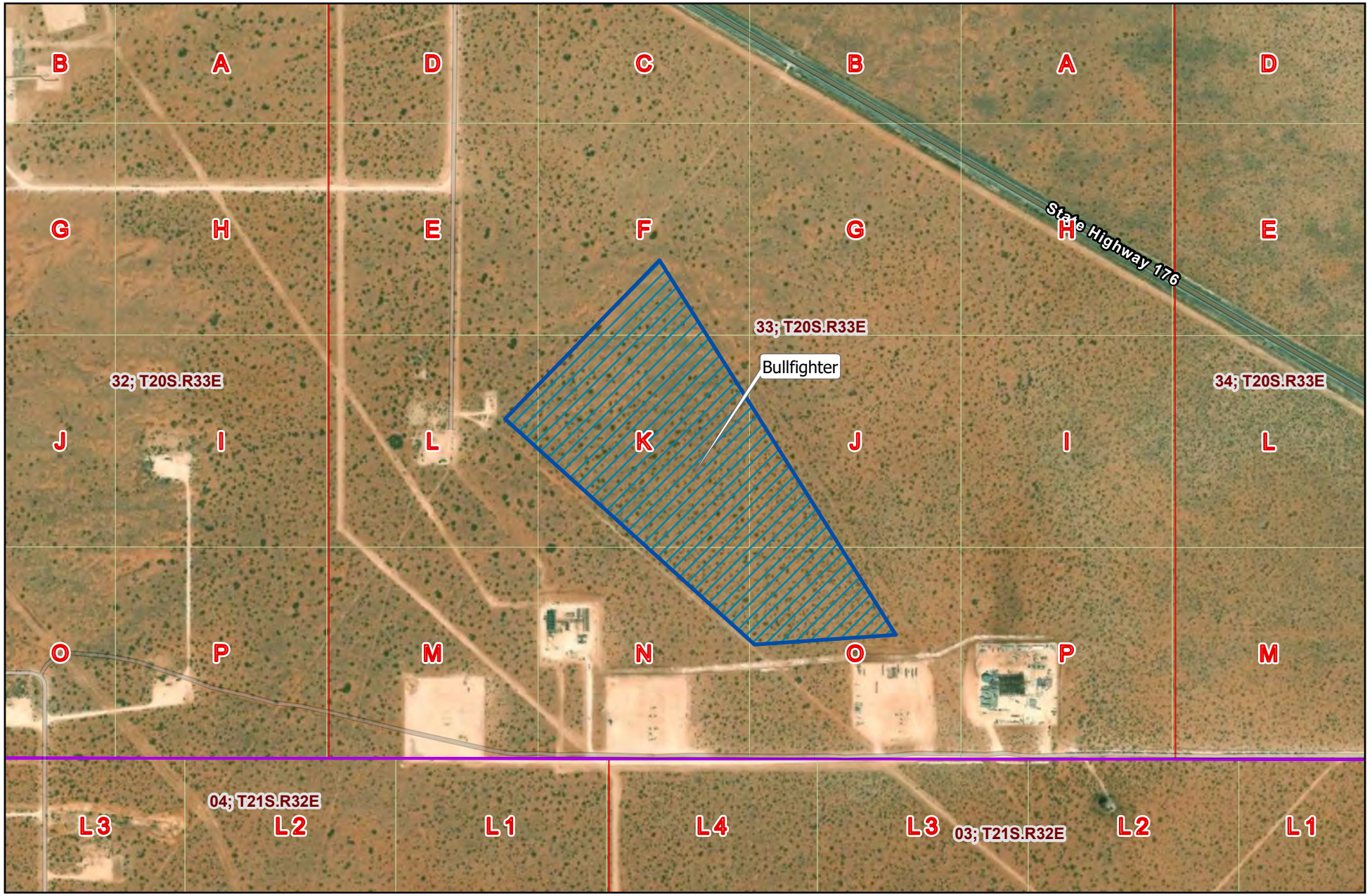


N
W E
S

0 0.13 0.25 Miles

Scale: 1:12,000

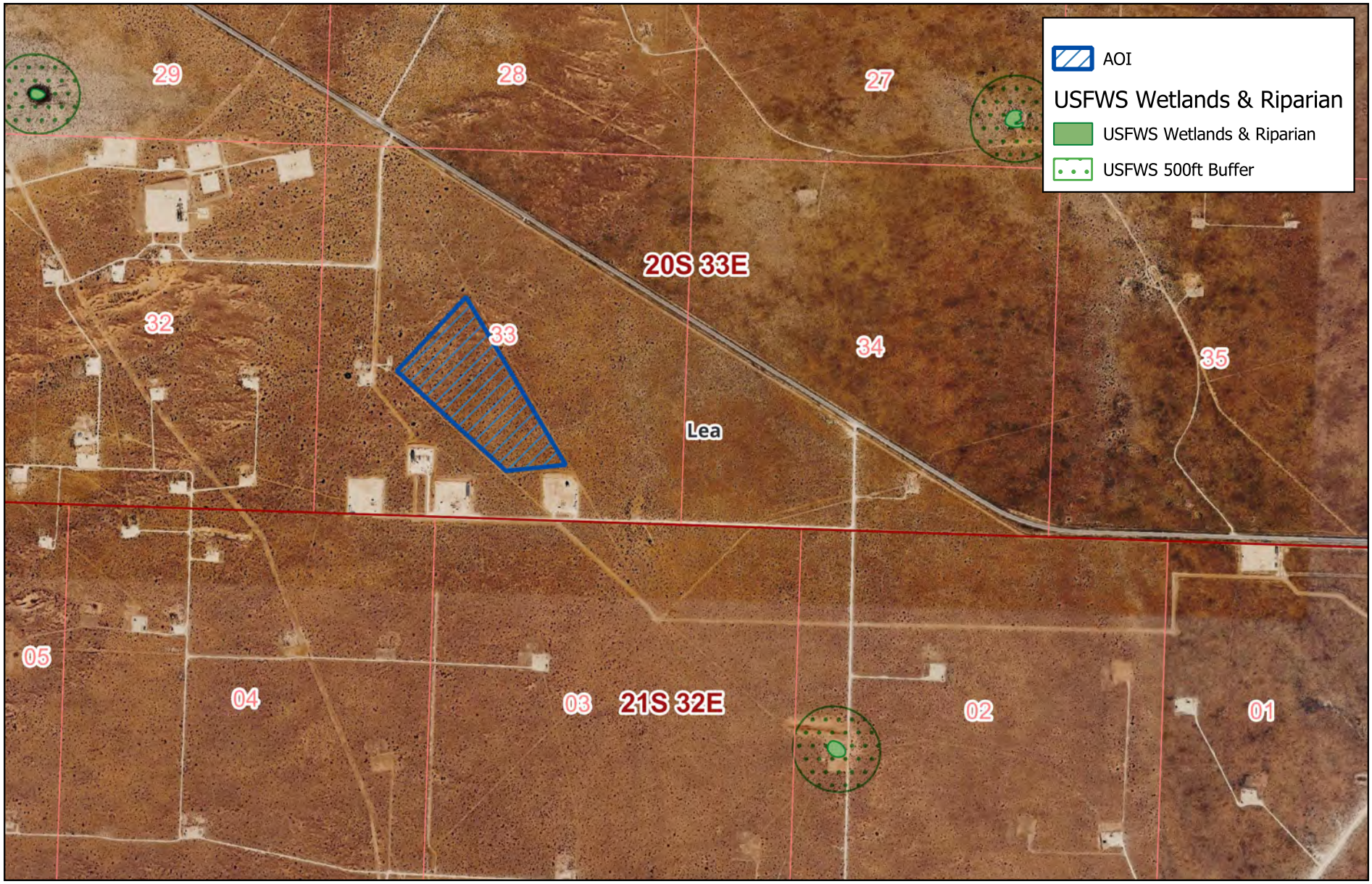
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearest Structures

Plate 8

Solaris Water Midstream - Bullfighter Containment

February 2026



N
W E
S

1,000 2,000 ft

Scale 1:24,000

CASCADE SERVICES

952 Echo Lane, Suite 130
Houston, Texas 77024

Watercourse, Wetland, and Spring Setbacks	Plate 9
Solaris Water Midstream Bullfighter Containment	April 2026

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Appendix Well Logs & USGS Data

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.): Pod-1	WELL TAG ID NO.	OSE FILE NO(S.): CP-2082
WELL OWNER NAME(S): Coterra Energy CO.		PHONE (OPTIONAL)
WELL OWNER MAILING ADDRESS: 840 Gessner Rd.		CITY: Houston STATE: TX ZIP: 77024-4152

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	33	6.00	N
	LONGITUDE	103	37	52.00	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: SWSE S-23 T-20S R-33E

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1862	James Hawley	H&R Enterprises, LLC

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
8/21/25	8/21/25	105	105	Dry Hole

COMPLETED WELL IS: ☐ ARTESIAN *add Centralizer info below ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A

DATE STATIC MEASURED: 8/24/25

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

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)
			No Casing left in hole				

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 *(if using Centralizers for Artesian wells- indicate the spacing below)	AMOUNT (cubic feet)	METHOD OF PLACEMENT

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. CP-02082	POD NO. 1	TRN NO. 790052	
LOCATION 20S. 33E. 23. 434		WELL TAG ID NO.	PAGE 1 OF 2

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	5	5	red sand and caliche	Y ✔ N	
5	30	25	caliche	Y ✔ N	
30	70	40	red hard clay	Y ✔ N	
70	105	35	red clay with grey clay layers	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): N/A

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: well was drilled 8/19/25, gauged on 8/24, well bore was dry, casing was removed and borehole was plugged according to the approved PPOO on 8/24/25.

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

Jamess Hawley

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:

James Hawley — 8/24/25

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. CP-02082	POD NO. 1	TRN NO. 790052	
LOCATION 20S.33E.23.434		WELL TAG ID NO.	PAGE 2 OF 2

Elizabeth K. Anderson, P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 790052
File Nbr: CP 02082
Well File Nbr: CP 02082 POD1

Sep. 22, 2025

JAMES HAWLEY
H&R ENTERPRISES, LLC
PO BOX 3641
HOBBS, NM 88241

Greetings:

The above numbered permit was issued in your name on 08/05/2025.

The Well Record was received in this office on 09/05/2025, stating that it had been completed on 08/21/2025, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before .

If you have any questions, please feel free to contact us.

Sincerely,

Rodolfo Chavez
(575)622-6521

drywell

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

STATE ENGINEER OFFICE

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): 1	OSE FILE NUMBER(S): CP-1151
WELL OWNER NAME(S): Caza Operating LLC, Richard Wright	PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: 200 North Loraine	CITY: Midland, STATE: Tx, ZIP: 79701

WELL LOCATION (FROM GPS)

	DEGREES	MINUTES	SECONDS	
LATITUDE	32	32	0.446	N
LONGITUDE	-103	38	3827	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

N½ Sec. 32 Township 22S Range 36E

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1292	Billy J. Bentle	Bentle Water Well Ser.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
2-21-13	4-12-13		823	

STATIC WATER LEVEL IN COMPLETED WELL (FT):

COMPLETED WELL IS: ( ) ARTESIAN (•) DRY HOLE ( ) SHALLOW (UNCONFINED)

DRILLING FLUID: ( ) AIR (•) MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ( ) ROTARY ( ) HAMMER (•) CABLE TOOL ( ) OTHER – SPECIFY:

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	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
+1	6	18	A-53 B	PE	12¼	.250	—
0	823	6	none dry hole				

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
0	6	18	Cement	3	Tremie
0	823	6	Cement	340	Tremie

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	CP-1151	POD NUMBER	1	TRN NUMBER	520275
LOCATION	OWD	22S.35E.35.222			PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	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	3	3	Top Soil	○ Y ● N	
3	11	8	Caliche	○ Y ● N	
11	20	9	Sandy Clay	○ Y ● N	
20	28	8	Dry Sand	○ Y ● N	
28	31	3	Rock	○ Y ● N	
31	53	22	Red Sandy Clay	○ Y ● N	
53	131	78	Red Bed	○ Y ● N	
131	162	31	Lime	○ Y ● N	
162	193	31	Sand	○ Y ● N	
193	260	67	Red Bed	○ Y ● N	
260	336	76	Rock	○ Y ● N	
336	484	148	Red Bed w/sand stringers	○ Y ● N	
484	519	35	Red & Blue Clay	○ Y ● N	
519	529	10	Sand	○ Y ● N	
529	543	14	Hard Red & Blue Clay	○ Y ● N	
543	638	95	Red & Blue clay w/tight sand stringers	○ Y ● N	
638	730	92	Red & Blue Clay	○ Y ● N	
730	732	2	Rock	○ Y ● N	
732	823	95	Red Bed	○ 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): Dry

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:

!!!!!!!!!!!!!

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

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 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Billy Bantle 4-21-13

SIGNATURE OF DRILLER / PRINT SIGNEE NAME DATE

FOR OSE INTERNAL USE WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	CP-1151	POD NUMBER	1	TRN NUMBER	520275
LOCATION	OWD	225.35E.35.222			PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD 1 (TW-1)	N/A	CP-2063

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Exxon Mobil	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
106 W Green St.	Carlsbad	NM	88220

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	32	5.85	N
	LONGITUDE	103	41	44.71	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

SE NE NE Sec. 31 T20S R33E. Hat Mesa

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)
06/09/2025	06/09/2025	Temporary Well Material	±105	N/A

COMPLETED WELL IS: ☐ ARTESIAN *add Centralizer info below ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A

DATE STATIC MEASURED:

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

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

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

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	105	±6.25	Soil Boring	--	--	--	--

OSE DIT ROSWELL NM
20 JUN '25 AM 9:52

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 *(if using Centralizers for Artesian wells- indicate the spacing below)	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			N/A		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. CP-2063	POD NO. 1	TRN NO. 785271	
LOCATION 20S. 33E. 31 4 22		WELL TAG ID NO. NA	PAGE 1 OF 2

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	6	6	Caliche, semi-consolidated, tan/white	Y ✓ N	
6	19	13	Sand, fine-grained, with caliche, tan and white	Y ✓ N	
19	39	10	Sand, fine-grained, clay, tannish brown	Y ✓ N	
39	69	30	Clay, with fine-grained sand semi-consolidated, Brown	Y ✓ N	
69	105	36	Clay, Stiff, High plastic, 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	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm):

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 material removed and soil boring backfilled using drill cuttings from total depth to ten feet below ground surface(bgs), then hydrated bentonite chips ten feet bgs to surface.

OSE DII ROSWELL NM
20 JUN '25 AM9:52

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

Cameron Pruitt

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 (Jun 20, 2025 07:48 MDT) Jackie D. Atkins 06/20/2025

SIGNATURE OF DRILLER / PRINT SIGNEE NAME DATE

FOR OSE INTERNAL USE WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. CP- 2063	POD NO. 1	TRN NO. 785271	
LOCATION 20S.33E.31 422		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD 1	N/A	CP 02032

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Matador Production Company	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
R347 N26th Rural Street 2nd Floor	Artesia	NM	88210

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	30	23.98	N
	LONGITUDE	-103	36	51.6	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

Unit K, Section 06, T 21S, R 33E, Lea, County

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1188	John Scarborough	John Scarborough Drilling Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
11/12/2024	11/12/2024	105	105	N/A

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

STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

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	105	5.00	Soil Boring				

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
			N/A		

OSE DII ROSWELL NM
20 NOV '24 PM2:40

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. CP-2032	POD NO. 1	TRN NO. 770604	
LOCATION 21S.33E.06 1 2 3		WELL TAG ID NO. NA	PAGE 1 OF 2

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	10	10	Sand with Gravel, Red, Fine grained with small to large gravel	Y ✓ N	
10	20	10	Sand with Gravel, Red, Fine grained with small to large gravel	Y ✓ N	
20	30	10	Silty Sand, Red, Fine grained	Y ✓ N	
30	40	10	Silty Sand, Red, Fine grained	Y ✓ N	
40	50	10	Silty Sand, Red, Fine grained	Y ✓ N	
50	60	10	Silty Gravel with Sand, Red, Very fine to Medium Grained with Large Gravel	Y ✓ N	
60	70	10	Silty Gravel with Sand, Red, Very fine to Medium Grained with Large Gravel	Y ✓ N	
70	80	10	Silty Gravel with Sand, Red, Very fine to Medium Grained with Large Gravel	Y ✓ N	
80	90	10	Silty Gravel with Sand, Red, Very fine to Medium Grained with Large Gravel	Y ✓ N	
90	100	10	Fat Clay with Gravel, Red, Very fine with small to large gravel	Y ✓ N	
100	105	5	Fat Clay with Gravel, Red, Very fine with small to large gravel	Y ✓ N	
105	105	0	Fat Clay with Gravel, Red, Very fine with small to large gravel	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 material removed and soil boring backfilled using drill cuttings from total depth to 10 ft below ground surface (bgs), then hydrated bentonite chips 10 ft bgs to ground surface.

OSE DII ROSWELL NM
20 NOV '24 PM 2:40

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

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Scott Scarborough — Digitally signed by Scott Scarborough Date: 2024.11.18 13:47:52 -07'00'

SIGNATURE OF DRILLER / PRINT SIGNEE NAME _____ DATE _____

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. CP-2032	POD NO. 1	TRN NO. 770604	
LOCATION 21S.33E.06 1 2 3		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1 (BH-01)	n/a	CP-1884

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Ascent Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O Box 270983	Littleton	CO	80127

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	30	3.18	N
	LONGITUDE	103	38	10.22	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

SW SW SW Sec. 01 T21S R32E

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)
09/08/2021	09/08/2021	temporary well material	55	n/a

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

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

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	55	±6.5	Boring- HSA	--	--	--	--

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

RECEIVED SEP 23 2021 4:01

FOR OSE INTERNAL USE

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

FILE NO. CP-1884	POD NO. 1	TRN NO. 699871	
LOCATION 21S-32E-01 333		WELL TAG ID NO. N/A	PAGE 1 OF 2

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	9	9	Sand, Medium/fine, with some caliche, Red	Y ✓ N	
9	14	5	Sand, Medium/fine, with some caliche, Brown	Y ✓ N	
14	24	10	Caliche with Medium/fine sannd, Off white	Y ✓ N	
24	34	10	Sand, Medium/fine, with some caliche, Brown	Y ✓ N	
34	55	21	Caliche with Medium/fine sannd, Off white	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 backfilled using drill cuttings from total depth to ten feet below ground surface, then hydrated bentonite chips from ten feet below ground surface to surface.

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

Shane Eldridge, Cameron Pruitt and Carmelo Trevino

OSE DII SEP 28 2021 PM3:01

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 — 09/27/2021

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

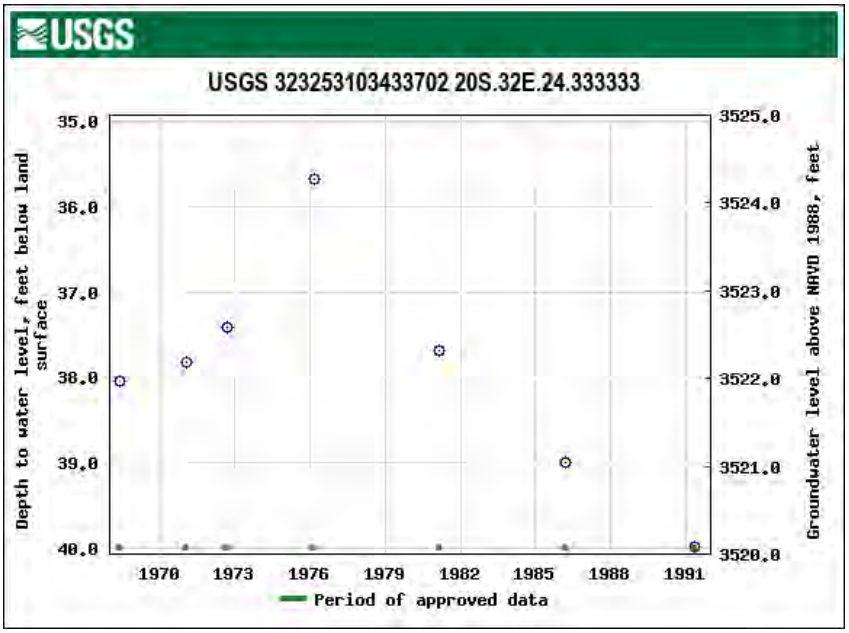
FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO. CP-1884	POD NO. 1	TRN NO. 699871	
LOCATION 21S-32E-01 333		WELL TAG ID NO. N/A	PAGE 2 OF 2

USGS 323253103433702 20S.32E.24.333333 AKA USGS-15588

Northwest 2.75 miles

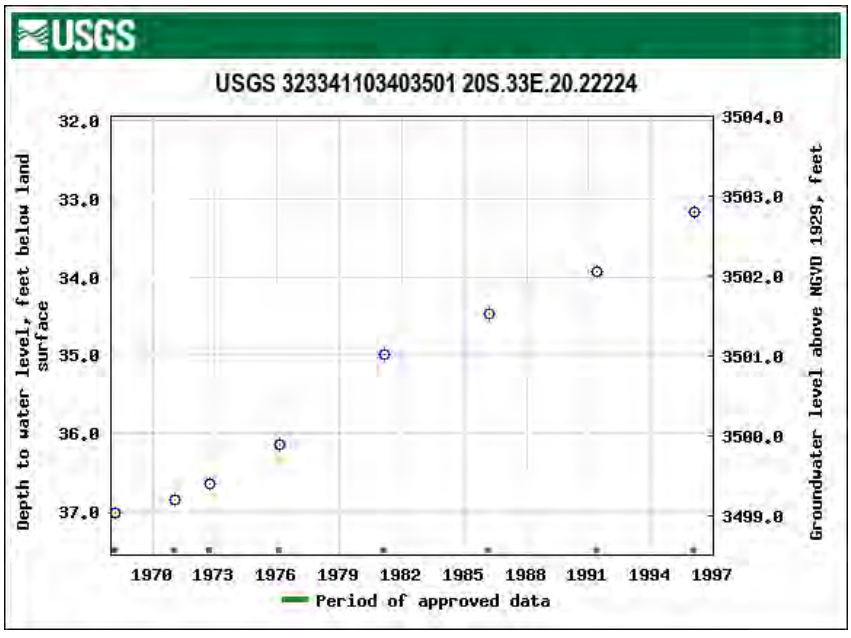
Lea County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°32'53",
Longitude 103°43'37" NAD27
Land-surface elevation 3,560 feet above NAVD88
The depth of the well is 65 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.



USGS 323341103403501 20S.33E.20.22224 AKA USGS-15411

North 2.7 miles

Lea County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°33'55",
Longitude 103°40'38" NAD27
Land-surface elevation 3,536.00 feet above NGVD29
The depth of the well is 52 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.



Site Photographs

Image showing photograph locations with circled locations presented below


The cover page image # 706 at sunset, looking northwest. The mound of R-360 landfill is in the center of the horizon. The vegetation is typical of the area.

Location 704 looking east. Caliche litters the surface of the spoil pile associated with construction of the location on the right side of the image.

Location 642 looking south along a pipeline on the east side of the AOI. Caliche litters the surface of the buried pipeline demonstrating that caliche underlies the thin aeolian sand.

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Rule 34 Permit

April 2026

Bullfighter Recycle Containment & AST Facility

Section 33, Township 20S, Range 33E, Lea County

Volume 3

- C-147 and Closure Cost **(in Volume 2)**
- Design Sketch
- Stamped Design Drawings
- Design and Construction Plan
- AST Set Up SOP
- Operation and Maintenance Plan
- Closure Plan
- Variances and Equivalency Demonstrations

Photo taken near the center of the proposed Bullfighter Containment looking to the south. The area consists of eolian and piedmont deposits with vegetation typical of the area.

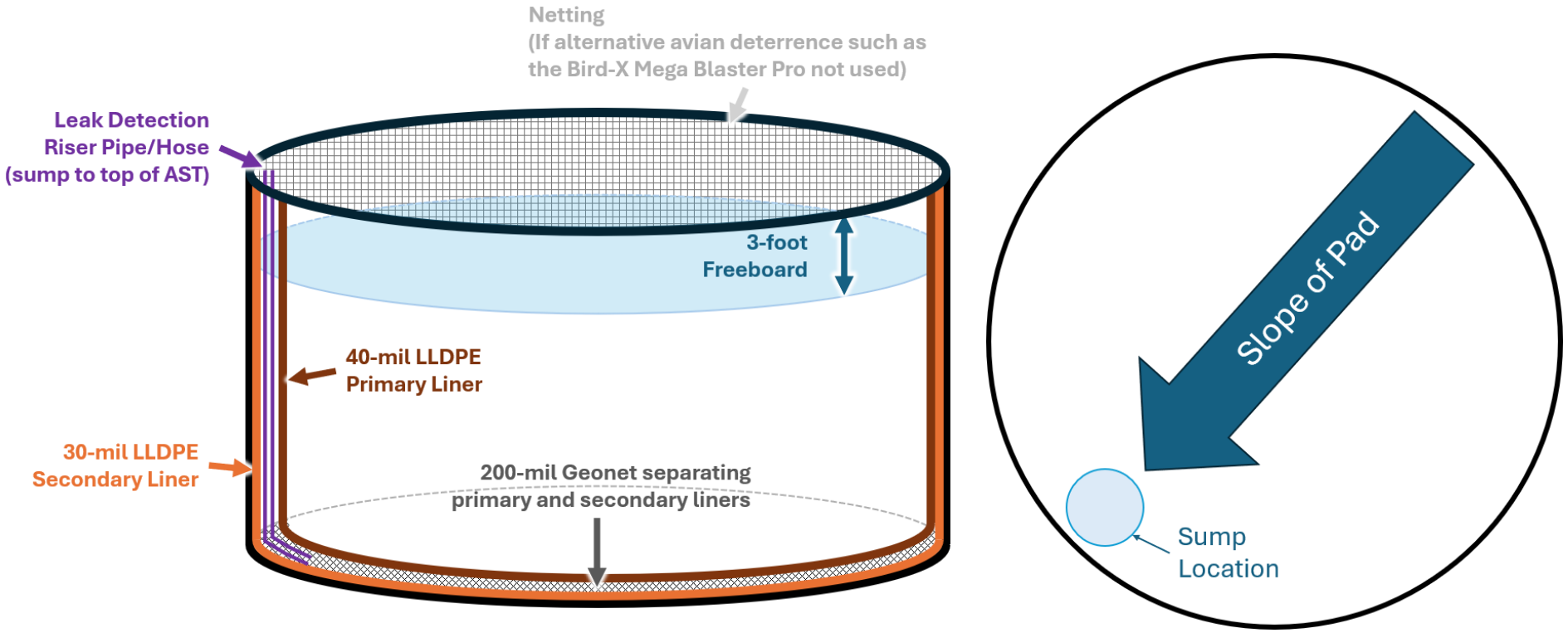
Prepared for:
Solaris Water Midstream, LLC
The Woodlands, Texas

Prepared by:
Cascade Services LLC
Midland, Texas

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Design Sketch

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

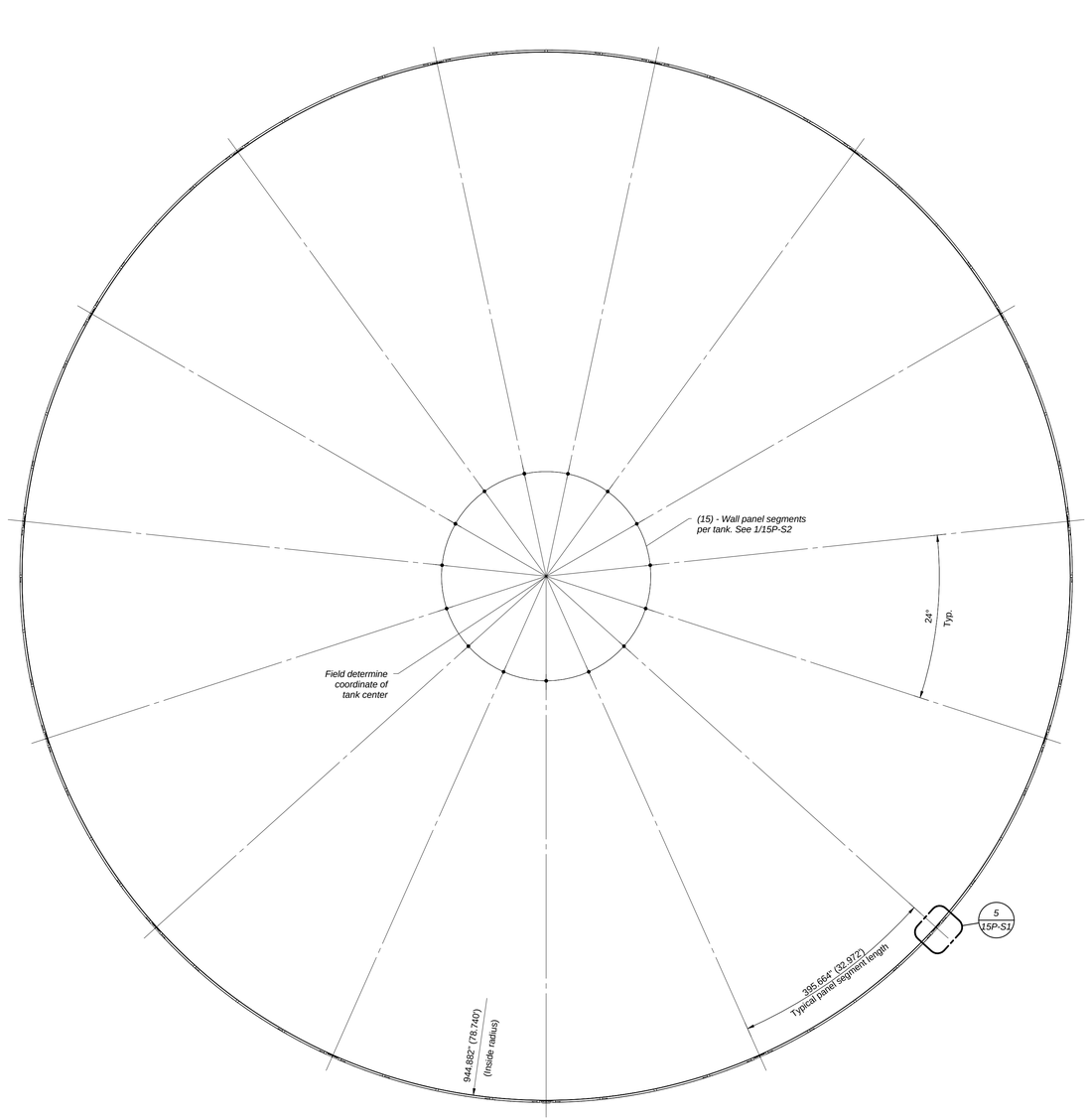


Leak Detection System

- Primary Liner: 40-mil LLDPE
- Secondary Liner: 30-mil LLDPE
- Leak Detection Drainage Layer: 200-mil Geonet
  - Situated between the Primary and Secondary Liners
- >3-inch sump excavated at the lowest point on the down slope side of the AST (per SOP)
- A small hose or pipe runs from the sump to the top of the AST
- Leak detection system inspected weekly for seepage
  - An appropriate pump is connected to the leak detections system with any discharge returning to the AST (above the Primary Liner)
  - If fluid is detected, samples are taken and the plan outlined in the Operation & Maintenance Section is followed to determine the origin of the water (i.e. produced water vs condensation)

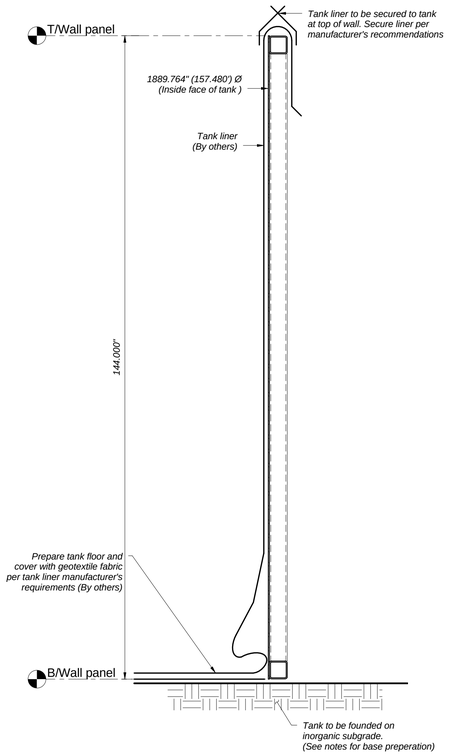
| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Stamped Design Drawings



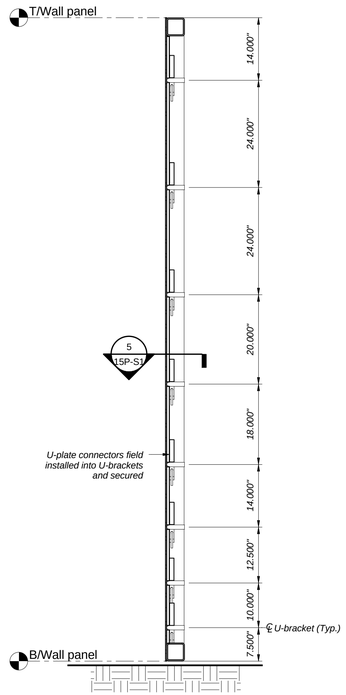
1 Tank Layout Plan

SCALE: 3/32" = 1'-0"



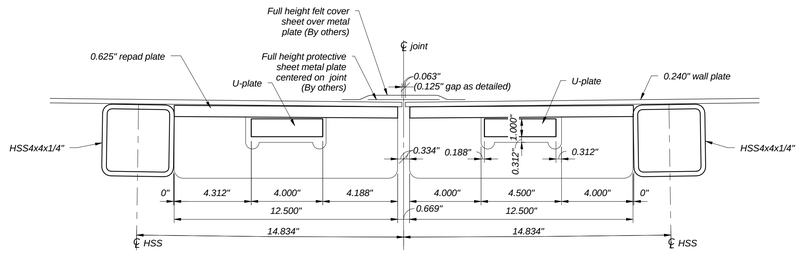
2 Typical Tank Wall Section

SCALE: 3/4" = 1'-0"



3 Wall Section at Panel Joint

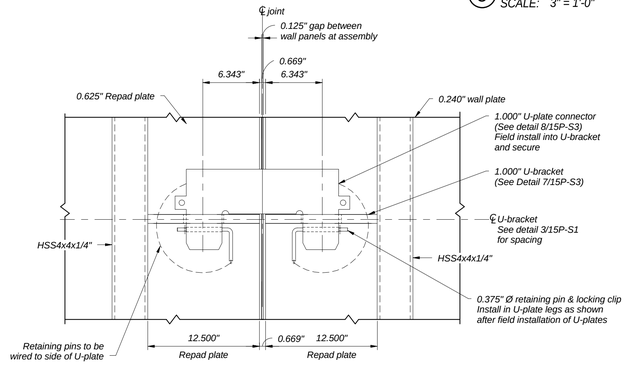
SCALE: 3/4" = 1'-0"



Note: Max. estimated gap between adjacent panels is 0.500" under full hydrostatic load as detailed.

5 Enlarged Plan Detail

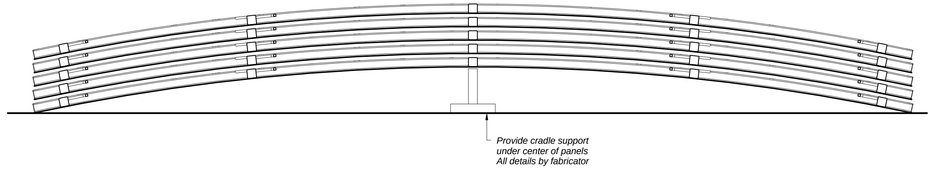
SCALE: 3" = 1'-0"



Note: U-plate connection to accomodate max. 0.500" variation between heights of adjacent panels.
Field shim panels vertically to within 0.500" prior to installing U-plates.

6 Enlarged Elevation

SCALE: 1 1/2" = 1'-0"



4 Transport and Storage Detail

SCALE: N.T.S.

Notes:

1. Contractor is responsible for means and methods of construction during tank erection and disassembly and for the safety of all personnel. All work shall be completed in strict accordance with all state and federal occupational safety and health administration requirements.
2. Contractor is responsible for the stability of tank during assembly and disassembly and shall provide shoring as required until the tank is fully assembled or disassembled.
3. The Contractor shall ensure all the panels are adequately supported or braced until the entire structure is assembled.
4. All topsoil, organics, soft or wet soils, debris or other deleterious materials shall be removed from the tank site.
5. The finished grades along the perimeter of the tank shall be level and true to plane. The maximum elevation difference across any two diametrical points shall be less than 9.000".
6. The maximum deviation from plane over any 118.00" of circumference shall be less than 0.1875" and less than 0.500" over any 390.000" of circumference.
7. The area surrounding the tanks shall be graded to direct surface water away from the tank.
8. The edge of any (excavated) sump shall be a minimum of 36.000" from the edge of the tank wall.
9. All wall panels shall be erected plumb. The maximum out-of-plumbness of the top of the panel relative to the bottom shall be less than 1.000".
10. The maximum deviation from the theoretical radius shall be less than 2.000" at any point along the tank wall.
11. The liner shall be securely fastened to the top of each panel in accordance with the liner's manufacturer's recommendations. The liner shall be installed with sufficient slack at the base of the panel to prevent any tension in the liner.
12. The vertical lifting bar shall only be used to lift the panels into the vertical position. The lift rigging must be within 12.000" of the top rail prior to lifting the panel.

Frost Engineering & Consulting

Frost Engineering & Consulting Company
R. Jerry Frost, PE, MS, MBA
Troy A. Madlem, PE, MLSE

201 Lincolnway West
Mishawaka, Indiana 46544
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Email: contactus@frosteng.net
Web: www.frosteng.net

Hydrena Energy Modular Tanks
15P Water Tank (157.480' Dia.)

COLORADO LICENSED TROY A. MADLEM 47546 PROFESSIONAL ENGINEER

CERTIFIED BY: Troy A. Madlem, P.E.

Revision:

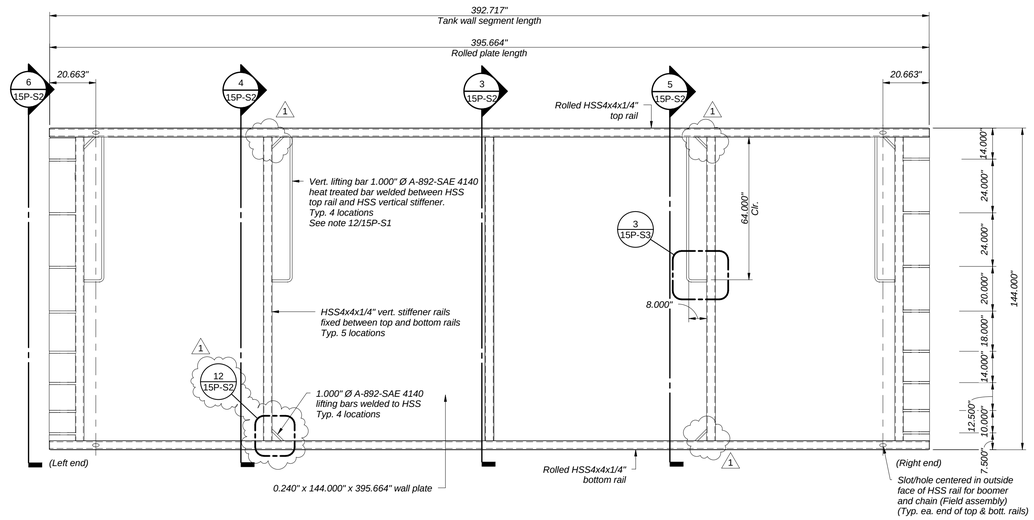
Project:
Designed: FEC
Drawn: TCM
Checked: TAM
Scale: As indicated
Issue Date: 06/24/13

Tank Installation & Assembly

15P-S1

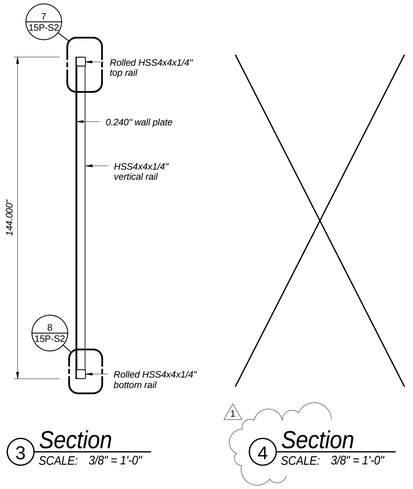
Highest level of Quality and Commitment for our Clients

P:\Hydrena Energy Services Corp\Modular Tanks\Dwg\15P Modular Water Tank.rvt 7/30/2013 12:36:39 PM



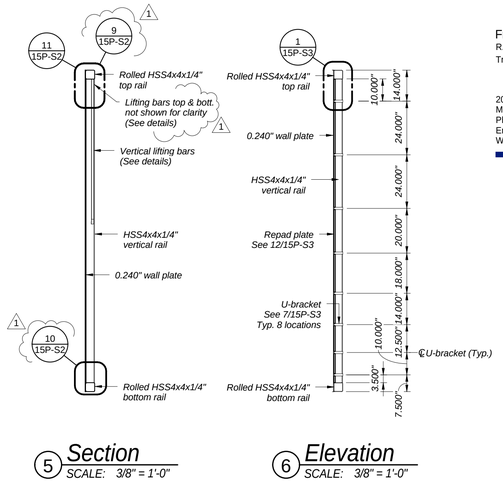
Note: Framing shown to outside face of panel.

1 Wall Panel elevation (15 total)
SCALE: 3/8" = 1'-0"



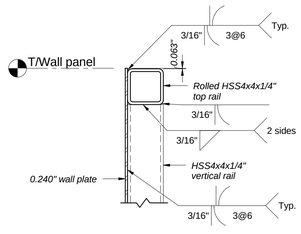
3 Section
SCALE: 3/8" = 1'-0"

4 Section
SCALE: 3/8" = 1'-0"

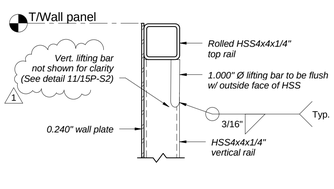


5 Section
SCALE: 3/8" = 1'-0"

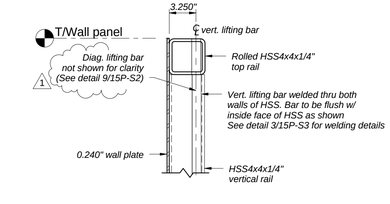
6 Elevation
SCALE: 3/8" = 1'-0"



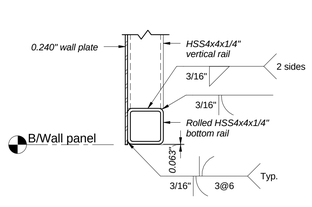
7 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



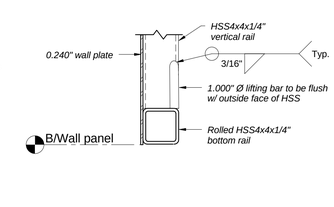
9 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



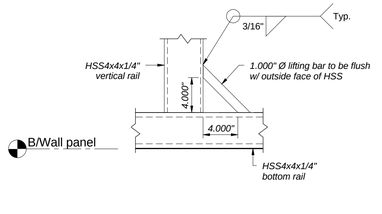
11 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



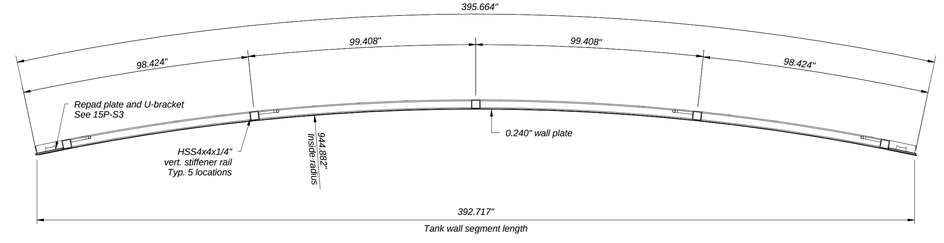
8 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



10 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



12 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



2 Typical Plan Section
SCALE: 3/8" = 1'-0"

General Notes:

1. Tank design based on a design liquid with specific gravity of 1.0.
2. All structural steel design, fabrication and erection shall comply with American Institute of Steel Construction (AISC) specification 303 and 360, latest editions.
3. All welding shall be performed in strict accordance with American Welding Society (AWS) D1.1, latest edition.
4. Structural steel materials shall comply with the following minimum requirements:
   - Wall plate.....ASTM A-572 w/ min. Fy = 44 ksi.
   - HSS tubing.....ASTM A-500, Gr. B w/ min. Fy = 46 ksi.
   - Repad plates.....ASTM A-572, Gr. 50 w/ min. Fy = 50 ksi.
   - U-plates.....ASTM A-514, Gr. B w/ min. Fy = 100 ksi.
   - U-brackets.....ASTM A-514, Gr. B w/ min. Fy = 100 ksi.
   - Lifting bars.....ASTM A-892-SAE 4140 w/ min. Fy = 135 ksi.
5. Fabrication of wall panels shall be of solid welded construction, as shown, using appropriate weld electrodes with minimum tensile strength equal to or greater than the yield strength of the strongest connected parts.

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Hydrena Energy Modular Tanks
15P Water Tank (157.480' Dia.)

COLORADO LICENSED
TROY A. MADLEM
47546
PROFESSIONAL ENGINEER

CERTIFIED BY: Troy A. Madlem, P.E.

Revision:

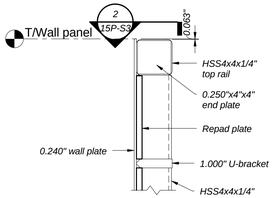
1	Revisions	07/30/13

Project:
Designed: FEC
Drawn: TCM
Checked: TAM
Scale: As indicated
Issue Date: 06/24/13

Framing Plan, Elevation, Sections & details

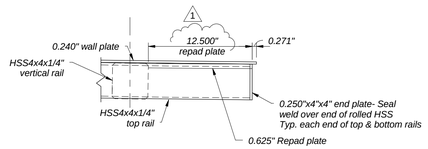
15P-S2

Highest level of Quality and Commitment for our Clients

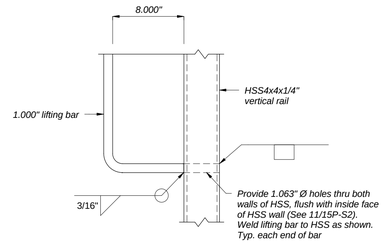


Note: Detail at bottom rail similar.

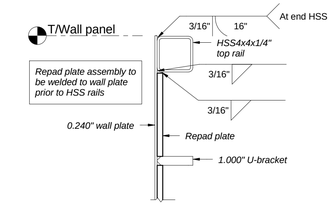
1 Enlarged Detail
SCALE: 1 1/2" = 1'-0"



2 Plan Detail
SCALE: 1 1/2" = 1'-0"

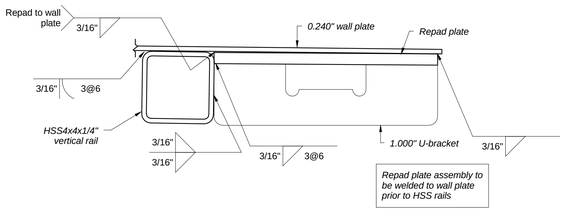


3 Enlarged Detail
SCALE: 1 1/2" = 1'-0"

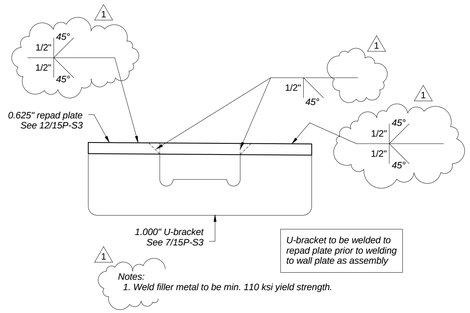


Note: Connection detail at bottom rail similar.

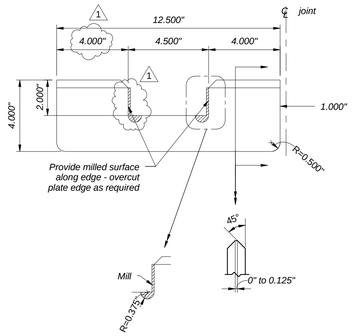
4 Panel Connection Welds - Section
SCALE: 1 1/2" = 1'-0"



5 Repad Connection
SCALE: 3" = 1'-0"

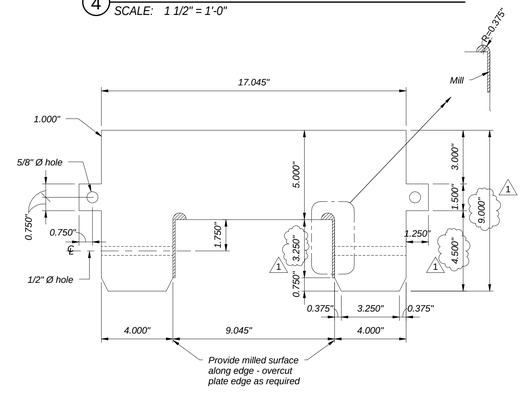


6 U-Bracket to Repad Connection
SCALE: 3" = 1'-0"



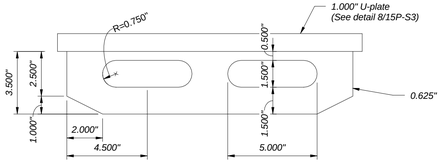
Note: U-bracket shall be ASTM A-514-B w/ min. Fy = 100 ksi.

7 U-Bracket
SCALE: 3" = 1'-0"



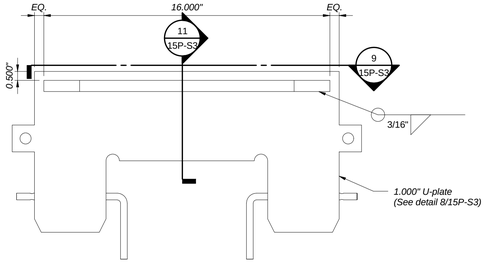
Note: U-plate shall be ASTM A-514-B w/ min. Fy = 100 ksi.

8 U-Plate
SCALE: 3" = 1'-0"

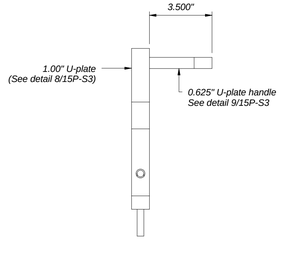


Note: U-plate handle shall be ASTM A-572, Gr. 50 w/ min Fy = 50 ksi.

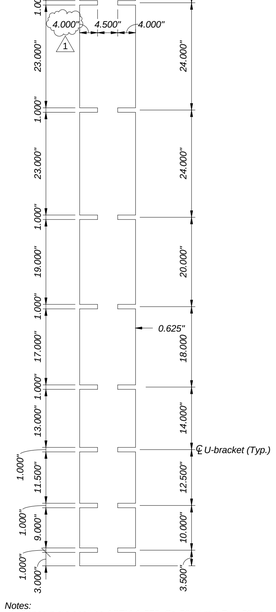
9 U-Plate Handle
SCALE: 3" = 1'-0"



10 U-Plate w/ Handle Assembly
SCALE: 3" = 1'-0"

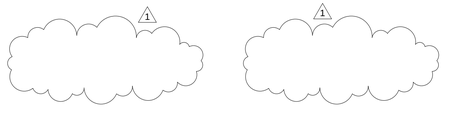


11 U-Plate Section
SCALE: 3" = 1'-0"



Notes:
1. Repad plate shall be ASTM A-572, Gr. 50 w/ min Fy = 50 ksi.

12 Repad Elevation
SCALE: 3/4" = 1'-0"



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Hydrera Energy Modular Tanks
15P Water Tank (157.480' Dia.)

COLORADO LICENSED TROY A. MADLEM 47546 PROFESSIONAL ENGINEER

CERTIFIED BY: Troy A. Madlem, P.E.

Revision:
1 Revisions 07/30/13

Project:
Designed: FEC
Drawn: TCM
Checked: TAM
Scale: As indicated
Issue Date: 06/24/13

Framing Sections & Details

15P-S3

Highest level of Quality and Commitment for our Clients

Inland TARP & LINER

Premium Quality - Built to Last

www.inlandtarp.com

Geotextile Product Description Sheet
GT-110
Nonwoven Geotextile

GT-110 is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. SKAPS GT-110 resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. SKAPS GT-110 conforms to the physical property values listed below:

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Weight (Typical)	ASTM D 5261	oz/yd^2 (g/m^2)	10.0 (339)
Grab Tensile	ASTM D 4632	lbs (kN)	250 (1.11)
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs (kN)	100 (0.444)
CBR Puncture Resistance	ASTM D 6241	lbs (kN)	700 (3.11)
Permittivity*	ASTM D 4491	sec^{-1}	1.2
Water Flow*	ASTM D 4491	gpm/ft^2 ($l/min/m^2$)	80 (3251)
AOS*	ASTM D 4751	US Sieve (mm)	100 (0.150)
UV Resistance	ASTM D 4355	%/hrs	70/500

PACKAGING

Roll Dimensions (W x L) – ft. 12.5 x 360 / 15 x 300
Square Yards Per Roll 500
Estimated Roll Weight – lbs. 320

* At the time of manufacturing. Handling may change these properties.
This information is provided for reference purposes only and is not intended as a warranty or guarantee. SKAPS assumes no liability in connection with the use of this information.

Made in U.S.A.

U.S. Fabrication & Distribution Centers

Moses Lake, Washington ● 4172 North Frontage Road E, Moses Lake, WA 98837 ● 800.346.7744 ● Fax 509.766.0414

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www.inlandtarp.com

TECHNICAL DATA SHEET
Geomembrane 40mil LLDPE

Property	Test Method	Frequency (A)	Unit Metric		Solmax 140-7000
Thickness (Nominal +/- 10%) (E)	ASTM D 5199	Every roll	mm		1.00
Resin Density	ASTM D 1505	1/Batch	g/cc		<0.926
Melt Index-190/2.16(max)	ASTM D 1238	1/Batch	g/10min		1.0
Sheet Density (C)	ASTM D 1505	Every 2 rolls	g/cc		<0.939
Carbon Black Content (D)	ASTM D 4218	Every 2 rolls	%		2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	Every 6 rolls	Category		Cat. 1 / Cat. 2
Oxidative Induction Time (min. avg)	ASTM D3895	1/Batch	min		100
Tensile Properties (min. avg)(B)	ASTM D 6693	Every 2 rolls			
Strength as Break			kN/m		23
Elongation at Break			%		800
2% Modulus (max.)	ASTM D 5323	PerFormulation	kN/m		420
Tear Resistance (min. avg.)	ASTM D 1004	Every 6 rolls	N		85
Puncture Resistance (min. avg.)	ASTM D 4833	Every 6 rolls	N		215
Dimensional Stability	ASTM D 1204	Every 6 rolls	%		+/- 2
Multi-Axial Tensile (min.)	ASTM D 5617	PerFormulation	%		90
Oven Aging-% retained after 90 days	ASTM D 5721	PerFormulation			
STD OIT (min. avg.)	ASTM D 3895		%		35
HP OIT (min. avg.)	ASTM D 5885		%		60
UV Resistance-% retained after 1600 hr	GRI-GM-11	PerFormulation			
HP-OIT (min. avg.)	ASTM D 5885		%		35

Note;

(A) Testing frequency based on standard roll dimensions and one batch is approximately 180,000 lbs (or one railcar).
(B) Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.
(C) Correlation table is available for ASTM D792 vs. ASTM D1505. Both methods give the same results.
(D) Correlation table is available for ASTM D1603 vs. ASTM D4218. Both methods give the same results.
(E) The minimum average thickness is +/- 10% of the nominal value.

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

SKAPS TRANSNET™

HDPE GEONET TN 220

SKAPS TRANSNET™ geonet consists of SKAPS Geonet made from HDPE resin.

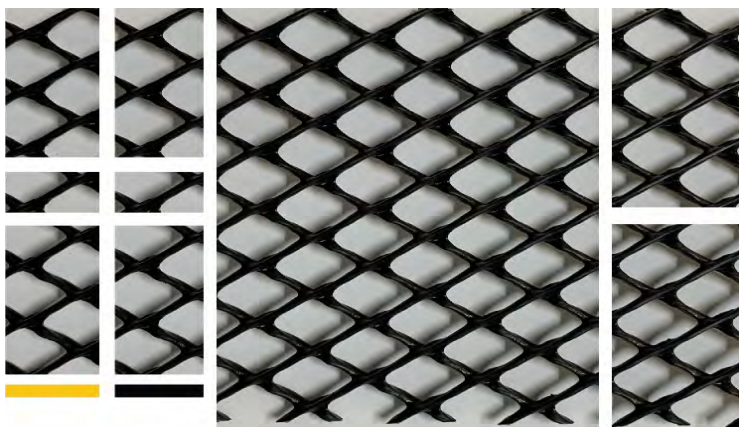
PROPERTY	TEST METHOD	UNIT	VALUE	QUALIFIER
Thickness	ASTM D 5199	mm	5.08	MAV(3)
Carbon Black	ASTM D 4218	%	2.0	MAV
Tensile Strength	ASTM D 7179	N/mm	7.87	MAV
Melt Flow	ASTM D 1238(2)	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm^3	0.94	MAV
Transmissivity(1)	ASTM D 4716	m^2/sec	2.0×10^{-3}	MAV

Notes:

(1) Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 479 kPa between steel plates after 15 minutes. Values may vary with individual labs.

(2) Condition 190/2.16

(3) Minimum average value



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TECHNICAL DATA SHEET
Geomembrane 30mil LLDPE

Property	Test Method	Frequency (A)	Unit Metric		Solmax 130-2000
Thickness (min. avg.)	ASTM D 5199	Every roll	mm		0.75
Thickness (min.)	ASTM D 5199	Every roll	mm		0.68
Resin Density	ASTM D 1505	1/Batch	g/cc		<0.926
Melt Index-190/2.16(max)	ASTM D1238	1/Batch	g/10min		1.0
Sheet Density (C)	ASTM D1505	Every 2 rolls	g/cc		<0.939
Carbon Black Content (D)	ASTM D 4218	Every 2 rolls	%		2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	Every 6 rolls	Category		Cat. 1 / Cat. 2
Oxidative Induction Time (min. avg)	ASTM D3895	1/Batch	min		100
Tensile Properties (min. avg)(B)	ASTM D 6693	Every 2 rolls			
Strength as Break			kN/m		20
Elongation at Break			%		750
2% Modulus (max.)	ASTM D 5323	PerFormulation	kN/m		315
Tear Resistance (min. avg.)	ASTM D 1004	Every 6 rolls	N		70
Puncture Resistance (min. avg.)	ASTM D 4833	Every 6 rolls	N		200
Dimensional Stability	ASTM D 1204	Every 6 rolls	%		+/- 2
Multi-Axial Tensile (min.)	ASTM D 5617	PerFormulation	%		90
Oven Aging-% retained after 90 days	ASTM D 5721	PerFormulation			
STD OIT (min. avg.)	ASTM D 3895		%		35
HP OIT (min. avg.)	ASTM D 5885		%		60
UV Resistance-% retained after 1600 hr	GRI-GM-11	PerFormulation			
HP-OIT (min. avg.)	ASTM D 5885		%		35

Note;

(A) Testing frequency based on standard roll dimensions and one batch is approximately 180,000 lbs (or one railcar).
(B) Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.
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(D) Correlation table is available for ASTM D1603 vs. ASTM D4218. Both methods give the same results.

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

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

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Design and Construction Plan

Design and Construction Plan

Above-Ground Storage Tanks (AST's) have a solid history of performance when designed and assembled correctly. The Design and Construction Plan and the Standard Operating Procedure (SOP) presented in the subsequent section demonstrate best practices to ensure the spirit and letter of NMAC 19.15.34 are followed. Because NMAC 19.15.34 is specifically tailored to in-ground produced water recycling facilities, several variances are requested to account for the design of ASTs, which utilize engineered vertical steel walls instead of sloped embankments and do not allow for installation of an anchor trench.

This volume provides the stamped engineered drawings, liner specifications, fencing plans, and avian deterrent plans for the containment that demonstrate the following design/construction specifications:

Site Preparation

Purpose: Must confine produced water, prevent releases, avert overtopping from wave action or rainfall, and avoid run-on of surface water.

Foundation & Slopes:

- The leak detection system will be placed at the low point of the AST as determined by the pad slope. See attached design sketch.
- Firm, smooth base free of rocks/debris to protect liner.
- Because AST's are designed to have vertical walls, *a variance is requested for the part of 19.15.34.12 A (2) which requires inside levee slopes to be ≥2H:1V and outside slopes to be ≥3H:1V. Additionally, a variance is requested for the part of 19.15.34.12 A (2) which* requires that *"The top of the levee shall be wide enough to install an anchor trench and provide adequate room for inspection and maintenance."*
- Geotextile under liner as needed 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.

Run-on Prevention:

- The engineered walls of the AST act as a berm to "prevent run-on of surface water" into the containment.

19.15.34.12 A

(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.

(7) [...] 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.
(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. 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.
(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.

(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 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.

Liners & Leak Detection

Liner Requirements:

- Minimum: **Primary (upper) liner, Secondary (lower) liner, and leak detection system**.

Liner Specs:

- Primary: **40-mil LLDPE** (as previously approved).
- Secondary: **30-mil LLDPE** (as previously approved).
- Liners have a hydraulic conductivity no greater than 1 x 10^{-9} cm/sec and meet or exceed EPA SW-846 Method 9090A compatibility.
- See Engineered Drawings Section for Specs.

Seams:

- Minimize seams; orient vertically (up/down slope).
- Factory weld preferred; field seams thermally welded.
- Overlap: 4–6 inches; no horizontal seams within 5 ft of slope toe.
- Qualified personnel required for welding/testing.

Leak Detection System:

- Between liners: **200-mil geonet**
- Include drainage, collection, and removal system at the low point based on pad slope for early detection.
- 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.

Discharge/Suction Protection:

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.

Topsoil Stockpiling

- Strip and stockpile topsoil for closure cover if the pad is a new construction.

(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.

(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. 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.

(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.

(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.

19.15.34.12 B: Stockpiling of topsoil
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.

Design and Construction Plan

Signage

- Upright sign: **≥12" × 24"**, letters **≥2" high**, posted on fence.
- Must include: **operator name, site location (quarter-quarter or unit letter, section, township, range), and emergency phone 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 AST containment structure is constructed of steel walls approximately 11 feet in height, which fully enclose the containment in a manner that deters terrestrial wildlife. As such, the steel structure satisfies the enclosure requirements of Rule 34. See the variance section below.

In the spirit and letter of rule 19.15.34.12 D (1), the operator may install and maintain a chain-link / game fence rather than a barbed wire fence. This will more effectively deter unauthorized humans, feral pigs, deer, etc. from accessing the containment than "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".

- Safety measures to deter wildlife/human access; maintain in good repair.
- Gates locked when unattended.

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.

Wildlife Protection

The AST containment structure is constructed of steel walls approximately 11 feet in height, which fully enclose the containment in a manner that deters terrestrial wildlife. As such, the steel structure satisfies the enclosure requirements of Rule 34. See the variance section below.

The Bird-X Mega Blaster Pro, configured with sound patterns appropriate for the Permian Basin environment, is the primary avian deterrent system. Containment areas will be routinely inspected for the presence of birds and personnel may discharge blank cartridges from a handgun, starter pistol, or shotgun to reinforce deterrence. Raptor decoys may also be placed on fencing or other suitable elevated locations.

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.

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Above Ground Storage Tank Set Up

Standard Operating Proceedure (SOP)

AST Set Up SOP

Above Ground Storage Tank - Standard Operating Procedure

1. Planning for an AST Project

Achieving the efficient deployment, installation and removal of an AST lies in our ability to effectively plan for each phase of the project. Engagement of the proper personnel from each company involved and discussing the essential planning categories as listed below will increase the opportunity to achieve an incident-free, desired result.

a. Essential Planning Steps:
b. Request for Quote
c. Pre-Order and Deployment Requirements
d. Ground Preparation
e. Pre-Assembly Requirements

a. Request for Quote

Discussing and obtaining the following details is essential in building accurate AST project pricing.

1. Total Fluid Storage (barrels. or gallons) and Free-board Requirements
2. Anticipated Install Date and Rental Duration
3. Location GPS Coordinates or Physical Address
4. Location Size, Adequacy or Restrictions
5. Type of Fluid Being Stored and Material Package Strategy (liner mil thickness, single or double lined)
6. Accessory(ies) Strategy (Fill Piping, Suction Piping/Drain, Bird Netting, Lid, Leak Detection)
7. On-Site Orientation(s), Specific Certification(s), and Training Required to Gain Clearance to Access Location
8. Initial Fill Strategy (source, availability of fluid, fill rate, turn-around time for trucks)
9. Site Access Restrictions

b. Pre-Order and Deployment Requirements

Once pricing has been submitted and accepted by the customer, a PO must be obtained from the customer prior to placing an order for the material package or accessories. Only thereafter should the project coordination be set into motion and scheduled.

Pre-Deployment Discussion:

AST Set Up SOP

A meeting with the customer should be held prior to the tank and/or crew deployment for installation or removal. The below should be used a guidance for the customer meeting prior to installation:

- AST Delivery and Installation Schedule
- Confirmation of Proper Ground Preparation
- Adequate Clearances Around the Tank for Crew and Equipment - 25' or greater around perimeter of tank
- Standard Equipment or Crane Installation Confirmation
- Strategy to pin the floor of the tank (fresh water, source type, fill rate, etc.)
- Customer roles/responsibilities/contact information including customer's project manager, key on site staff, and EHS staff.
- Review AST intended use and customer safety requirements.
- Review AST accessories required (fill lines, suction, egress, etc.)
- Site access and truck route requirements
- Crew start and stop time requirements or limitations.
- Forecast rental duration.
- Confirm AST size to be deployed.
- 2' minimum fluid requirement in AST always
- Conditions that could result in standby time charges or additional charges, and what prior customer approvals are required.
- Rental Start Date Strategy
- Rental End Date Strategy
- AST component storage on-site while tank is in operation.

c. Ground Preparation

Preparation of the soil and location is required to form a dependable base for the AST. This base is also imperative in achieving the proper operation of the AST once fluid is introduced - Proper seating of the liner on the floor of the tank; Adequate, ongoing suction of the stored fluid; Favorable draining/"bottoming-out" of the tank at the end of the project.

*Preparation of the soil and location is the sole responsibility of the customer. Ensuring proper slope and compaction prior to AST installation is the sole responsibility of the customer.

Location preparation requirements are as follows:

- Use laser level to grade pad to within one inch, up and down.

- Confirm that there is 25' of clearance around the parameter of the tank, based on the diameter of the specific AST being installed.
- Use center pin, tape measure and marking paint to mark the diameter of the tank on the pad as per measurement chart.
- Check area for sharp objects, rocks, or any other potential hazards to the liner.
- Speak with the consultant to determine where the suction will be located and mark out where the “Y” trench will be situated.
- The suction branch of the “Y” trench should be at least twelve inches (12”) deep with the depth tapering out to six at center and level at the two other points of the “Y” trench.
- Ensure the start of the suction trench is at least three feet from the edge of the tank and the ends of “Y” trench are 10 feet from the edge.

Soil preparation requirements are as follows:

- A minimum soil compaction of 95% compaction. Soil testing results are normally shared with the installation Supervisor or Field Operations Manager.

*Soil compaction testing to be conducted via Standard Proctor Test (American Society for Testing and Materials {ASTM} Standard D698) or Modified Proctor Test (ASTM Standard D1557).

CALL BEFORE YOU DIG - 811

*It is the responsibility of the excavating company to ensure 811 - Call Before You Dig has been notified and proper clearances obtained prior to digging sump.

Installation Crew:

The installation crew may have basic equipment on-site to double check that location is graded to within one inch, up and down, however does not have access to compaction testing equipment or methods. It is good practice for the installation crew to check location grade and confirm compaction testing results prior to installing the AST.

*Inadequate ground preparation should be documented and discussed with the customer and project halted until ground preparation is complete per SOP.

d. Pre-Assembly Requirements

Prior to starting the assembly process, use the steps below as guidance to achieve an incident free, efficient installation of the tank, while meeting customer and SOP requirements:

1. Conduct Job Safety Analysis

2. All 3rd party personnel, sub-contractors, customers, end user representatives, and tank operators (if available) are encouraged to participate in JSA and/or pre-job meetings.
3. Inspect location/soil conditions and review compaction test results with customer.
4. If applicable, installation crew to check grade using a laser level - document slope in inches around parameter of tank.
5. Confirm a 30' clear work area around the perimeter of the tank is possible to provide access for equipment and lay-down area for AST materials and installation equipment.
6. Check that the minimum distances to existing wells, power lines, etc. are met.
7. Establish final location for the suction tube and stairs.
8. Confirm trash bin is available to dispose of packaging, cut-off materials and installation garbage.
9. Confirm that fluid is available, per initial fill strategy, to seat the floor of the tank at the desired time.

Standard Equipment:

All equipment is subject to daily inspection. (Check condition, rigging, oil, water, fuel and cleanliness.) The below represents a list of the recommended, standard equipment required for assembly of the tank.

- Two (2) - 40' extending straight boom man-lifts.
- One (1) - 12,000 lb. capacity extending boom, rough terrain powered telehandler.
- One (1) - 310 backhoe or comparable.

Hand and Power Tools:

- Two extension ladders
- One Push and one house broom
- One Paint wand
- One 24" pipe wrench
- One 36" pipe wrench
- Two 4 lb. sledgehammers
- 100’ and 300’ tape measure
- Set of wrenches ¼” – 1 ½”
- Set of deep impact sockets ¼” – 1 ½” (3/4" drive)
- Two 36” pry bars
- 8’ Dig/Frost Bar
- Two round nose shovels
- Four safety harnesses with retractable lanyards
- 300’ of 3/8” rope
- Self-retracting utility knife (one per Installer)
- One 3/4" drive impact
- Patch tape, Rubbing alcohol, Patch Roller
- Wire brush
- Crescent and channel lock wrench set
- Little Giant 2,000 lb. wagon

Rigging:

- Two tag lines
- Four 4" x 4" x 2' blocks
- Four-way chain sling
- Four 3/8" x 2' cable slings
- Four - 10' continuous loop slings (yellow)
- 2 - 1-1/4" shackles
- 4 - 3/4" shackles
- 1 - 10,000 lb. swivel
- 1 - 4" x 15' schedule 80 pipe with eyelets

Consumables:

- Three cans of orange marking paint
- PB Blaster or Lubricant
- Gorilla tape
- Zip ties

2. AST Installation Process

Laying Out the Tank:

1. Establish the center of the tank with a sandbag. This will be used to determine the tank’s perimeter using model/size specific radius/diameter, using paint wand and marking paint. In addition, the center of the tank will be identifiable after the geo ground pad and liner have been rolled out as well.
2. Measure and paint perimeter circle for tank panels and measure where geo and liner(s) will begin and end including width.
3. Measure and paint where the sump or bottom drain is to be set.

AST Set Up SOP

4. Once layout is complete, confirm minimum distances are met for on-site hazards - existing wells, power lines, production equipment, etc.

Sump or Bottom Drain Excavation:

1. 811 must be called, with confirmation that all utilities have responded to the request before excavation commences.
2. Sump or bottom drain should be excavated on the low side of location, using a backhoe or excavator.
3. If multiple suctions are required, a minimum of 8' of separation should be placed in-between excavations.
4. Barricade any excavation with cones and tape if left unattended overnight.
5. Excavation will vary depending on what type of suction is to be installed (candy cane, bottom drain, etc.)

Geo Ground Pad and Liner Installation:

1. All sharp objects are to be removed from inside the tank layout (rocks, sticks, debris, roots, etc.)
2. Using a 12,000# telehandler, approved rigging and liner bar, unroll the geo ground pad, placing the edge of the roll on the designated geo ground pad line marked during the layout stage. Unroll from one end of the tank to the other using a spotter, to unroll over the center of the tank.
3. Per prefabricated design, unfold the geo ground pad in both directions and pull until centered on the tank floor.
4. Steps #2 and #3 should be repeated as to roll-out and unfold the primary liner, using the designated liner marked during the layout stage.
    a. Follow double lined AST SOP for installation of multiple liners.
5. Perform a visual inspection of the liner. If defects are found, document, take photos and repair. Take post repair photos.
6. If a bird net is required set the bird net, stands, and cables on liner. Make sure stands have protective covering on base to ensure no damage to liner is done.
7. Starting at the sump and moving counterclockwise, fold the liner inward around perimeter. The liner edge should be pulled inside the painted tank wall no less than 2'.
8. Next, holding onto the inner most edge of the liner, fold the liner back over itself, toward the outside of the tank and around the entire perimeter (creating a pocket for fluid to be trapped, eliminating escape from the floor of the tank)

AST Set Up SOP

*It is critical that customer and regulatory requirements are met when storing flowback, production, waste or treated fluid

*Geo and/or liner should not be installed in winds of 15 mph or more

Sand or Geotextile Transition: Enough sand or geotextile should be placed in the ground to wall transition, around the inside perimeter of the AST to achieve a 1:1 transitional slope.

Standing Panels (Building Tank Walls):

1. Using a 12,000# telehandler and approved rigging, begin standing panels per AST engineering requirement or forecast wind direction (if applicable)
2. Once the first panel is stood, with cribbing blocks installed under each end, use a backhoe or excavator to hold and secure the panel, allowing the telehandler to safely disconnect from the panel without losing stability or securement. The equipment used should remain connected until enough panels are installed to safely stand on their own (varies per tank size and panel engineering)
3. Establish which direction the walls will be stood up and stand one panel at a time until the last seam is joined together, ensuring a 1:1 transitional slope of sand or geotextile is installed at each panel's interior base.

Note:

- Spotters should be used while connecting panel seams (ladder use, falling objects, moving equipment, etc.)
- Two taglines are to be used when transporting each panel from their stacked state to upright position/installation.
- Rigging should be inspected with each lift to ensure the safe handling of the suspended load.
- Pre-cut strips of 10 oz. geotextile should be installed on the inside of each seam to protect the liner from sharp edges.

Liner Placement and Clamp Installation:

1. Unfold the liner in sections, toward the base of each panel, ensuring that the transitional material is installed properly.
2. After liner is pulled toward the base of the panel, a two-man crew in a 40' straight boom on the outside of the tank works with the team members inside the tank to begin pulling the liner edge up and over the top of each panel. The man lift crew lifts the liner edge using ropes attached by the inside crew. The man boom crew lifts a small liner section to the top of the panel and folds it over the top of the panel, while

the crew inside the tank ensures that there is enough slack in the liner inside the panel wall (typically 1' of slack).

3. Once a section of liner is positioned properly (with liner slack inside the tank) and over the top of each panel wall, the man lift crew secures the top of the liner with liner clamps.
    a. NOTE: The number of clamps per panel is dependent on the panel length and specific engineering of the tank
4. Both inside and man lift crews continue this process, working around the tank, one or two panels at a time, until the entire liner is in place.
    a. NOTE: The crew must allow sufficient slack in the liner at the wall to allow for liner movement during filling and draining.

Stairs, Fill Tubes, and Suction/Bottom Drain:

1. Install safety stair system, fill tubes, and suction or complete bottom drain. Ensure that stair system and tubes are appropriately secured to the tank walls according to customer specifications.
2. Upon completion of the stair system installation, the stairs should be secured as per the operating company requirements.

Bird Net Installation (if no alternative bird deterrent approved)

1. Erect bird net stand(s) and run security cables through D-rings of each stand and secure cables to panel wall D-rings. Be sure cables are straight across the diameter of the tank.
2. Spread out bird net on liner floor. A 2-man crew in man boom will pull a section with tag line up to clamps to secure edge of net on top of panels. Continue pulling and securing bird net going around the tank. Continue to pull and secure until desired tautness is obtained.

Final Steps and Initial Fill:

1. Trim liner around perimeter of tank, allowing for 2' - 5' of liner to hang over edge of tank. Longer trim strategy includes the installation of a perimeter cable.
2. Inspect all connections and equipment.
3. Pump a minimum of 18" of FRESH or approved water onto the floor of the tank and monitor for leaks.
4. As soon as reasonably possible, complete the initial fill on the tank, monitoring for leaks.

AST Set Up SOP

Ongoing Inspection Guidance:

1. When the fluid levels are lowered, it is good practice to have the operating company perform an inspection on the exposed liner. Take photos if necessary and send to the installation crew.
2. As the tank is operated day-to-day, visibly inspect each panel.
3. Inspect the accessories, piping, valves and liner clamps installed.
4. Water must NEVER go below 24 inches at the LOWEST level in the tank. 2' water marks can be painted on the inside of the tank as a reminder to the operating company.
5. Do not leave liner exposed inside tank for long periods of time. The wind will cause the liner to rub on itself. This friction will create potential pinholes.
6. All water present on the ground around the tank should be inspected to ensure it is not coming from the tank. Water spots can be traced to identify growth, if visible fluid is not running from under the tank wall or down a panel.

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Operation and Maintenance Plan

Operation and Maintenance Plan

Summary:

This plan provides additional protocols to bring Above-Ground Storage Tanks (AST's) into conformance with NMOCD Rules.

The operator will use the AST containment to contain liquids and incidental solids (blow sand and minimal precipitates from the produced water). The operator will maintain the integrity of the liner system to prevent contamination of fresh water and protect public health and the environment.

The purpose of the AST containment is to facilitate treatment, recycling, reuse, and reclamation of produced water sourced from oil and gas wells. The containment will not be used to dispose 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.

Operation Plan

A. Raw produced water from oil and gas wells will be received into the AST as part of the recycling facility, as indicated on the C-147 form.
B. Unless specified otherwise, after treatment through the recycling facility, the treated water will then be transferred to the recycling containment.
C. Recycled water is then removed from the recycling containment for treated water for use in oil and gas operations including drilling below the freshwater zones (beneath surface casing), hydraulic fracturing of the reservoir, and other oil and gas related uses as approved by the OCD.

19.15.34.13 B (2)
(See Operational Standards below)

D. When the maximum capacity of the AST is reached, no additional water will be transferred into the AST until compensatory space is first created via fluid removal, maintaining at least a 3-foot freeboard.

19.15-34-12 E
(See Operational Standards below)

E. Accurate records will be maintained monthly and weekly in accordance with the OCD rules. The sources and disposition of all recycled water as well as weekly leak detection systems shall be made available for review by the division upon request.

19.15.34.12 E
19.15.34.9 E
19.15.34.9 F
(See Monitoring, Inspection and Reporting Plan below)

Operation and Maintenance Plan

F. Reports will be sent monthly to the OCD using the C-148 form to record the total volumes of produced and fresh water (recorded separately) received and the total volume of water leaving the facility.
G. The containment will be considered to have ceased operations if less than 20% of the total fluid capacity is used every six months. The operator will report the cessation of operations to the division, and either request an extension (no longer than six months) or prepare for closure.

19.15.34.13 C
A recycling containment shall be deemed to have ceased operations if less than twenty percent 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 division. The division may grant an extension to this determination of cessation of operations not to exceed six months.

Operational Standards:

The containment will adhere to the following mandates:

1. **Remove any visible oil layer** from the containment surface.
2. **Maintain minimum three feet of freeboard**.
3. **Use headers/diverters or other hardware** to prevent liner damage during fluid injection or withdrawal.
4. **If the primary liner is damaged above fluid level**, **repair or replace within 48** hours or request an extension.
5. **If damage to the primary liner below fluid level** is confirmed through the leak detection system (see **"**Leak Detection, Fluid Removal, and Leak Reporting Plan" section below): begin and maintain fluid removal from the leak detection / pump-back system, Notify the district office within 48 hours, identify the location of the leak, and repair or if needed, replace the containment liner.
6. **Prevent surface water run-on** into containment.
7. **Keep an oil absorbent boom** or similar device on site for emergency containment.
8. **Report fluid releases** in a manner consistent with NMAC 19.15.29.
9. **Do not discharge or store hazardous waste** (as defined by 40 CFR 261 and NMAC 19.15.2.7.H.3) in the containment.

19.15.34.13 B
(1) The operator shall remove any visible layer of oil from the surface of the recycling containment.
(2) The operator shall maintain at least three feet of freeboard at each containment.
(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.
(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.
(6) The containment shall be operated to prevent the collection of surface water run-on.
(7) The operator shall install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release.

19.15.34.8 A
(6) All releases from the recycling and re-use of produced water within the jurisdiction of the division shall be handled in accordance with 19.15.29 NMAC. If the release is detrimental to ground or surface waters, the responsible party must send a copy of the form C-141 to the New Mexico environment department, as applicable, in accordance with 19.15.29 NMAC.

19.15.34.10 B
[...] may not include any hazardous waste.

10. **Ensure all gates are closed and locked** when personnel are not onsite.
11. **Maintain the fences** in good repair.

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.

Monitoring, Inspection and Reporting Plan:

Operators must inspect recycling containments and leak detection systems **weekly** while fluids are present and **maintain a log** available for division review.

Weekly inspections include:

- Recording the **fluid height**
- Recording evidence of **visible oil**
- Visually **inspecting** the containment's **exposed liners**
- **Identify and report** to the AST contractor any **changes in site conditions** such as uneven tank panel settlement, soil settlement, liner damage, insufficient liner slack, or leaks.
- **Inspecting berms** and other diversion means (if present) around the containment **for erosion and collection of surface water run-on**
- **Inspecting the leak detection system** integrity and **monitor for leakage**

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.

Monthly inspections include:

- **Inspect** the containment **for dead migratory birds or other wildlife** and report any findings to the appropriate wildlife agency and to the division district office to facilitate further assessment and implementation of measures to prevent incidents from reoccurring.
- **Record and report** to the division the **total volumes of produced and fresh water (recorded separately) received and the total volume of water leaving the facility** using the C-148 form.
- **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.

Leak Detection, Fluid Removal, and Leak Reporting Plan

The leak detection system includes a monitoring riser pipe connected to the collection sump. All leak-detection piping and appurtenances shall be chemically compatible with produced-water constituents and designed to withstand structural loads, equipment operations, and thermal expansion/contraction without loss of integrity. Any fluid released from the primary liner flows to the leak detection system, where fluid levels can be monitored.

Monitoring Water Levels Procedure

- Use a portable electronic water level meter to check for fluid in the monitoring riser pipe.
- If the containment base is sloped, obtaining accurate readings may require additional steps:
  - Push the probe to the bottom of the port using an electrician's wire snake.
  - Attach a small bailer or similar device to confirm water presence.
- The operator may use any effective method to obtain accurate readings.

Actions When Seepage Is Suspected

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 daily for one week** to confirm discovery of seepage.
2. **Simultaneously collect a water sample** from the monitoring riser pipe to verify seepage using electrical conductivity and chloride measurements.
3. **Notify NM OCD** of a confirmed positive detection within 48 hours (initial notification).
4. **Install a pump** in the monitoring riser pipe sump to remove fluids from the leak detection system until the liner is repaired or replaced.

19.15.34.13 A

(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.

5. **Remove all fluid above the damage or leak.**
6. **Dispatch a liner professional** to inspect the suspected leakage area during a “low water” monitoring event.
7. **Provide NM OCD a second report** describing inspection and/or repair within 20 days of the initial notification.

Repair and Inspection

- If the point of release is obvious during inspection, the liner professional will repair the loss of integrity.
- If the point of release cannot be determined, the liner professional will develop a plan to identify the leak location.
- Submit the inspection plan and schedule to NM OCD with the second report.
- Implement the plan upon OCD approval.

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Closure Plan

Closure and Site Reclamation Requirements for Recycling AST Facilities

Overview and Timeline

- After ceasing operations:
  - **Remove all fluids within 60 days**.
  - **Close the containment within 6 months** of ceasing operations.
  - Extensions:
    - Up to **2 months** for fluid removal.
    - Up to **6 months** for closure.
- Any alternative use of the containment must be approved by the division.
- Closure design must conform to site needs; variances require division approval.

Excavation and Removal Closure Plan

1. **Fluid Removal**
   - Remove all fluids from the containment.
   - Dispose of liquids at a division-approved facility or reuse if permitted.
2. **Containment Cleanout**
   - Remove all solids, contents, and synthetic liners.
   - Transfer these materials to a division-approved facility.
3. **AST Disassembly**
   - Disassemble the AST per the manufacturer's recommendations.
4. **Soil Testing**
   - Collect a **minimum five-point composite sample** from soils beneath the containment, including stained or wet areas.
   - Analyze sample for contaminants listed in **Table I of 19.15.34.14**.
5. **Laboratory Results**
   - If **contaminant levels exceed Table I**:
     - Additional delineation may be required.
     - Operator must obtain division approval before proceeding.
   - If **contaminant levels are within limits**:

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 division district office may grant an extension for the removal of all fluids not to exceed two months. The division district office may grant an extension to close the containment not to exceed six months. If the operator wants to use the containment for a purpose other than recycling then the operator must have that use approved or permitted by the division in accordance with the appropriate rules.

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.

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.

(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.

(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.

Closure Plan

- Backfill with clean, uncontaminated earthen material.
- OR submit a variance request for an alternative closure process.

Closure Documentation

- Within **60 days of closure completion**, submit **Form C-147** with:
  - Sampling results.
  - Details of backfilling, capping, or covering.
  - Certification that all information is correct and closure complies with division rules.

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.

Reclamation and Re-vegetation

- Restore the site to:
  - A **safe and stable condition** blending with surrounding undisturbed area.
  - Or comply with federal, state trust, or tribal land requirements if they provide equal or better protection.
- Specific actions:
  - Replace topsoil and subsoil to original relative positions.
  - Contour for erosion control, long-term stability, and preservation of surface water flow patterns.
  - Reseed during the first favorable growing season after closure.
- Reclamation is complete when:
  - All ground-disturbing activities are finished.
  - Vegetative cover achieves:
    - **±50% of pre-disturbance life-form ratio**.
    - **≥70% total plant cover**, excluding noxious weeds.

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

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 of pre-disturbance levels and a total percent plant cover of at least seventy percent of pre-disturbance levels, excluding noxious weeds.

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.

Final Notification

- Notify the division when reclamation and re-vegetation are complete.

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

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Variances for Recycling Storage Containments (In-Ground and AST)

Alternative Testing Methods

Fencing

Alternative Testing Methods

Variance Request for OCD Approval of Alternative Test Methods to Analyze Concentrations of TPH and Chloride

The prescriptive mandates of the Rule that are the subject of this variance request are the following subsections: NMAC 19.15.17.13, 19.15.34.14, and 19.15.29. 12 D

NMAC 19.15.17.13 D

CLOSURE AND SITE RECLAMATION REQUIREMENTS:

5. The operator shall collect, at a minimum, a five point composite of the contents of the temporary pit or drying pad/tank associated with a closed-loop system to demonstrate that, after the waste is solidified or stabilized with soil or other non-waste material at a ratio of no more than 3:1 soil or other non-waste material to waste, the concentration of any contaminant in the stabilized waste is not higher than the parameters listed in Table II of 19.15.17.13 NMAC.

The referenced Table II, which is reproduced in part below, notes the Method with asterisk signifying: "*Or other test methods approved by the division".

Table II
Closure Criteria for Burial Trenches and Waste Left in Place in Temporary Pits

Depth below bottom of pit to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
25-50 feet	Chloride	EPA Method 300.0	20,000 mg/kg
	TPH	EPA SW-846 Method 418.1	100 mg/kg

NMAC 19.15.34.14

CLOSURE AND SITE RECLAMATION REQUIREMENTS FOR RECYCLING CONTAINMENTS:

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.
   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.

The referenced Table I, which is reproduced in part below, notes the Method with asterisk signifying: "*Or other test methods approved by the division".

Alternative Testing Methods

Table I Closure Criteria for Recycling Containments			
Depth below bottom of containment to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
51 feet - 100 feet	Chloride	EPA 300.0	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	2,500 mg/kg

19.15.29.12 D.

CLOSURE REQUIREMENTS:

D. The responsible party must take the following action for any major or minor release containing liquids.
   1) The responsible party must test the remediated areas for contamination with representative five-point composite samples from the walls and base, and individual grab samples from any wet or discolored areas. The samples must be analyzed for the constituents listed in Table I of 19.15.29.12 NMAC or constituents from other applicable remediation standards.

The referenced Table I, which is reproduced in part below, notes the Method with asterisk signifying: "*Or other test methods approved by the division".

Table I Closure Criteria for Soils Impacted by a Release			
Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
≤ 50 feet	Chloride***	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

The three tables above illustrate that different laboratory methods for determining the same constituent concentration are acceptable to the OCD when collecting a five-point composite sample.

Alternative Testing Methods

As proven by repeated sampling of drilling pits in the Permian Basin, significant problems with non-petroleum drilling additives (e.g. starch) interfere with the laboratory method 4.18.1 to test for TPH. This has been observed and reported to the OCD numerous times.

We request approval for the OCD approved Method 8015 (GRO + DRO + MRO) to be used in place of method 418.1 to test for TPH.

We request approval for the use of the OCD approved EPA 300.0 or OCD approved SM4500 for the analysis of chloride.

Demonstration that OCD Approval Will Provide Equal or Better Protection of Fresh Water, Public Health and the Environment

The intent of TPH analysis under the Pit Rule is to measure total petroleum hydrocarbons, not non-petroleum, non-polar compounds such as starches or cellulose, which can interfere with EPA Method 418.1. While Method 418.1 may provide useful information for transportation-related crude oil or condensate spills, the presence of non-polar organic additives commonly used in drilling fluids—particularly for horizontal wells—renders this method unreliable for determining compliance with the Rule. Use of EPA Method 8015 (TPH-GRO, DRO, and MRO) provides a more accurate measurement of petroleum hydrocarbons and better reflects the Commission's regulatory intent.

In prior hearings before the Oil Conservation Commission, technical arguments were presented supporting the use of SM 4500 in lieu of EPA Method 300.0 for chloride analysis under Rule 29. The Division and the Commission determined that SM 4500 provides equal or better protection of fresh water, public health, and the environment. This precedent supports the acceptance of alternative analytical methods when equivalent or superior environmental protection is demonstrated.

Fencing

Variance Request for OCD Approval of Alternative Fencing

The prescriptive mandates of the Rule that are the subject of this variance request are presented below

NMAC 19.15.17.13 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.

The AST will employ netting or sonic bird hazing (The Bird-X Mega Blaster Pro, configured with sound patterns appropriate for the Permian Basin environment). The OCD and BLM have approved of both methods, per Rule 34 and BLM Rules respectively, and have found that they protect avian species such as waterfowl and bats effectively.

The AST containment structure is constructed of vertical steel walls approximately 11 feet in height, which fully enclose the containment in a manner that deters terrestrial wildlife. As such, the steel structure satisfies the enclosure requirements of Rule 34. In combination with netting, the containment system meets the Rule's requirements for deterring and protecting both avian and terrestrial wildlife.

Because AST containments include a steel stairway providing access between ground surface and the open top, the operator proposes the following measures to deter unauthorized human access:

1. Installation of a gate or chain across the stairway;
2. Placement of appropriate signage on the gate or chain to deter unauthorized access; and
3. Provision of a locking mechanism to secure the gate when authorized personnel are not onsite.

Demonstration That the Variance Will Provide Equal or Better Protection of Fresh Water, Public Health and the Environment

The proposed protocol provides equal or greater protection of Public Health as a 4-strand barbed wire fence.

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Liner Equivalency Demonstrations and Variance Request

40-mil Non-Reinforced LLDPE Liner as Alternate Primary and 30-mil Non Reinforced LLDPE as Secondary Liner for Above-Ground Storage Tanks

Liner Equivalency Demonstration

Variance Request for 40-mil Non-Reinforced LLDPE Geomembrane as an alternative Primary and 30-mil Non-Reinforced LLDPE as an alternative Secondary Liner for Above-Ground Storage Tanks (AST's)

The prescriptive mandates of the Rule that are the subject of this variance request are the following subsections:

NMAC 19.15.34.12 A.

DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT:

5. 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 applicant proposes one layer of 40-mil (or thicker) LLDPE non-reinforced as a primary liner and a secondary liner consisting of one layer of 30-mil (or thicker) LLDPE non-reinforced material.

These proposed liners have a hydraulic conductivity not exceeding 1×10^{-9} cm/sec and will meet or exceed the performance requirements of EPA SW-846 Method 9090A.

NMAC 19.15.34 was written to regulate in-ground produced water recycling facilities and did not contemplate Aboveground Steel Storage Tanks (ASTs) that employ liner systems for primary and secondary containment. Proposed AST Containments utilize engineered vertical steel walls rather than sloped embankments, precluding the use of the prescribed materials.

The proposed materials are more readily available and provide superior flexibility and conformity characteristics compared to the prescriptive liner types identified in the Rule. Due to the presence of vertical steel walls, 60-mil HDPE, 45-mil or 30-mil LLDPE string-reinforced liners, and 30-mil PVC liners lack sufficient flexibility for use within these modular aboveground containments.

The following technical document demonstrates that the proposed liner system, including the integrated leak detection system, provides equal or greater protection of fresh water, public health, and the environment than the materials prescribed in the Rule. Attachments include a technical comparison of the proposed liner material relative to the requirements of NMAC 19.15.34. Material Specifications can be found in the Drawings Section.

R.K. FROBEL & ASSOCIATES
Consulting Engineers

Technical Memorandum: 40-mil LLDPE as Alternative Primary with 30-mil LLDPE as Alternative Secondary Liner System for Modular Steel AST Recycling Containment

NMAC 19.15.34.12 A (4)

In consideration of the liner application for modular AST impoundments, size and depth of the AST, design details for modular tanks as well as estimated length of at least five years of service time, it is my professional opinion that a 40 mil LLDPE (non-reinforced) and a 30 mil LLDPE (non-reinforced) geomembrane system will provide the requisite barrier against produced water loss as an alternative primary and secondary liner system. *The two proposed liners, 40 mil LLDPE as Primary liner and 30 mil LLDPE Secondary liner, will function equal to or better than 45 mil String Reinforced LLDPE, 30 mil PVC, or 60 mil HDPE liners as a primary liner and 30 mil LLDPE string reinforced as a secondary liner system. Additionally, this two-layer system with integrated leak detection system, will provide requisite protection for the environment that is equal to or better than the above primary and secondary liner systems referenced in OCD rule 34.* The following are discussion points that will exhibit the attributes of a 40 mil/30 mil LLDPE lining system:

The nature and formulation of LLDPE resin is very similar to HDPE. The major difference is that LLDPE is lower density, lower crystallinity (more flexible and less chemical resistant). However, LLDPE will resist aging and degradation and remain intact for many years in exposed conditions. The LLDPE resin is virtually the same for non-reinforced 30 or 40 mil LLDPE and string reinforced 30 or 45 mil LLDPE geomembranes and both will provide requisite containment and be equally protective for this application, enduring UV and chemical degradation in the produced water environment.

Flexibility Requirements. Non-reinforced LLDPE geomembranes are less stiff and far more flexible than string reinforced geomembranes as well as 60 mil HDPE and in this regard are preferred for installations in vertical wall tanks such as this proposed installation. LLDPE provides a very flexible sheet that enables it to be fabricated into large panels, folded for shipping and installed on vertical walls transitioned to flat bottom. Non-reinforced LLDPE sheet will conform better than a string reinforced LLDPE to the tank dimensions under hydrostatic loading and will exhibit less wrinkling and creasing during and after installation.

Thermal Fusion Seaming Requirements. Thermal seaming and QC seam test requirements for geomembranes are product specific and usually prescribed by the sheet manufacturer. Both dual wedge and single wedge thermal fusion welding is commonly used on LLDPE and QC testing by air channel (ASTM D 5820) or High Pressure Air Lance (ASTM D 4437) is fully acceptable and recognized as industry standards. In this regard, either non-reinforced LLDPE or string-reinforced LLDPE will be acceptable as far as QC and thermal fusion seaming methods are concerned.

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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 between the primary and secondary LLDPE geomembranes at the base of the AST in this application provides immediate drainage to a low point or outside the Modular AST Impoundment and thus no hydrostatic head or driving gradient is available to push leakage water through a hole in the Secondary LLDPE liner .

Leakage through any Primary geomembrane is driven by size of hole and depth and will be detected by the increase of water in the drainage system and the volume being pumped out of the secondary containment. In this regard and for this variance, the Primary consists of 40 mil LLDPE geomembrane which will perform equal to or better than a single layer of string reinforced LLDPE for potential leakage. Thus, if a leak occurs through the top layer, it will be effectively contained by the second layer of 30 mil LLDPE geomembrane. If required, location of holes in the Primary can be found by Electrical Leak Location Survey (ELLS) using a towed electrode (ASTM D 7007). Holes found can then be repaired and thus water seepage into the leakage collection and drainage system will be kept to a minimum. Dependent on OCR requirements for Action Leakage Rate (ALR), the leakage volumes may only be monitored. For example, a typical ALR is < 20 gpad whereas a rapid and large leak (RLL) may be > 100 gpad.
Most states specify maximum ALR values for waste and process water impoundments usually in the range of 100 to 500 gpad. However, New Mexico does not specify an ALR for waste or process water impoundments (GRI Paper No. 15).

LLDPE (and string reinforced LLDPE) can be prefabricated into large panels and thus both types offer the following for Containment:

- Prefabrication in factory-controlled conditions into very large panels (up to 30,000 sf) results in ease of installation, less thermal fusion field seams and less on site QC and CQA. (It should be noted that HDPE cannot be prefabricated into panels and requires considerably more on-site welding and QC).

- Large prefabricated panels will provide better control of thermal fusion welding in a factory environment that will improve the liner system integrity for the long term. Ease of installation of large prefabricated custom size panels results in a greater reduction of installation time and associated installation and QC costs

- The Non-reinforced LLDPE geomembrane provides superior lay flat characteristics and conformability which allows for more intimate contact with the underlying soil, geonet, or geotextile and tank walls as well as overlying materials thus providing better flow characteristics for drainage of water. String reinforced LLDPE exhibits more wrinkling and when overlaid or in contact with a geonet drain, wrinkles tend to form pockets and dams affecting drainage of any leakage water to the exterior of the Modular AST Impoundment.

- Both types of LLDPE geomembrane are easily repaired using the same thermal fusion bonding method without the need for special surface grinding preparation for extrusion welding as is typically used in repair of HDPE geomembranes. However, string reinforced LLDPE requires that all cut edges with exposed scrim must be encapsulated with extrusion bead. No encapsulation is required on non-reinforced LLDPE.

In summary, it is my professional opinion that the liner system of 40 mil non-reinforced LLDPE geomembrane as Primary liner and 30 mil non reinforced LLDPE Secondary liner, with integrated leak detection system, will provide protection that is equal to or better than 45 mil string reinforced LLDPE, 30 mil PVC, 60 mil HDPE (primary liner) and 35 mil LLDPEr (secondary liner) and meets requirements as defined by the rule as an alternative liner system (resistance to UV and chemical exposure and required hydraulic conductivity). Additionally, this liner system will provide a superior installation in the AST environment and function better than liners referenced in the OCD rule and will provide the requisite protection of fresh water, public health and the environment for at least 5 years in the produced water recycling environment.

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,

RK Frobel

Ronald K. Frobel, MSCE, PE

References:

NMAC 19.15.34.12 DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT

Geosynthetic Research Institute (GRI) Published Standards and Papers 2018

ASTM Standards 2018

Attachments:

R. K. Frobel C.V.

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Slope and Anchor Variance Request for Above Ground Steel Tank Modular Recycling Storage Containments (AST's)

Slope and Anchor Demonstration

Variance Request for Slope and Anchor for Modular Steel AST Containments

The prescriptive mandates of the Rule that are the subject of this variance request are the following subsections:

NMAC 19.15.34.12.

DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT:

A. An operator shall design and construct a recycling containment in accordance with the following specifications.
   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. 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.
   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 edges of all liners shall be anchored in the bottom of a compacted earthfilled trench. The anchor trench shall be at least 18 inches deep.

The applicant requests a variance to prescribed slope and anchor in the setting of above ground modular steel containments.

Because NMAC 19.15.34 is specifically tailored to in-ground produced water recycling pits, variances are required to account for the professionally designed and engineered steel tank ring of ASTs, which utilize vertical steel walls instead of sloped embankments.

As such, there is no slope to consider. Additionally, there is no anchor trench as envisioned by the Rule. Instead, liners are anchored to the top of the steel wall with clips.

The following technical memorandum demonstrates that the setup of an AST with vertical walls and liners anchored at the top provide equal or better protection of fresh water, public health and the environment as sloped earthen berms with an anchor trench.

R.K. FROBEL & ASSOCIATES
Consulting Engineers

Technical Memorandum: Slope and Anchor Trench Variance for Above Ground Steel Modular Containments

NMAC 19.15.34.12 A (2), (3)

Side Slope

The design of soil side slope (inclination) is a geotechnical engineering design consideration. Liquid impoundments such as fresh water or process water containments are usually built within an excavation or with raised earthen embankments. For a liquid impoundment with an exposed liner system, the slope soils and construction dictate slope inclination and very detailed slope stability analysis may be required to determine if slope failure within the embankment will occur once loaded with impounded water. Slope failure may also occur during construction or when the impoundment is empty. A maximum slope is usually specified and is dependent on soil type and cohesive strength, saturated or unsaturated conditions, etc. Detailed analysis for slope stability can be found in "Designing with Geosynthetics" by R.M Koerner as well as many geotechnical books.

A modular impoundment, on the other hand, consists of a professionally designed steel tank ring with vertical walls. *There is no slope to consider as the segmental steel sections are set vertical.* Design of steel tanks, in regard to hydrostatic loading, wind loading, seismic loads, etc. are thoroughly referenced with detailed procedures in the design code - American Petroleum Institute (API) 650-98 "Welded Steel Tanks for Oil Storage". *There are no requirements for maximum slope inclination other than perhaps 90 degrees or vertical wall.*

Anchor Trench

All earthen impoundments with a geomembrane lining system require some form of top of slope anchor, the most common of which is an excavated and backfilled anchor trench usually set back at least 3 ft from the top of slope. Again, there are detailed procedures for anchor trench design in "Designing with Geosynthetics" by R.M Koerner.

A Modular Impoundment requires mechanical anchoring of the geomembrane at the top of the vertical steel wall using standard liner clips that prevent the geomembrane or geomembrane layers from slipping down the side wall. These are detailed in the Tank Installation Manual. *There are no requirements for an "anchor trench" as this is not an in-ground impoundment.*

In summary, based on the design and specifications of a modular steel impoundment, there is no requirement for a maximum interior slope angle of 2H:1V due to the fact that this impoundment is a steel tank with vertical walls. Additionally, there is no requirement for an anchor trench as the geomembrane is attached to the top of the Modular Impoundment vertical walls with large steel clips. This provides the requisite protection of fresh water, public health and the environment for many years.

32156 Castle Court / Suite 211 / Evergreen, CO 80439
Ph 303-679-0285 Fx 303-679-8955 geosynthetics@msn.com

R.K. FROBEL & ASSOCIATES
Consulting Engineers

If you have any questions on the above technical memorandum or require further information, give me a call at 303-679-0285 or email geosynthetics@msn.com

Sincerely Yours,

R K Frobel

Ronald K. Frobel, MSCE, PE

References:

NMAC 19.15.34.12 DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT

American Petroleum Institute (API) 650-98 "Welded Steel Tanks for Oil Storage"

Koerner, R.M., 2005 "Designing With Geosynthetics" Prentice Hall Publishers

Attachments:

R. K. Frobel C.V.

| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Applicability of Variances for Modular AST Containments in the Permian Basin of New Mexico

R.K. FROBEL & ASSOCIATES
Consulting Engineers

Technical Memorandum: Applicability of Variances for Modular AST Containments in the Permian Basin of New Mexico
NMAC 19.15.34.12 A (2)

I have reviewed the most recent historical variances for AST Containments in the document titled "Variances for C-147 Registration Packages Permian Basin of New Mexico" (January 2020) and examined the applicable design drawings and permits for the following modular AST containments located in the Permian Basin of New Mexico.

- C-147 Registration Package for Myox Above Ground Storage Tank Section 32, T25S, R28E, Eddy County (January 20, 2020)
- C-147 Registration Package for Fez Recycling Containment and Recycling Facility Area (100+ acres) Section 8, T25-S, R35-E, Lea County, Volume 2 – Above-Ground Storage Tank Containments
- Hackberry 16 Recycling Containments and Recycling Facility Section 16, T19S, R31E, Eddy County

Locations of the modular containments range from west of the Pecos River to slightly west of Jal, NM. All locations exhibit different surface and subsurface geology, different topography and are of various sizes and volumes. *However, in regard to structural integrity of the base soils that support the AST and in particular the geomembrane containment system, the specification requirements are the same.* The foundation soils must be roller compacted smooth and free of loose aggregate over ½ inch. Compaction characteristics must meet or exceed 95% of Standard Proctor Density in accordance with ASTM D 698. This specification requirement is specific and causes the general or earthworks contractor to meet this standard regardless of the site- specific geology or topography. Provided that the design drawings and associated specifications call out the minimum requirements for subsoils compaction (i.e., 95% Standard Proctor Density – ASTM D 698), the design engineer or owners representative will carry out soils testing on the foundation materials to provide certainty to the AST containment owner that the earthworks contractor has met these obligations.

Thus, provided that the contractor meets the minimum specified requirements for foundation soils preparation and density, the location, geology or depth to groundwater will make no difference in regard to geomembrane liner equivalency as demonstrated by the AST variances presented in this volume and are considered valid for meeting NMOCD Rule 34 requirements for all locations within the Permian Basin of New Mexico.

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

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Ph 303-679-0285 Fx 303-679-8955 geosynthetics@msn.com

R.K. FROBEL & ASSOCIATES
Consulting Engineers

Sincerely Yours,

R K Frobel

Ronald K. Frobel, MSCE, PE

References:

NMAC 19.15.34.12 DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT

ASTM Standards 2019

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RONALD K. FROBEL, MSCE, P.E.

CIVIL ENGINEERING
GEOSYNTHETICS
EXPERT WITNESS
FORENSICS

FIRM: R. K. FROBEL & ASSOCIATES
Consulting Civil / Geosynthetics Engineers

TITLE: Principal and Owner

PROFESSIONAL AFFILIATIONS:

American Society for Testing and Materials (ASTM) -
Founding member of Committee D 35 on Geosynthetics
Chairman ASTM D35 Subcommittee on Geomembranes 1985-2000
ASTM Award of Merit Recipient/ASTM Fellow - 1992
ASTM D18 Soil and Rock - Special Service Award - 2000
Transportation Research Board (TRB) of The National Academies
Appointed Member A2K07 Geosynthetics 2000 - 2003
National Society of Professional Engineers (NSPE) - Member
American Society of Civil Engineers (ASCE) - Member
Colorado Section - ASCE - Member
International Society of Soil Mechanics and Foundation Engineers
(ISSMFE) - Member
International Geosynthetics Society (IGS) - Member
North American Geosynthetics Society (NAGS) - Member
International Standards Organization (ISO) - Member TC 221
Team Leader - USA Delegation Geosynthetics 1985 - 2001
European Committee for Standardization (CEN) - USA Observer
EPA Advisory Committee on Geosynthetics (Past Member)
Association of State Dam Safety Officials (ASDSO) – Member
U. S. Committee on Irrigation and Drainage (USCID) - Member
Technical Advisory Committee - Geosynthetics Magazine
Editorial Board - Geotextiles and Geomembranes Journal
Fabricated Geomembrane Institute (FGI) – Board of Directors
Co-Chairman International Conference on Geomembranes
Co-Chairman ASTM Symposium on Impermeable Barriers
U.S. Naval Reserve Officer (Inactive)
Registered Professional Engineer – Civil (Colorado)
Mine Safety Health Administration (MSHA) Certified

ACADEMIC BACKGROUND:

University of Arizona: M.S. - Civil Engineering - 1975
University of Arizona: B. S. - Civil Engineering – 1969
Wentworth Institute of Technology: A.S. Architecture – 1966

PROFESSIONAL EXPERIENCE:

R. K. Frobel & Associates - Consulting Engineers
Evergreen, Colorado, Principal and Owner, 1988 - Present

Chemie Linz AG and Polyfelt Ges.m.b.H., Linz, Austria
U. S. Technical Manager Geosynthetics, 1985 - 1988

U.S. Bureau of Reclamation, Engineering and Research Center
Denver, Colorado, Technical Specialist in Construction Materials Research and Application, 1978 - 1985

Water Resources Research Center (WRRC), University of Arizona
Tucson, AZ, Associate Research Engineer, 1975 - 1978

Engineering Experiment Station, University of Arizona
Tucson, AZ, Research Assistant, 1974 - 1975

United States Navy, Commissioned Naval Officer, 1970 - 1973

REPRESENTATIVE EXPERIENCE:

R.K. Frobel & Associates: Civil engineering firm specializing in the fields of geotechnical, geo-environmental and geosynthetics. Expertise is provided to full service civil/geotechnical engineering firms, federal agencies, municipalities or owners on a direct contract, joint venture or sub-consultant basis. Responsibilities are primarily devoted to specialized technical assistance in design and application for foreign and domestic projects such as the following:
Forensics investigations into geotechnical and geosynthetics failures; providing expert report and testimony on failure analysis; providing design and peer review on landfill lining and cover system design, mine waste reclamation, water treatment facilities, hydro-technical canal, dam, reservoir and mining projects, floating reservoir covers; oil and gas waste containment; design of manufacturers technical literature and manuals; development and presentation of technical seminars; new product development and testing; MQA/CQA program design and implementation.

Polyfelt Ges.m.b.H., Linz, Austria and Denver Colorado: As U.S. technical manager, primary responsibilities included technical development for the Polyfelt line of geosynthetics for the U.S. civil engineering market as well as worldwide applications.

U.S. Bureau of Reclamation, Denver, Colorado: As technical specialist, responsibilities included directing laboratory research, design and development investigations into geosynthetics and construction materials for use on large western water projects such as dams, canals, power plants and other civil structures. Included were material research, selection and testing, specification writing, large scale pilot test programs, MQA/CQA program design and supervision of site installations. Prime author or contributor to several USBR technical publications incorporating geosynthetics.

University of Arizona, Tucson, Arizona: As research engineer at the Water Resources Research Center, responsibilities included research, design and development of engineering materials and methods for use in construction of major water projects including potable water reservoirs, canals and distribution systems. Prime author or contributor to several WRRC technical publications.

Northeast Utilities, Hartford, Connecticut: As field engineer for construction at Northeast Utilities, responsibilities included liason for many construction projects including additions to power plants, construction of substations, erection of fuel oil pipelines and fuel oil storage tanks. Responsibilities also included detailed review, inspection and reporting on numerous construction projects.

U.S. Navy: Commissioned Naval Officer – Nuclear Program

PUBLICATIONS: Over 85 published articles, papers and books.

CONTACT DETAILS:

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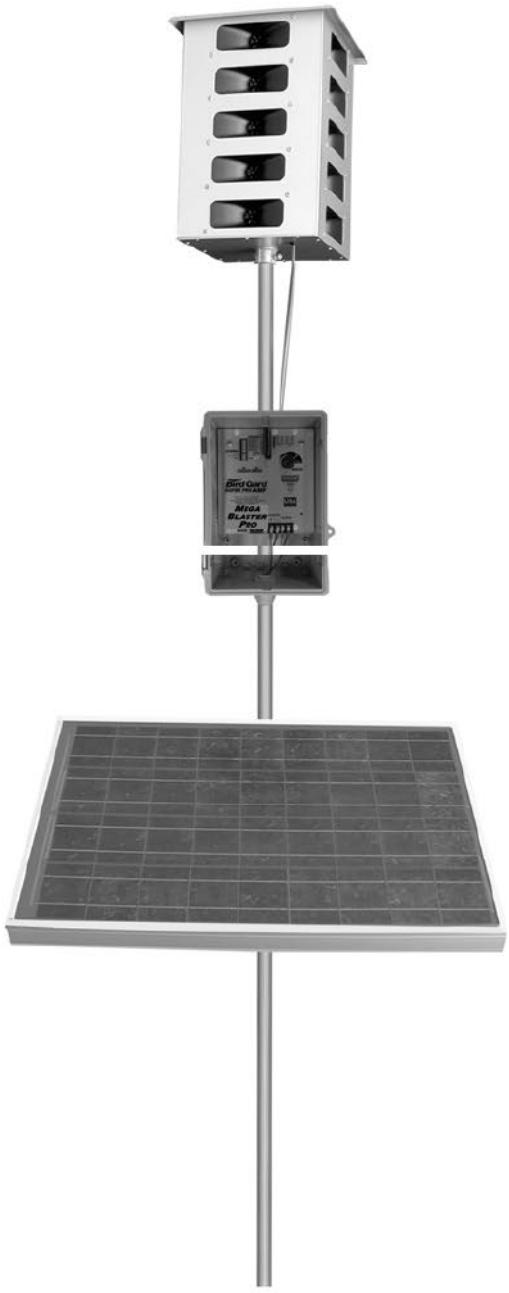
| Cascade Services, LLC | 3403-B E. County Road 44, Midland, TX 79705 |

Avian Deterrent System

MEGA BLASTER PRO

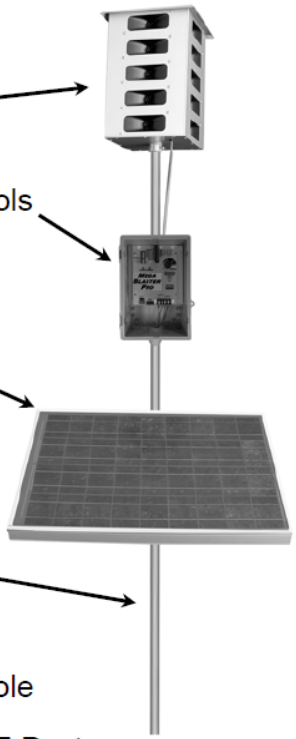
BIRD-X

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

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Wednesday, May 6, 2026 2:15 PM
To: David.VanderVieren@westernmidstream.com; gjennings@CascadeServicesLLC.com; Bobbi Jo Crain
Subject: FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY
Attachments: C-147 FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY.pdf

FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY

Good afternoon Mr. Van der Vieren.
The NMOCD has reviewed the recycling containment permit application and related documents, submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on 04/27/2026, Application ID **579269**, for FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY in K-33-20S-33E, Lea County, New Mexico. [371643] SOLARIS WATER MIDSTREAM, LLC requested variances from 19.15.34 NMAC for FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY.

The following variances have been approved:

- The variance to 19.15.34.14 NMAC Table I for the use of alternate analytical method 8015/8015M for total petroleum hydrocarbons (TPH) is approved.
- The variance to 19.15.34.14 NMAC Table I for the use of alternate analytical method EPA 300.0 or SM4500 for the analysis of chloride is approved.
- The variance to 19.15.34.12.A.(2) NMAC for the no side-slope requirement for the AST containment with vertical walls is approved.
- The variance to 19.15.34.12.A.(3) NMAC for the liners to be anchored to the top of the AST steel walls and no anchor trenches is approved.
- The variance to 19.15.34.12.A.(4) NMAC for the installation on the AST containment of a 40-mil non-reinforced LLDPE primary liner and a 30-mil non-reinforced LLDPE secondary liner is approved.
- The variance to NMAC 19.15.34.12.D to install a gate or chain across the stairway between the ground surface and the open-top of the AST containment is approved. The operator shall place an appropriate sign on the gate or chain to prevent unauthorized human access to the open top of the containment and will provide a mechanism to lock the gate when responsible personnel are not onsite.

The form C-147 and related documents for FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY are 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.
- FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY is approved for five years of operation from the date of permit application of 04/27/2026. FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY permit expires on 04/27/2031. If [371643] SOLARIS WATER MIDSTREAM, LLC wishes to extend operations past five years, an annual extension request must be submitted using on Form C-147 Long through OCD Permitting by 03/27/2031.
- FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY consists of one (1) AST of 40,000.00 barrels and one (1) earthen containment with a capacity of 1,281,736.00 barrels.

- The total closure cost estimated of permit FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY in the amount of $ 659,103.00, 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.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall construct, operate, maintain, close, and reclaim FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY in compliance with NMAC 19.15.34 NMAC.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall notify OCD, through OCD Permitting, when construction of FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY commences.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall notify NMOCD through OCD Permitting when recycling operations commence and cease at FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY.
- A minimum of 3-feet freeboard must be maintained at FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY at all times during operations.
- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operations of the FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY are considered ceased and a notification of cessation of operations should be sent electronically to OCD Permitting. A request to extend the cessation of operations, not to exceed six months, may be submitted using a C-147 form through OCD Permitting. If after that 6-month extension period, the FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY is not utilized at a minimum of 20% fluid capacity, no additional extensions would be granted, and the operator would be directed to remove all fluids and proceed with the closure requirements.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall submit monthly reports of recycling and reuse of produced water, drilling fluids, and liquid oil field waste on OCD form C-148 via OCD Permitting even if there is zero activity.
- [371643] SOLARIS WATER MIDSTREAM, 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 logs available for review by the division upon request according to 19.15.34.13.A.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field waste at FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY.

Please reference number FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY in all future communications.
Best regards,

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

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Phone: (505) 476-3441

General Information
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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:
SOLARIS WATER MIDSTREAM, LLC 9950 WOODLOCH FOREST DR THE WOODLANDS, TX 77380	371643
	Action Number: 579269
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY permit expires on 04/27/2031. If [371643] SOLARIS WATER MIDSTREAM, LLC wishes to extend operations past five years, an annual extension request must be submitted using on Form C-147 Long through OCD Permitting by 03/27/2031. • [371643] SOLARIS WATER MIDSTREAM, LLC shall construct, operate, maintain, close, and reclaim FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY in compliance with NMAC 19.15.34 NMAC. • [371643] SOLARIS WATER MIDSTREAM, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field waste at FVV2612634174 BULLFIGHTER RECYCLE CONTAINMENT & AST FACILITY.	5/6/2026