October 2023

C-147 Registration Package for
Zeus Tres Containment
Section 35, T21S, R32E, Eddy County

Volume 2 In-Ground Containment

C-147 Form

Stamped Design Drawings, Liner Equivalency Demonstration & Avian Deterrent System

Plans for: Design/Construction, O&M, Closure

Looking southeast into the Zeus Tres Containment Site.

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Prepared for:
Solaris Midstream LLC
9811 Katy Freeway Suite 900
Houston, TX 77024

Prepared by:
R.T. Hicks Consultants, Ltd. 901
Rio Grande NW F-142
Albuquerque, New Mexico

C-147

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: 9811 Katy Freeway, Suite 900, Houston, TX, 77024
Facility or well name (include API# if associated with a well): Zeus Tres Containment
OCD Permit Number: 1RF-517 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr I,J,O, and P Section 35 Township 21S Range 32E County: Lea
Surface Owner: ☐ Federal ☐ State ☑ Private ☐ Tribal Trust or Indian Allotment

2.
☑ **Recycling Facility:** 1 RF-478 Zeus Containment
Location of recycling facility (if applicable): Latitude 32.428995 N Longitude -103.638084 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 32.432593 N Longitude 103.640347 W NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☑ Lined ☐ Liner type: Thickness _____mil ☐ LLDPE ☑ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced 60 mil Primary and 40 mil Sec.
Liner Seams: ☑ Welded ☐ Factory ☐ Other _____ Volume: 1120k bbl Dimensions: L 887' x W 580' x D 18'-22' @ 3' freeboard
☐ Recycling Containment Closure Completion Date:_____

4.

Bonding:

☐ Covered under bonding pursuant to 19.15.8 NMAC per 19.15.34.15(A)(2) NMAC **(These containments are limited to only the wells owned or operated by the owners of the containment.)**

☑ Bonding in accordance with 19.15.34.15(A)(1). Amount of bond $_____ **(work on these facilities cannot commence until bonding amounts are approved)**

☑ Attach closure cost estimate and documentation on how the closure cost was calculated. See Transmittal Letter

5.

Fencing:

☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet Will install 4 strand wire fence if requested

☑ Alternate. Please specify Fixed knot woven wire, 8-foot height. See Sheets C-105 and C-110 of Containment Plans

6.

Signs:

☑ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

If a Variance is requested, it must be approved prior to implementation.

8.

Siting Criteria for Recycling Containment

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

General siting

Ground water is less than 50 feet below the bottom of the Recycling Containment. NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☑ No ☐ NA
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; written approval obtained from the municipality	☐ Yes ☑ No ☐ NA
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division	☐ Yes ☑ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map	☐ Yes ☑ No
Within a 100-year floodplain. FEMA map	☐ Yes ☑ No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; visual inspection (certification) of the proposed site	☐ Yes ☑ No
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; aerial photo; satellite image	☐ Yes ☑ No
Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site	☐ Yes ☑ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site	☐ Yes ☑ No

9.

Recycling Facility and/or Containment Checklist:

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

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

10.

Operator Application Certification:

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

Name (Print): Drew Dixon Title: SVP- Land and Regulatory .

Signature: Drew Dixon Date: 3/15/2024 .

e-mail address drew.dixon@ariswater.com Telephone: 832-304-9028 .

11.

OCD Representative Signature: Victoria Venegas **Approval Date:** 04/16/2024

Title: Environmental Spcialist **OCD Permit Number:** 1RF-517

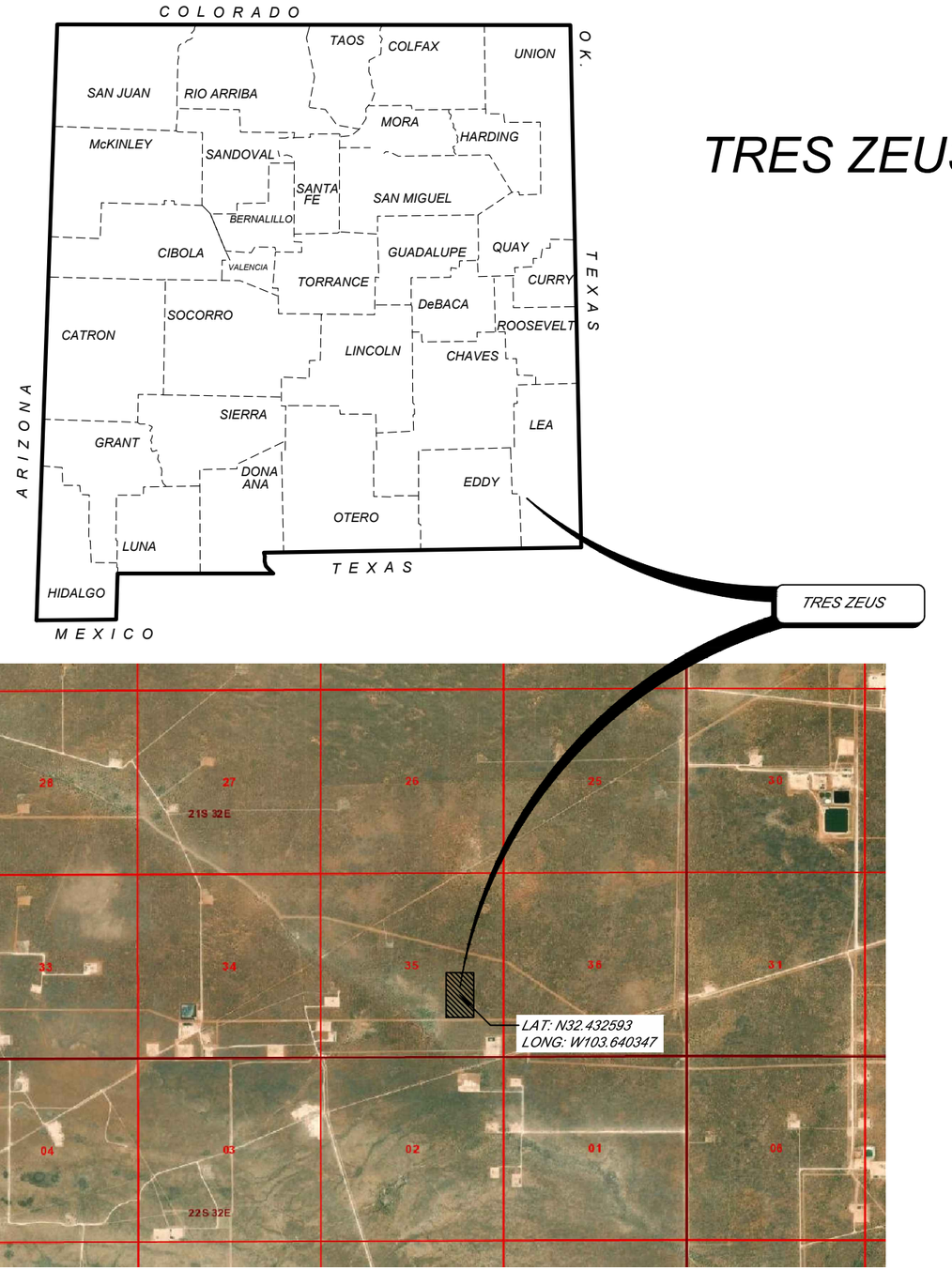
☒ OCD Conditions

☐ x Additional OCD Conditions on Attachment

RECYCLING CONTAINMENT DESIGN DRAWINGS

ALTERNATIVE LINER EQUIVALENCY DEMONSTRATION

AVIAN DETERRENT SYSTEM



ARIS WATER SOLUTIONS, INC
TRES ZEUS WATER TREATMENT AND REUSE FACILITY
S35, T21S, R32E
LEA COUNTY, NEW MEXICO

INDEX OF SHEETS

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

09/25/2023

Magrym Consulting, Inc.
110 W. Louisiana Ave. Ste 314
Midland, TX 79701
(432) 999-2737
www.magrym.com
TX #F-19848 ND #28610PE OK #8561PE

IFC	ISSUED FOR CONSTRUCTION	9-25-23	CSC
R-X	DESCRIPTION	DATE	BY
REVISIONS (OR CHANGE NOTICES)			

Aris Water Solutions, Inc
907 Tradewinds Boulevard
Midland, TX 79706
432-203-9020
www.ariswater.com

TRES ZEUS WATER TREATMENT AND REUSE FACILITY
S35, T21S, R32E
LEA COUNTY, NEW MEXICO
ARIS WATER SOLUTIONS, INC

COVER SHEET	
HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 100

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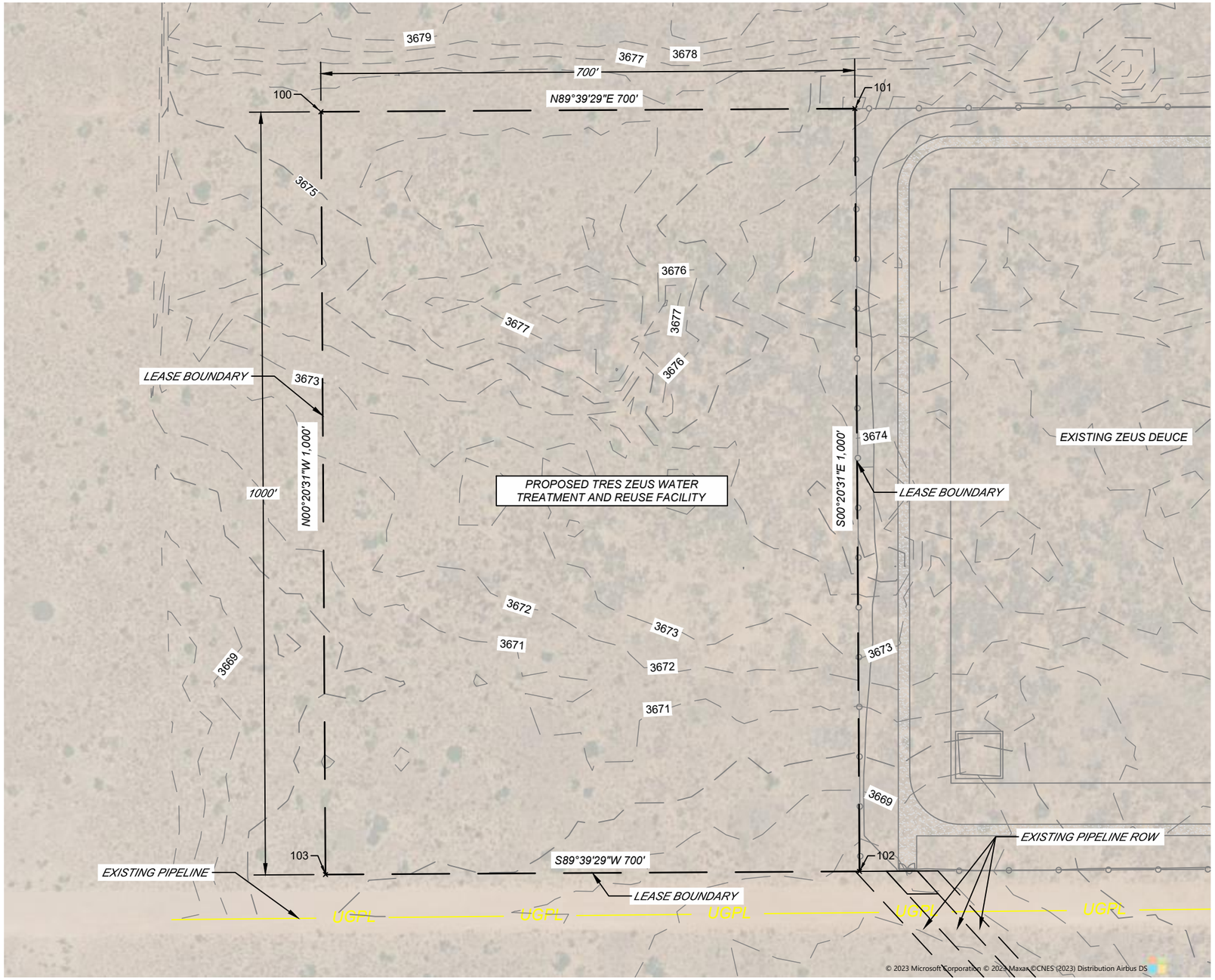

Point Table				
Point #	Northing	Easting	Elevation	Raw Description
100	522299.67'	754789.69'	3675.7'	CORNER
101	522303.85'	755489.68'	3676.5'	CORNER
102	521303.87'	755495.64'	3667.6'	CORNER
103	521299.69'	754795.66'	3670.4'	CORNER

IMPORTANT SURVEY NOTES:

1. *CONTRACTOR SHALL VERIFY ALL COORDINATES AND DIMENSIONS FROM THE LEASE BOUNDARY PLATS.*
2. *ALL BOUNDARY, TOPOGRAPHIC AND UTILITY INFORMATION SHOWN ARE BASED ON SURVEY INFORMATION FURNISHED BY DOWNTOWN DESIGN SERVICES, INC.*
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 NEW MEXICO EAST, NAD 83.*

LEGEND

SURVEY AREA
EXISTING EASEMENT
EXISTING UNDERGROUND PIPELINE — UGPL
EXISTING GRADE CONTOURS (1 FT INTERVAL)
PROPOSED DRIVING SURFACE

CLAUDIUS SANCHEZ CZYZEWSKA
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09/25/2023

N

SCALE 1"=150'
0 75' 150' 300'

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R-X	DESCRIPTION	DATE	BY
REVISIONS (OR CHANGE NOTICES)			

Aris Water Solutions, Inc
907 Tradewinds Boulevard
Midland, TX 79706
432-203-9020
www.ariswater.com

TRES ZEUS WATER TREATMENT AND REUSE FACILITY
S35, T21S, R32E
LEA COUNTY, NEW MEXICO
ARIS WATER SOLUTIONS, INC

EXISTING CONDITIONS	
HORIZONTAL SCALE: 1"=150'	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 101

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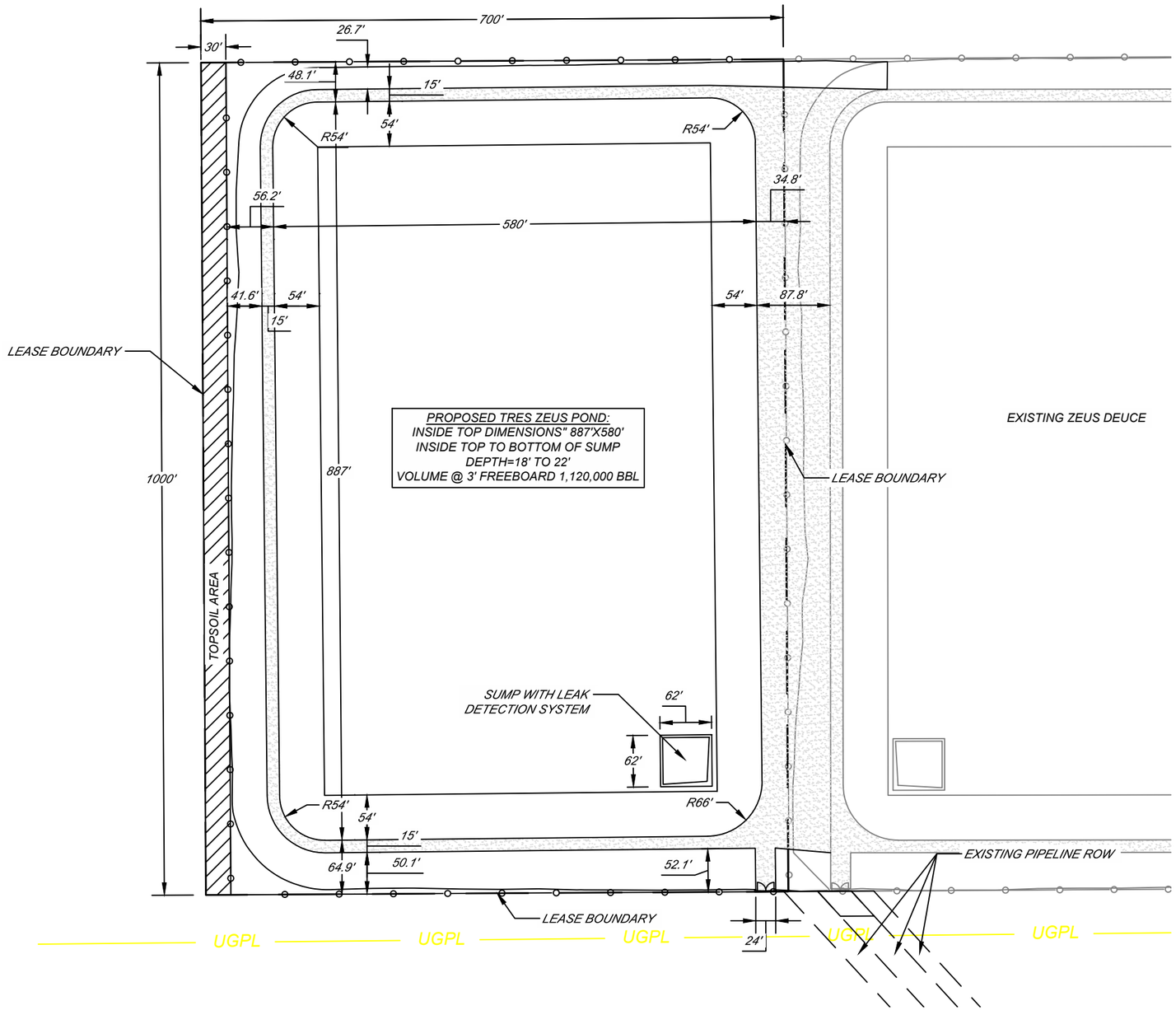

SUGGESTED CONSTRUCTION SEQUENCE

1. *CLEAR EXISTING VEGETATION AND DEBRIS, AND DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.*
2. *STRIP AND STOCKPILE TOPSOIL AT THE LOCATION DESIGNATED ON THESE PLANS.*
3. *PERFORM EARTHWORK OPERATIONS:*
   - 3.1. *PERFORM CUT AND FILL OPERATIONS TO THE DIMENSIONS SHOWN ON THIS PLAN.*
   - 3.2. *RESHAPE INSIDE SLOPES TO A 3 TO 1 RATIO.*
   - 3.3. *ESTABLISH A TOP OF BERM WIDTH OF 15 FEET.*
   - 3.4. *RESHAPE OUTER SLOPE TO A 3 TO 1 RATIO. 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.*

LEGEND

- *SURVEY AREA*
- *EXISTING EASEMENT*
- *EXISTING UNDERGROUND PIPELINE* — UGPL
- *PROPOSED DRIVING SURFACE*
- *PROPOSED 8' GAME FENCE*

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09/25/2023

N

SCALE 1"=150'
0 75' 150' 300'

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ARIS WATER SOLUTIONS, INC

PROPOSED SITE PLAN

HORIZONTAL SCALE: 1"=150'	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 102

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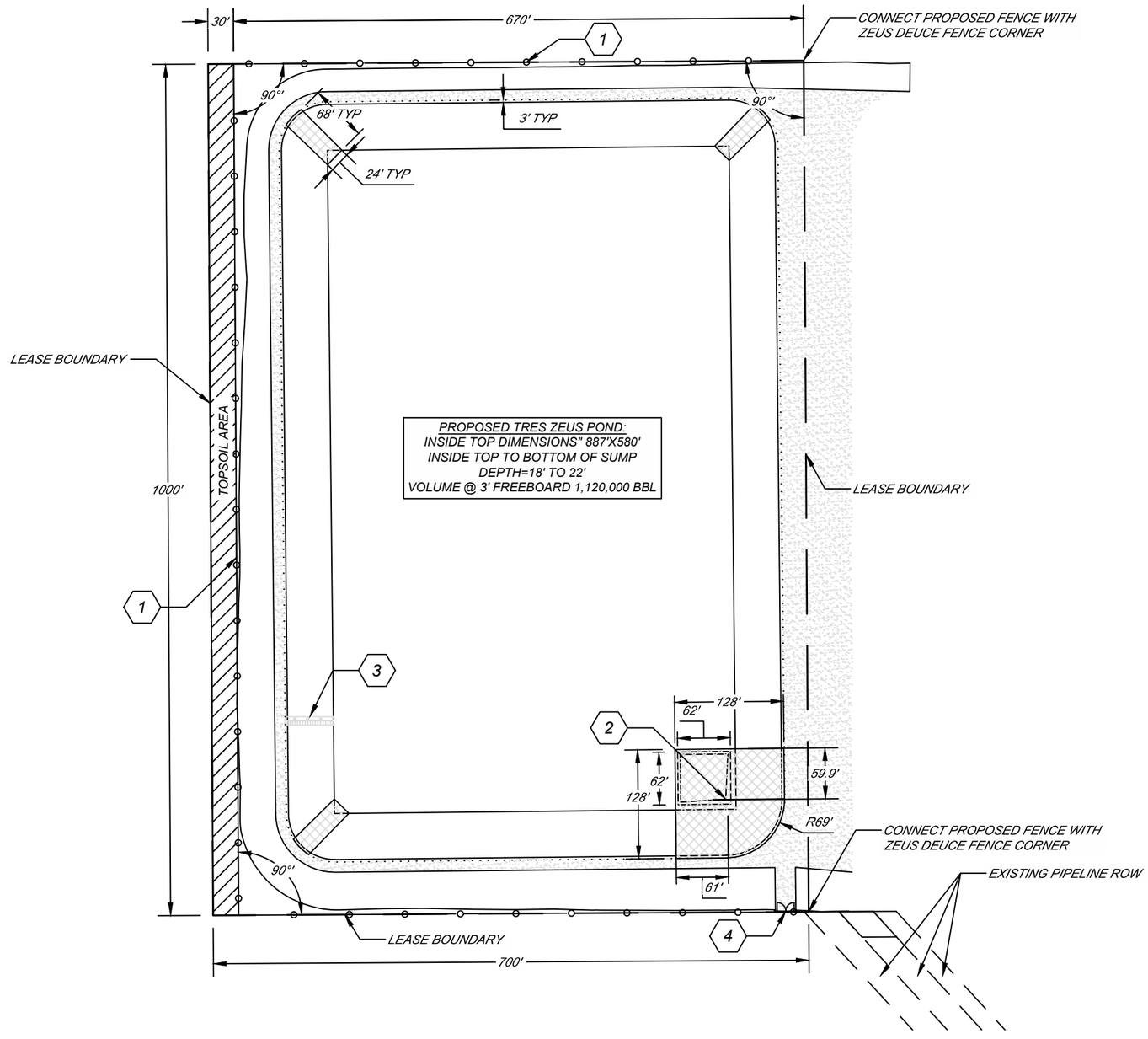

KEYED NOTES

1. PROPOSED 8' GAME FENCE PER DETAIL ON SHEET C110
2. SUMP WITH LEAK DETECTION SYSTEM PER DETAIL ON SHEET C107
3. GAGE LADDER PER DETAIL ON SHEET C111
4. 20' DOUBLE GATE PER DETAIL ON SHEET C110

LEGEND

- LEASE BOUNDARY
- EXISTING EASEMENT
- PROPOSED DRIVING SURFACE
- PROPOSED 8' GAME FENCE
- ANCHOR TRENCH
- RUB SHEET

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09/25/2023

N

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0 75' 150' 300'

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R-X	DESCRIPTION	DATE	BY
REVISIONS (OR CHANGE NOTICES)			

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LEA COUNTY, NEW MEXICO
ARIS WATER SOLUTIONS, INC

PROPOSED LINER AND FENCE PLAN

HORIZONTAL SCALE: 1"=150'	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 103

Drawing File: Z:\Shared\Projects\2023 Projects\23-530 Aris Tres Zeus\04_CIVIL\Design\Drawings\23-530-MAG-CIV-C-103.dwg

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 DOWNTOWN DESIGN SERVICES, INC.
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.
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.

STAGE STORAGE	
POND ELEVATION (FT)	REVELATION POND VOLUME (BBL)
3662.60	0
3663.60	186
3664.60	807
3665.60	8,966
3666.60	49,527
3667.60	115,686
3668.60	183,191
3669.60	252,052
3670.60	322,278
3671.60	393,879
3672.60	466,864
3673.60	541,243
3674.60	617,025
3675.60	694,220
3676.60	772,838
3677.60	852,887
3678.60	934,377
3679.60	1,017,317
3680.60	1,101,718
3681.60	1,187,589 ← MAX FLUID LEVEL
3682.60	
3683.60	
3684.60	

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER
09/25/2023

SUMMARY OF QUANTITIES

ITEM NUMBER	ITEM	UNIT	QTY
1	CLEARING AND GRUBBING	ACRES	17
2	STRIP AND STOCKPILE TOPSOIL (6" AVERAGE)	CUBIC YARD	13,600
3	ESTIMATED CUT (BELOW EXISTING GRADE)*	CUBIC YARD	114,600
4	ESTIMATED FILL (ABOVE EXISTING GRADE)**	CUBIC YARD	101,900
5	8' GAME FENCE	LINEAR FEET	2,400
6	20' DOUBLE GATE	LINEAR FEET	1
7	RUB SHEET 60 MIL HDPE GEOMEMBRANE (TEXTURED)***	SQUARE FEET	21,500
8	PRIMARY 60 MIL HDPE GEOMEMBRANE (SMOOTH)***	SQUARE FEET	534,000
9	200 MIL GEONET***	SQUARE FEET	534,000
10	SECONDARY 40 MIL HDPE GEOMEMBRANE (SMOOTH)***	SQUARE FEET	534,000
11	8 OZ. GEOTEXTILE***	SQUARE FEET	534,000
12	6" HDPE DR11 PIPE WITH PERFORATIONS IN SUMP	LINEAR FEET	90
13	GAGE LADDER	EACH	1
14	DRAIN ROCK	CUBIC YARD	1
15	ANCHOR TRENCH	LINEAR FEET	2,900
17	CONSTRUCTION WATER	ALLOWANCE	
18	MATERIALS TESTING	ALLOWANCE	
19	EROSION CONTROL BMP'S	ALLOWANCE	

IMPORTANT QUANTITY NOTES:

* CUT QUANTITY (ITEM NUMBER 3) INCLUDES TOPSOIL QUANTITY (ITEM NUMBER 2).

** GEOTECHNICAL INFORMATION WAS NOT AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. 20% FILL FACTOR WAS ASSUMED AND APPLIED TO THE FILL QUANTITY. THE CONTRACTOR SHALL FIELD VERIFY SHRINKAGE AND SWELLING OF EXISTING SOILS. CUT AND FILL QUANTITIES SHOWN ON THIS TABLE PERTAIN TO THE ENTIRE PROJECT AREA. LEVEE, PAD AND ADJACENT DRIVING SURFACE ARE INCLUDED IN THE FILL QUANTITY.

*** THESE ARE COMPLETE-IN-PLACE QUANTITIES. OVERLAP, ANCHOR, WRINKLE, SCRAP AND/OR SPOIL QUANTITIES ARE NOT INCLUDED IN THIS BID ITEM. THE CONTRACTOR SHALL ACCOUNT FOR THESE ADDITIONAL QUANTITIES IN THEIR BID.

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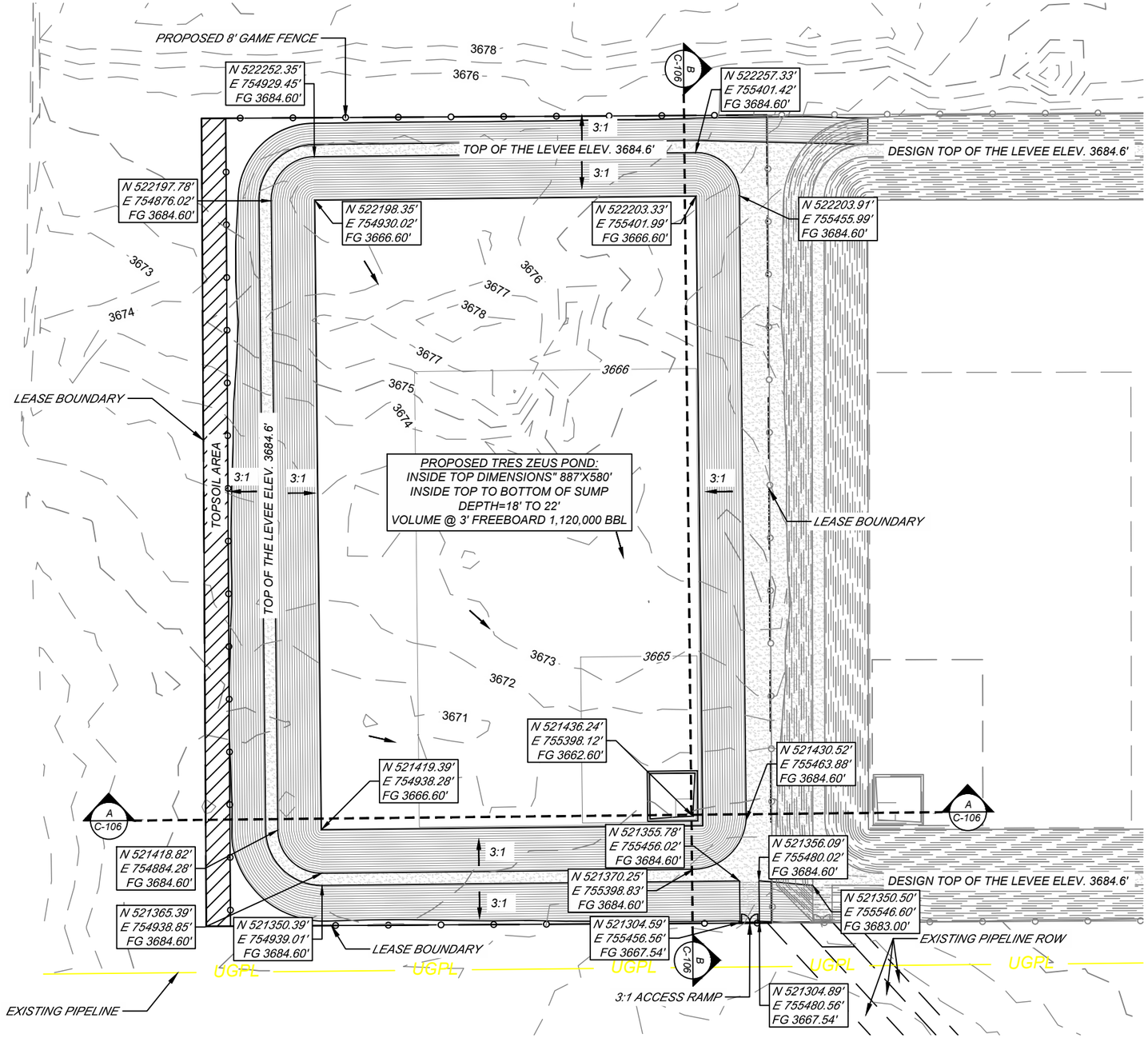
SUMMARY OF QUANTITIES AND GENERAL NOTES

HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 104

Drawing File: Z:\Shared\Projects\2023 Projects\23-530 Aris Tres Zeus\04_CIVIL\Design\Drawings\23-530-MAG-CIV-C-104 Grading.dwg



LEGEND

- LEASE BOUNDARY
- EXISTING EASEMENT
- EXISTING UNDERGROUND PIPELINE (UGPL)
- EXISTING GRADE CONTOUR (1 FT INTERVAL)
- PROPOSED DRIVING SURFACE
- PROPOSED 8' GAME FENCE
- FINISHED GRADE CONTOUR (1 FT INTERVAL)
- SLOPE DIRECTION
- FINISHED GRADE FG

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PROFESSIONAL ENGINEER
09/25/2023

N

SCALE 1"=150'
0 75' 150' 300'

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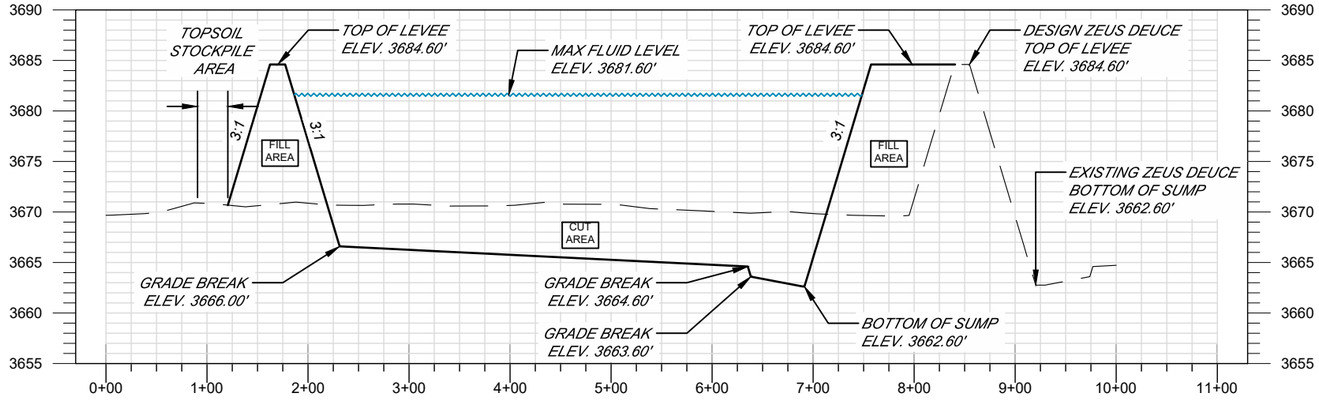
GRADING PLAN

HORIZONTAL SCALE: 1"=150'	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

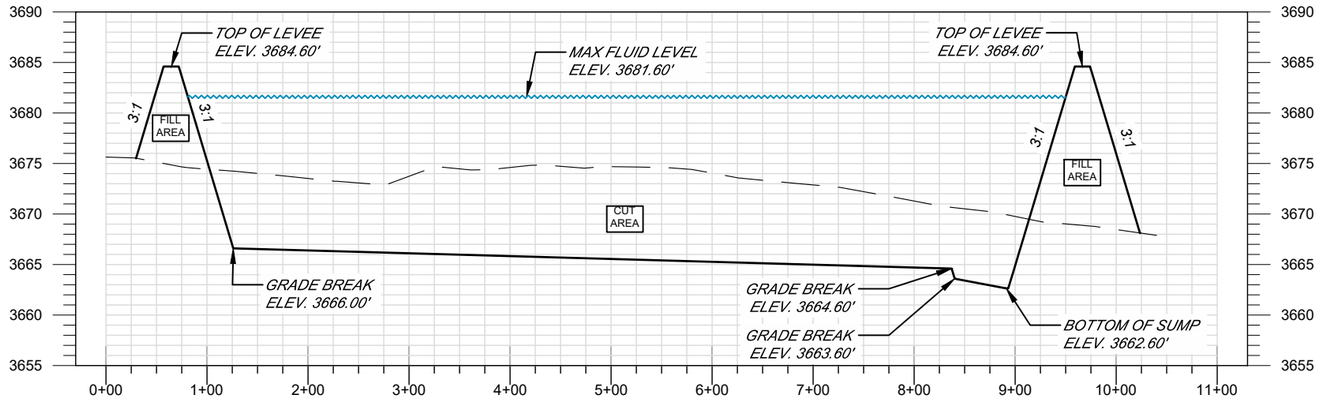
SHEET: C - 105

Drawing File: Z:\Shared\Projects\2023 Projects\23-530 Aris Tres Zeus\04_CIVIL\Design\Drawings\23-530-MAG-CIV-C-104 Grading.dwg

Section A



Section B



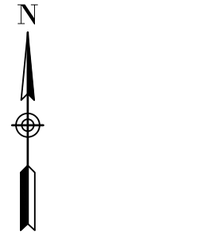
NOTES

FOR LEVEE DETAILS SEE PLAN SHEET C - 109

LEGEND

EXISTING GRADE

FINISHED GRADE



HORIZONTAL SCALE 1"=150'

0 75' 150' 300'

VERTICAL SCALE 1"=15'

0 7.5' 15' 30'

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CROSS SECTIONS	
HORIZONTAL SCALE: 1"=150'	VERTICAL SCALE: 1"=15'
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 106

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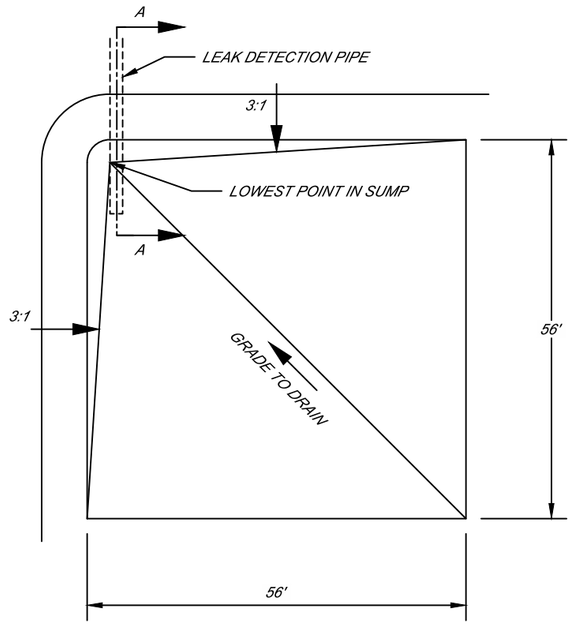

1 SUMP WITH LEAK DETECTION SYSTEM
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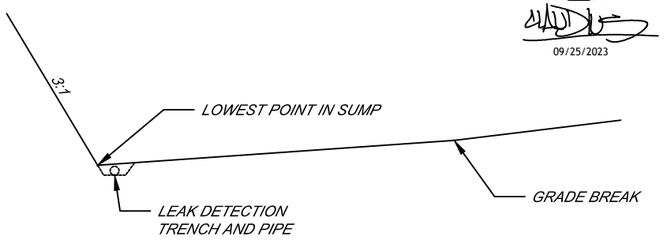

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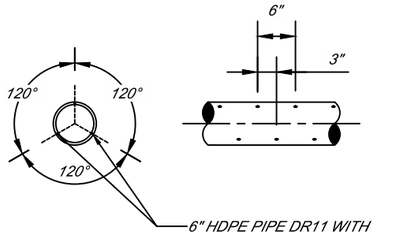
PROFESSIONAL ENGINEER
09/25/2023



4 DETAIL 1
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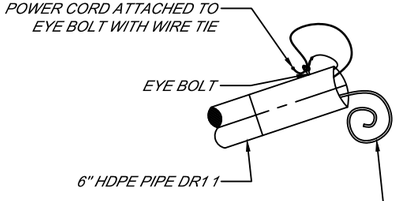

5 DETAIL 2
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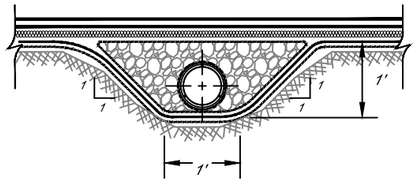

3 SECTION B-B
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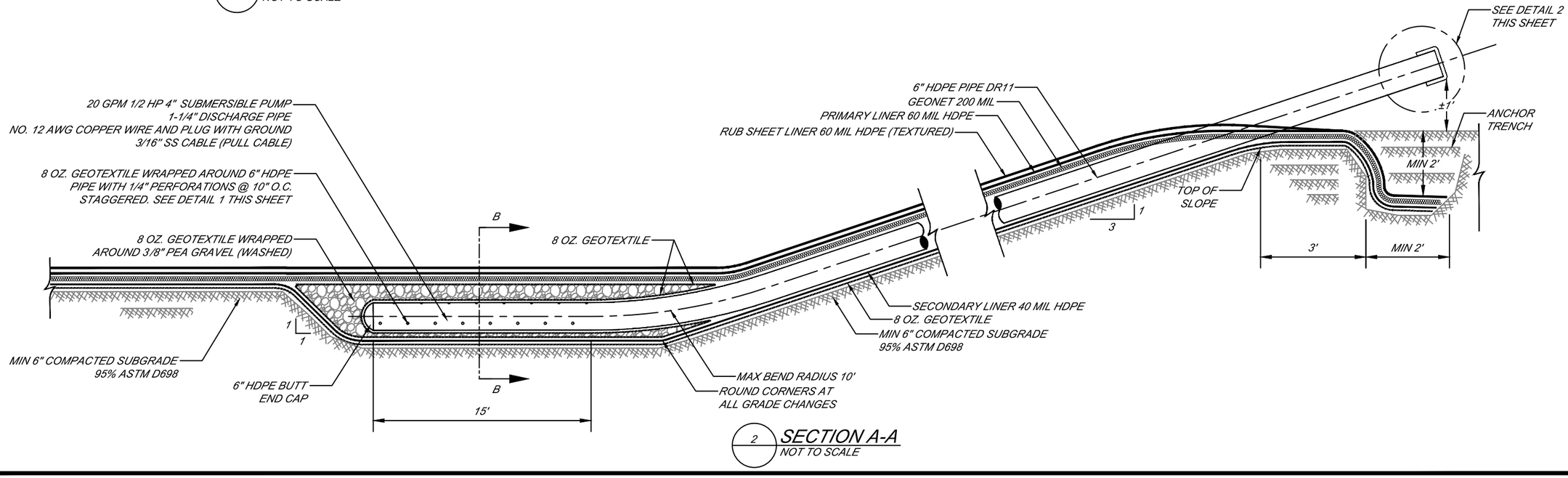

2 SECTION A-A
NOT TO SCALE

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IFC	ISSUED FOR CONSTRUCTION	9-25-23	CSC
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LEAK DETECTION SYSTEM DETAILS	
HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
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SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 107

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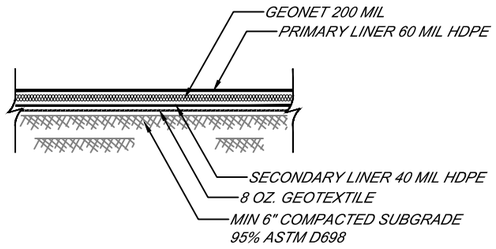
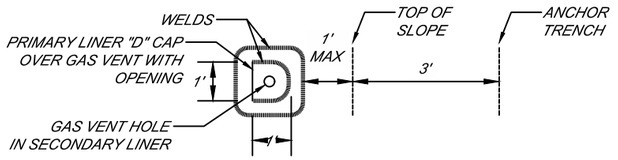
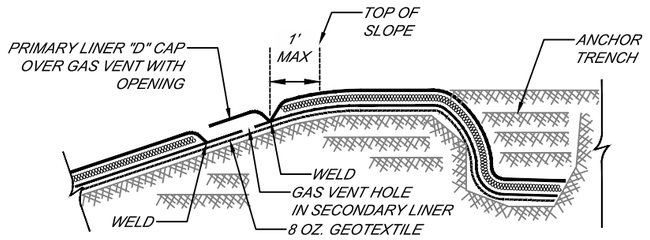


1 TYPICAL POND BOTTOM LINER
NOT TO SCALE

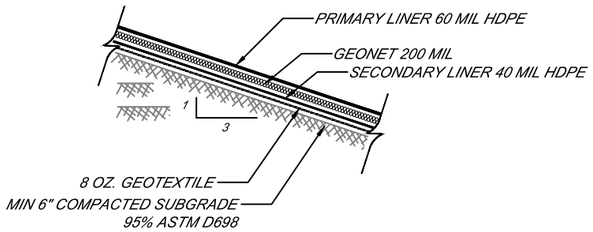


TOP VIEW



SIDE VIEW

NOTE:
GAS VENT SPACING SHALL BE INSTALLED
PER MANUFACTURER'S RECOMMENDATIONS



2 TYPICAL POND SLOPE LINER
NOT TO SCALE

3 TYPICAL GAS VENT
NOT TO SCALE

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MISCELLANEOUS DETAILS

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PROJECT NO. 23-530	CHECKED BY: CSC
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SHEET: C - 108

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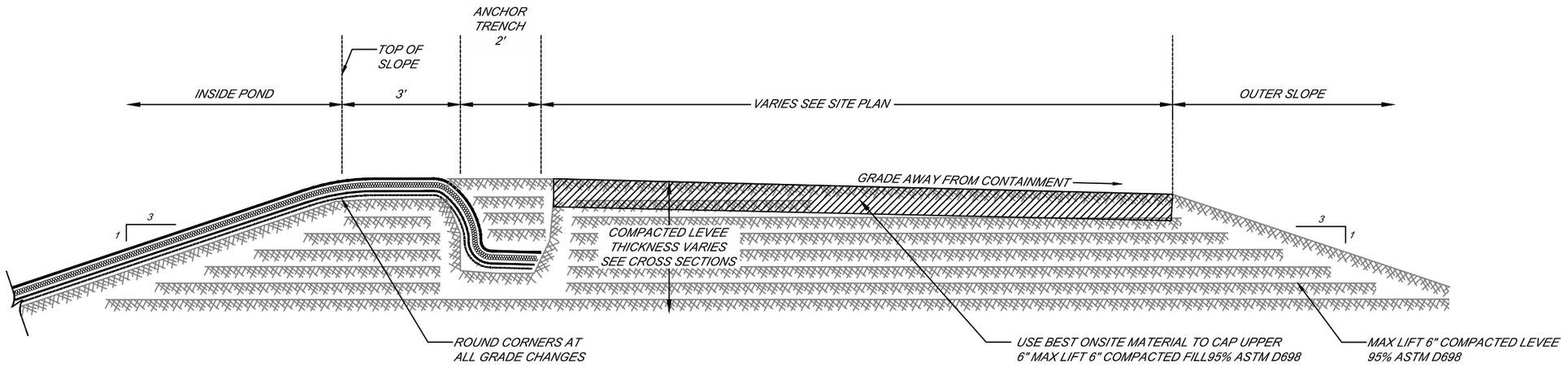
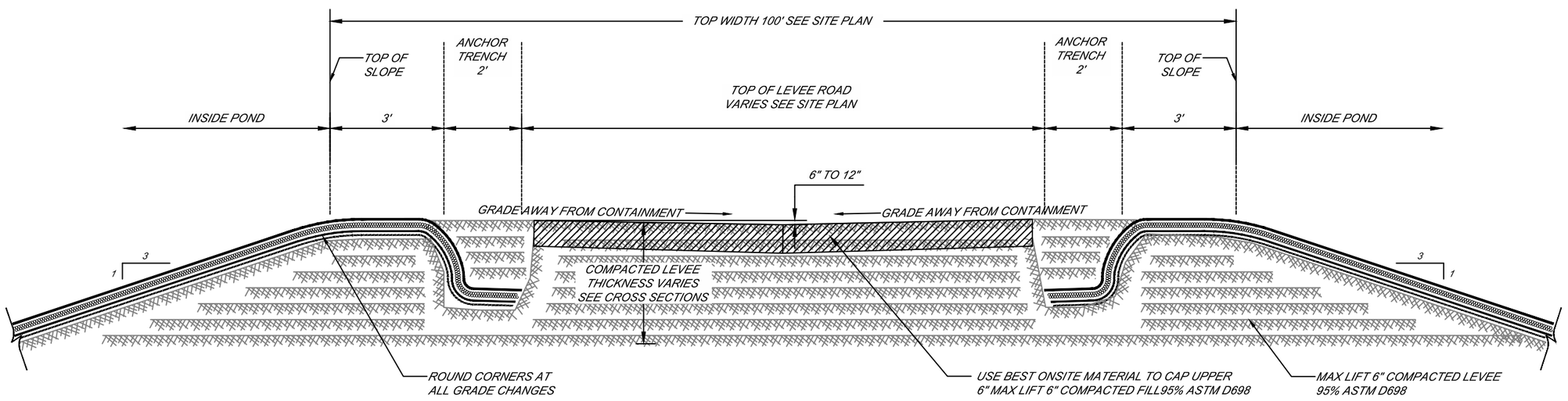


1 TYPICAL LEVEE SECTION
NOT TO SCALE



2 TYPICAL LEVEE SECTION BETWEEN CONTAINMENTS
NOT TO SCALE

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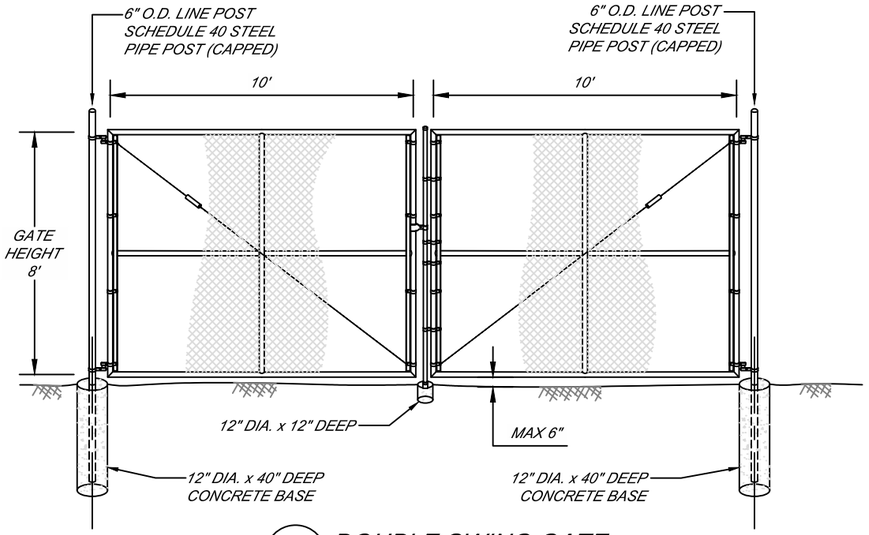
LEVEE DETAIL

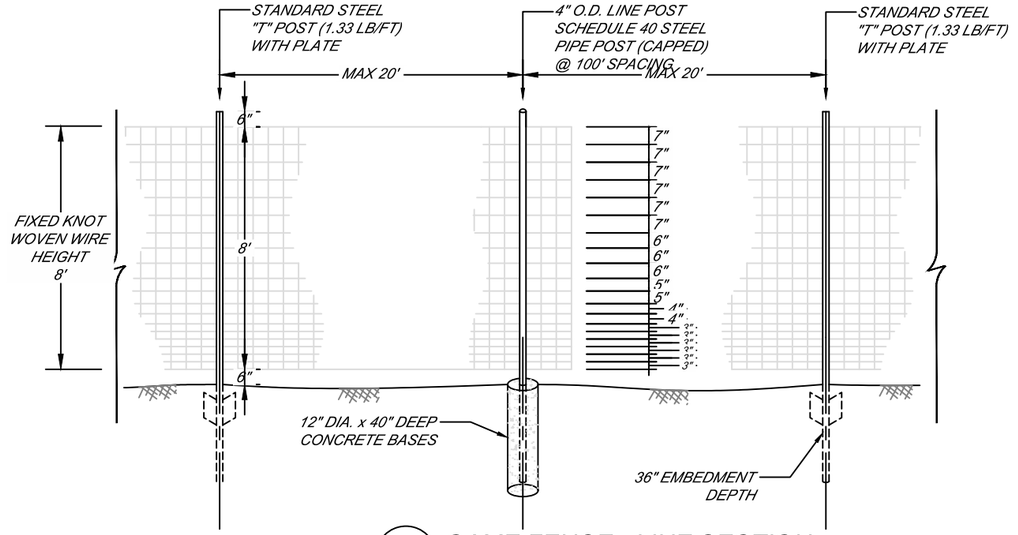
HORIZONTAL SCALE: NTS	VERTICAL SCALE: NTS
PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 109

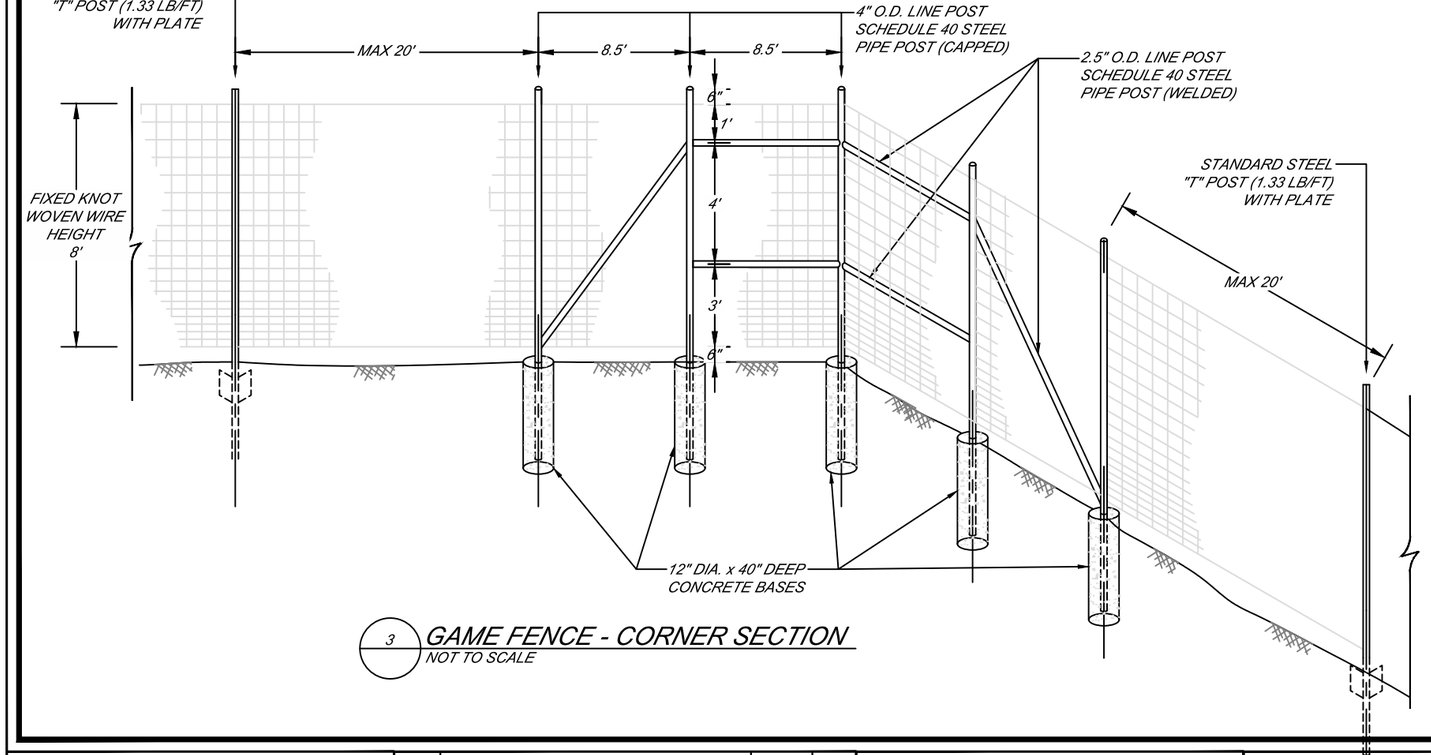
Drawing File: Z:\Shared\Projects\2023 Projects\23-530 Aris Tres Zeus\04_CIVIL\Design\Drawings\23-530-MAG-CIV-C-107 Details.dwg



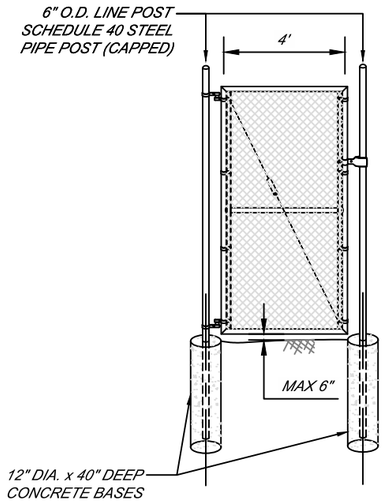
1 DOUBLE SWING GATE
NOT TO SCALE



2 GAME FENCE - LINE SECTION
NOT TO SCALE



3 GAME FENCE - CORNER SECTION
NOT TO SCALE



4 WALK GATE
NOT TO SCALE

NOTES:
1. FOR WOVEN WIRE, TOP AND BOTTOM STRANDS SHALL BE 12½ GAUGE OR HEAVIER; INTERMEDIATE STRANDS SHALL BE 14½ GAUGE OR HEAVIER.
2. ALL WIRE SHALL HAVE CLASS III GALVANIZATION.
3. STANDARD WOVEN WIRE FENCES MAY HAVE LINE POSTS SPACED UP TO 15 FEET APART. HI-TENSILE WOVEN WIRE FENCE MAY HAVE LINE POSTS SPACED UP TO 20 FEET APART. CLOSER SPACING IS REQUIRED WHERE NEEDED FOR INCLINES OR CHANGES IN TOPOGRAPHY.
4. CONCRETE FOOTINGS SHALL HAVE TOPS CROWNED.
5. TO PREVENT WIRE FROM SLIPPING ON STEEL POST, DOUBLE WRAP ALL WIRE AROUND STEEL POST OR WELD CHAIN LINK LOOPS.

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FENCE DETAILS

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PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
PROJECT NO. 23-530	CHECKED BY: CSC
SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 110

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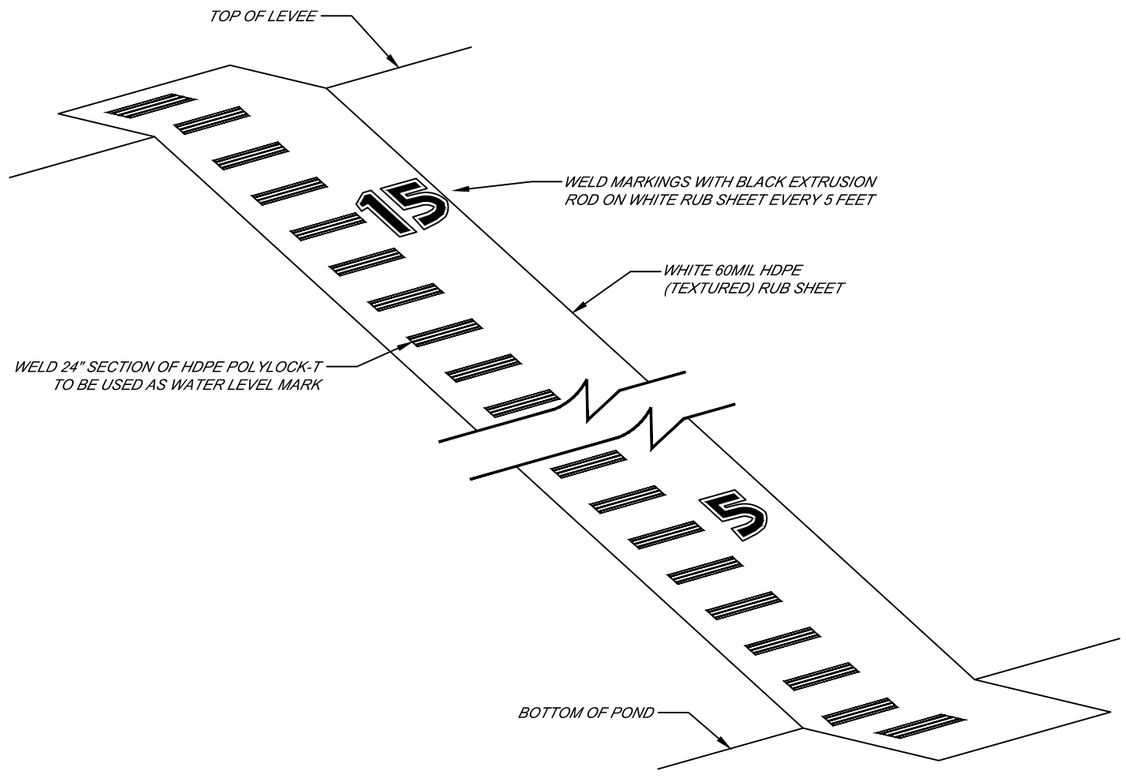
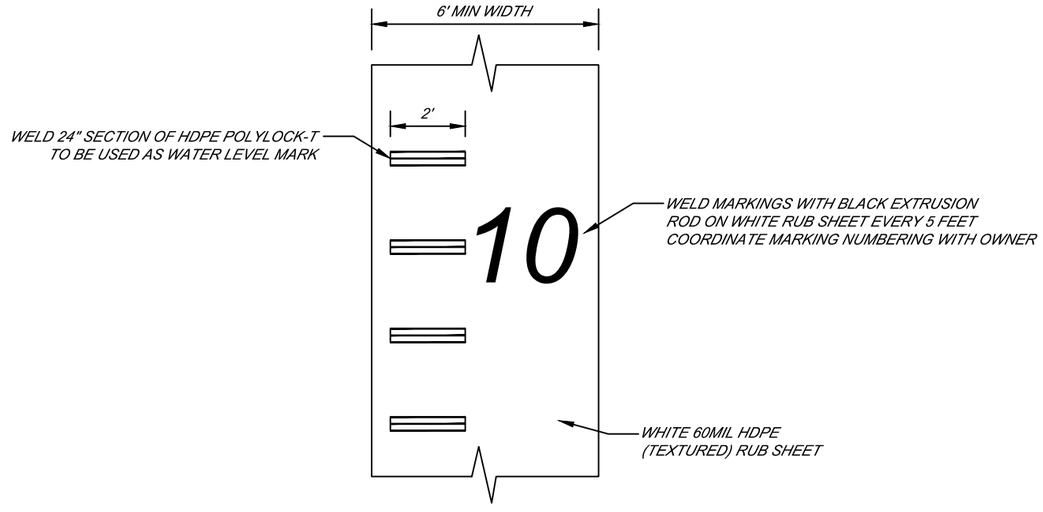


1 GAGE/LADDER DETAIL ISOMETRIC VIEW
NOT TO SCALE



2 GAGE/LADDER DETAIL PLAN VIEW
NOT TO SCALE

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22897
PROFESSIONAL ENGINEER
09/25/2023

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GAGE / LADDER DETAILS

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PRINT DATE: 9/25/2023	DESIGNED BY: ZZ, JN
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SUBSET: CIVIL	APPROVED BY: CSC

SHEET: C - 111

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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

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Ph 720-289-0300 / geosynthetics@msn.com

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

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

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

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

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

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

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

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

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

Sincerely Yours,

R K Frobel

Ronald K. Frobel, MSCE, PE

References:

NMAC 19.15.34.12 A DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT

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

ASTM Geosynthetics Standards 2017
www.ASTM.org/Standards

EFFECTIVE WIDE-AREA BIRD CONTROL!

Mega Blaster PRO sonic bird repeller covers 30 acres!

- NEMA Rated Case
- Crystal-Clear Digital Sounds

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

PREDATOR cries help scare all the birds.

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

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

Our most powerful system features two high-output amplifiers that drive our specially-designed 20 speaker tower. The intense sound output covers up to 30 acres (12 hectares).

It features solid-state electronics mounted inside a NEMA-type control box, suitable for most any application.

The generating unit mounts easily to a post or pole using the included hardware. The unit comes pre-recorded in four different configurations for the most common bird infestations.

Choose any or all of the 8 sounds, including predators to give the birds even more of a sense of danger. Customize by choosing volume and silent time between sounds.

CONFIGURATIONS AVAILABLE:

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

Mega Blaster PRO

Complete system includes the generating unit with two built-in high-output amplifiers, 20-speaker tower with audio cables, 40 watt solar panel, battery clips and all mounting hardware.

BIRD-X

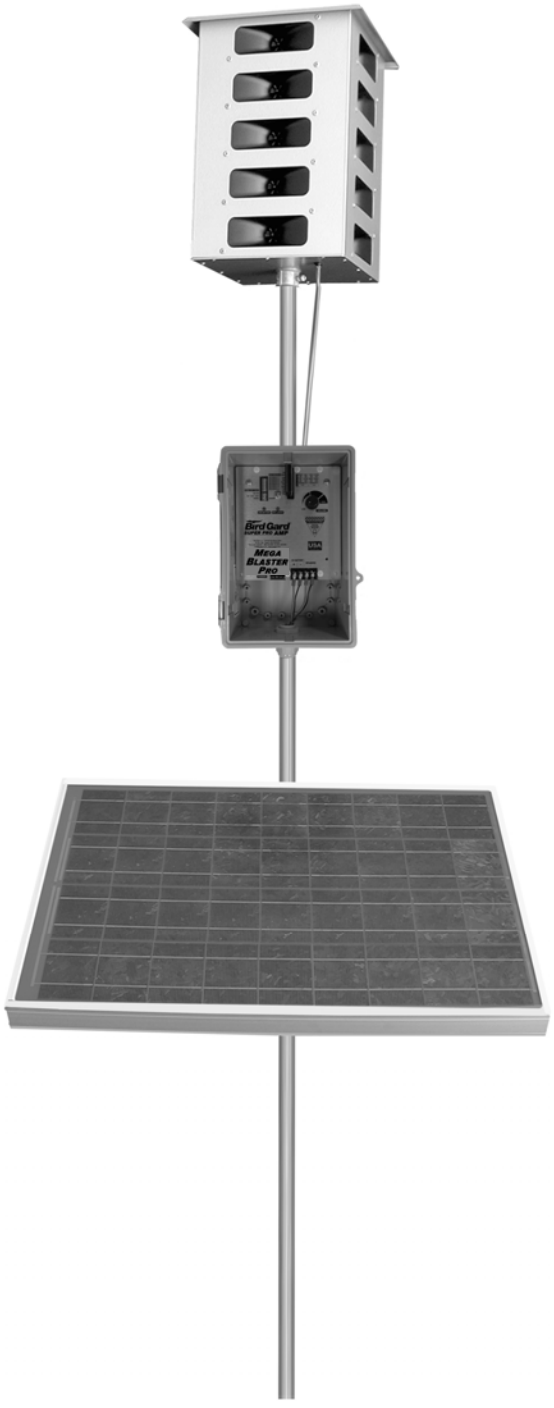
The Bird Control 'X'-Perts

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

MEGA BLASTER PRO

BIRD-X

User's Manual



Overview

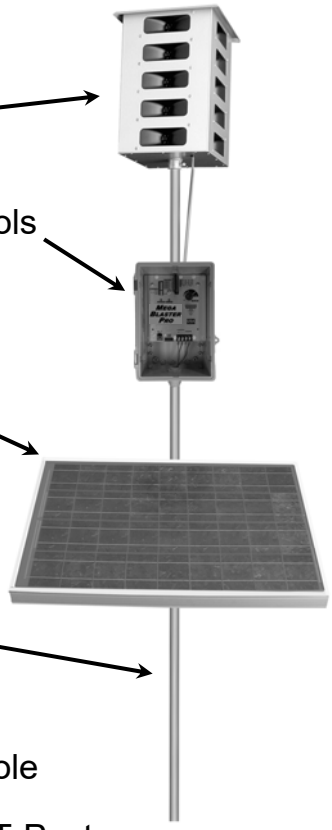
The Bird-X Mega Blaster Pro utilizes the innate power of the natural survival instincts of birds to effectively repel them. Digital recordings of distressed and alarmed birds, along with the sounds made by their natural predators are broadcast through high fidelity weather-resistant speakers over the 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 <u>not</u> included:

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

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

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

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

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

Bird Control Management Guidelines

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

For best results:

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

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

DESIGN/CONSTRUCTION PLAN

Design and Construction Plan In Ground Containments

This plan addresses construction of the earthen containments.

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

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

Dike Protection and Structural Integrity

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

Stockpile Topsoil

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

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

Signage

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

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

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

Fencing

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

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

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

Netting and Protection of Wildlife

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

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

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

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

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

Earthwork

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

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

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

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

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

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

Liner and Drainage Geotextile Installation

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

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

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

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

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

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

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

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

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

slope's toe.

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

vii. avoid excessive stress-strain on the liner

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

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

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

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

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

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

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

Leak Detection and Fluid Removal System Installation

The leak detection system, contains the following design elements

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

OPERATIONS AND MAINTENANCE PLAN

CLOSURE PLAN

Operation and Maintenance Plan
In Ground Containments

Overview

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

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

The operation of the containment is summarized below.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring, Inspection, and Reporting Plan

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

Weekly inspections consist of:

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

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

Monthly, the operator will:

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

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

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

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

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

Freeboard and Overtopping Prevention Plan

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

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

I. Cease discharging produced water to the containment.
II.Accelerate re-use of the produced water for purposes approved by the Division.

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

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

Protocol for Leak Detection Monitoring, Fluid Removal and Reporting

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

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

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

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

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

Closure Plan
In Ground Containments

Overview

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

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

The operator shall substantially restore the impacted surface area to

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

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

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

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

Excavation and Removal Closure Plan – Protocols and Procedures

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

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

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

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

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

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

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

Reclamation and Re-vegetation

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

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

Closure Documentation

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

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

The operator shall notify the division when reclamation and re-vegetation are complete. Specifically the notice will document that all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

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

19.15.34.14 F
Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

October 2023

March 2024
Revised Closure Cost

Rule 34 Registration: Volume 1
Zeus Tres Containments
Section 35, T21S, R32E, Lea County

- ***Transmittal Letter***
- ***Siting Criteria Demonstration with Plates & Appendices***

Aerial View of Zeus Tres Containment site showing nature of landscape.

Prepared for:
Solaris Midstream Waters, LLC
San Antonio, Texas

Prepared by:
R.T. Hicks Consultants, Ltd.
901 Rio Grande NW F-142
Albuquerque, New Mexico

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

November 8, 2023

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, Zeus Tres Containment
In-ground Containment Registration
Section 35, T21S, R32E, Lea County

Dear Ms. Barr and Ms. Venegas:

On behalf Solaris Water Midstream, LLC (Solaris), R.T. Hicks Consultants has prepared this C-147 registration for the above-referenced project. Please note that the Zeus Tres Containment is located immediately west of the Zeus Deuce Containment and north of the Zeus Containment. Of importance is that all three containments are completely within the 45-acre site demonstrated to meet the siting criteria in the Zeus Containment registration. As such, the demonstration that the Zeus Tres location meets the siting criteria is necessarily similar to that of the earlier registrations.

Solaris is proposing covering the three sites with one closure bond. Because of the proximity of the three Zeus Containments and the similar usage, a simultaneous closure is planned. Details of this proposal immediately follow this letter. As acceptance of this bond arrangement can affect Solaris' schedule, a timely review of this request will be greatly appreciated.

Solaris anticipates that construction will commence in January, 2024. Produced water will flow into the containment in Q1 of 2024.

Volume 1 of the package contains:

- this letter
- a closure cost estimate for the containment immediately follows this letter
- the siting criteria demonstration for the containment with appendices

Volume 2 includes:

- C-147 Form to register the in-ground containment
- Stamped Design Drawings with a liner equivalency demonstration and an Avian Deterrent System
- Recently Approved Plans for Design/Construction, O&M, Closure

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

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

Solaris will transmit the registration package to OCD via the OCD.Online portal. In compliance with 19.15.34.10 of the Rule, Solaris provided this package to Stacey Mills, who is the representative of the surface owner. If you have any questions or concerns regarding this permit or the attached C-147, please contact me. As always, we appreciate your work ethic and diligence.

Sincerely,
R.T. Hicks Consultants

Randall T. Hicks PG
Principal

Copy: Solaris Water Midstream, LLC
Stacey Mills, slash46@live.com

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

ZEUS TRES IN-GROUND CONTAINMENT

Financial Assurance Cost Estimate

Attached is the cost estimate for reclamation of the Zeus Tres recycling in-ground containment. The Zeus Tres site is immediately to the west of the Zeus Deuce containment. The work will be performed by the same contractor, Charger Services. Because of the similarities and proximity, variances are expected to be minimal. Should closure occur simultaneously, there may be reductions in costs.

The cost of closure sampling and reporting is estimated at $2,700 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.

RT Hicks Consultants will assist with the sampling as necessary and prepare the Closure Report for the site. Total closure costs associated with the sampling are estimated at $7500. The cost estimates from Charger Services (attached) and from RT Hicks Consultants are presented below.

Charger Services

Reclam. Earthwork	264,650
Confirm.Sampling	2700
Liner Removal	464,117
Seeding	2000
Fence Removal	22066
Subtotal	755533

RT Hicks Consultants

Preparation of sampling results and closure report	4800

Total for all Closure Activities	**$760, 333.00**

The reclamation must meet terms set forth in the surface lease agreement with the landowner, who received a copy of the registration.

Please contact Randall Hicks if you have any questions concerning this closure cost estimate.

CHARGER SERVICES

23 W. INDUSTRIAL LOOP
MIDLAND, TEXAS 79701
(432) 218 - 7674

MATT.HOLM@CHARGERSERVICES.COM
(432)-425-0270

ESTIMATE

ARIS
Zeus Tres Reclaim
11/2/2023

DATE	ACTIVITY	QUANTITY	RATE	TOTAL
Reclaim Earthwork	Mobilize equipment to site. Existing Pond estimated dimensions 436' x 779' floor 700' x 1000' outside to outside 15' top of wall Average 19' deep 3:1 slopes Dirt reclaim of pond consist of- 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. *No Density testing	1.00	$264,650.00	$264,650.00
Soil and contamination testing	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 10 tests.	1.00	$2,700.000	$2,700.00
Liner Removal	Remove and dispose liner estimated 2,374,000 SQFT Removal and Disposal of all 4 layers including Erosion control	2,374,000	$0.196	$464,117.00
Seeding	Broadcast seeding of pond area Seed will be a native mix for Lea County NM Includes purchase of seed mix and placement	1.00	$2,000.00	$2,000.00
Fence Removal	Fence removal and disposal Fence estimated at 3,400 ft This includes removal of all posts, braces, wire, fabric, gates, and hardware.	3,400.00	$6.49	$22,066.00

SITING CRITERIA DEMONSTRATION

Distance to Groundwater

Plates 1, 2a, and 2b with their associated legend, and the discussion presented below demonstrate that groundwater (fresh water, as defined by NMOCD Rules) at the location is greater than the required 50 feet below the proposed Zeus Tres Containment site. Specifically, the estimated depth to water is greater than 100 feet.

Hydrogeology of Zeus Tres Containment Site

Plate 1 shows the topography of the area of the Zeus Tres Containment and the locations of water wells in the databases of the NM Office of the State Engineer, the USGS and Hicks Consultants.

As can be seen on Plate 1, the site is in the northwestern portion of the northwest to southeast trending San Simon Swale. At the site, stormwater flows southeast toward the center of the Swale, 16 miles distant and beyond the southeastern limit of Plate 1. The low point of the Swale is more than 390 feet lower than the site at an elevation of 3273 feet. About 1.3 miles to the northwest of the Zeus Tres site is a slight saddle with an elevation of 3680 feet. On the far side of the saddle, surface water flows northwest into the Bilbrey Basin.

The State Geologic Map of Plate 2a shows that the Tertiary Ogallala Formation (To) is exposed north and northeast of the Zeus Tres site. Quaternary eolian sand and piedmont alluvial deposits characterize the surface at the site. Underlying the piedmont deposits are the Tertiary Ogallala Formation in the north and northeast portion of Plate 2a.

Plate 2b shows contours of the top surface of the Triassic Chinle (aka Dockum Group) in addition to the State Geologic Map of Plate 2a. This redbed surface underlies a thin veneer of alluvium. At the Zeus Tres site, the elevation of the Triassic surface (Chinle/Dockum) is not complete in the area of the containment site. Interpolation suggests that the top surface of the Chinle may be at about 3650 ASL. With the surface elevation of 3665 feet at the Zeus Tres site, the resultant thickness of alluvial material (Qp or To) is about 15 feet.

The driller's log for CP-1701 (see Well Logs Appendix), about 0.8 miles west of the site, penetrated a red clay from 80 feet to 190 feet deep. Underlying the clay is 210 feet of Tan/Red sandstone. This lithology is typical of the Chinle. We know the work of the driller of this well (Bryce Wallace) and believe the record of cuttings is valid. The surface elevation of CP-1701 is about 3675. Based upon the well log, the top of the "red bed" (Chinle) is at an elevation of (3675-80=) 3595. As CP-1701 is located west of the Zeus Tres site, the data is consistent with an upper red bed surface dipping to the west. The well log also indicates the uppermost water bearing zone is a red siltstone with gypsum at 560 feet, which may be the Permian Quartermaster or Rustler. However, the USGS identifies the Chinle/Santa Rosa as the primary aquifer in this area, and we agree with their interpretation.

Other well logs in the Well Logs Appendix provide useful data as indicated below.

- C-2821 (2.6 miles south of Zeus Tres) describes a red/smooth/sticky clay, is at 72 feet below surface. The elevation of the Chinle redbeds on Plate 2b at this location

is about (3715-72=) 3643, which agrees with the projected 3650 elevation of Plate 2b. The uppermost water bearing strata is noted at a depth of 410 feet with a groundwater elevation of (3715-410=) 3305..

- C-3717, in Section 9 of T22S, R32E, is about 2.7 miles southwest of the Zeus Tres site and was not completed as a well due to lack of water. Groundwater is noted at a depth of 55 feet, which may be a perched zone caused by recharge from the nearby Divide Tank. Red clay at the 30 foot depth is probably the top of the Chinle, which calculates to an elevation of (3775-30=) 3745. Note that Plate 2b suggests the Chinle is at or near the surface about 2 miles west of this well. A second water bearing zone composed of conglomerate was identified between the depths of 620 and 630 feet. The corresponding groundwater elevation is (3775-620=) 3155 feet.

Depth to Water Data and Nearby Wells

Plate 2a and the associated legend presents a topographic map overlain by a transparent geologic map of the state of New Mexico that display the following:

- A blue hatched rectangle, which represents the footprint of the Zeus Site.
- Water wells from the USGS database as green, cyan, purple, red, and blue triangles. These colors indicate the principal water-bearing unit for each well: Alluvium/Bolsom, Ogallala, Chinle, Santa Rosa, and Not Defined, respectively. The well number as defined in the database, recorded depth to water value, and date the water level was measured is displayed next to the corresponding well point.
- Miscellaneous water wells from public and non-public databases were identified by field inspection or other published documents are represented by yellow, cyan, green, dark green, and dark blue squares with black dots in the center. The colors correspond to the depth to water. The water level measurement and the date the measurement was recorded are displayed next to the corresponding well points.

While alluvial sediments near Hat Mesa to the north of the containment and the Ogallala Formation to the northeast create a reasonable water-table aquifer, these sediments are relatively thin and not saturated at the Zeus Tres site, as described above. Groundwater at the Zeus Tres site is derived from the Triassic Chinle/Santa Rosa units. The driller's log from the closest well, CP-1701, indicates "first water" at a depth of 560 feet and a static water level of 457. Within Plate 2a the 560 depth of "first water" is used to calculate the elevation of groundwater (3680-560=) 3120. Using the static water level from the well log (457), the elevation of the potentiometric surface at CP-1701 of the confined groundwater is (3680-457=) 3223.

Projecting the elevation that groundwater was encountered at CP-1701 beneath the Zeus Tres site yields a depth to water at the Zeus Tres site of (3665-3120=) 545 feet. Data from driller's logs can be inaccurate, but the description of the lithology and groundwater characteristics displayed in the log for CP-1701 is consistent with data from nearby wells, the geology of the area and USGS water level data (see Appendix Well Logs and Data). We can state with a high degree of scientific certainty that the depth to the groundwater surface beneath the Zeus Tres site is greater than 100 feet.

Distance to Municipal Boundaries and Freshwater Fields

Plate 3 demonstrates that the area of interest is not within incorporated municipal boundaries or within defined municipal freshwater well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- The nearest freshwater well field is 28 miles to the west and is associated with Loving and/or Otis New Mexico
- The nearest municipality is the City of Loving, which is 27 miles west-southwest of the site.

Distance to Subsurface Mines

Plate 4 and our general reconnaissance of the area demonstrate the absence of subsurface mines in the area.

- The Zeus Tres site is not in an area where subsurface mines exist.
- The nearest surface mine mapped in the MILS database is a caliche pit about 1.2 miles to the north-northwest.
- An unmapped caliche pit is about 5000 feet to the west-southwest

Distance to High or Critical Karst Areas

Plate 5 illustrates the Zeus Site is within a “low” karst potential.

- The closest high karst area is more than 8 miles to the west
- Our field investigation saw no evidence of unstable ground or karst features such as sinkholes.

Distance to 100-Year Floodplain

Plate 6 demonstrates the absence of 100-year flood plains with respect to the proposed location for the Zeus site.

- The nearest 100-year flood plain is 16 miles southwest of the site.

Distance to Surface Water

Plate 7 and the site visit demonstrate the that the Zeus Site is outside of the setback distances for a continuously flowing watercourse, significant watercourse or the next lower order tributary, lakebed, sinkhole, playa lake (measured from the ordinary high-water mark) or spring.

- The nearest surface water feature is an intermittent stream that is located more than 600 feet to the southwest.
- We observed no watercourses that meet the Rule 34 definition near the site.

Distance to Permanent Residences or Structures

Plate 8 demonstrates that the proposed site for the Zeus Tres Site is not within the setback distances of an occupied permanent residence, school, hospital, institution, church, or other structure at the time of the initial application.

- The only structures near the proposed site are the well pads, lease roads and pipelines.

Distance to Non-Public Water Supply

Plates 1 and 7 demonstrate the Zeus Tres location is not within the setback distances of a spring or freshwater well used for domestic or stock watering purposes, in existence at the time of initial application.

- Plate 1 shows the location of all area water wells. The nearest well, CP-1701 is located more than 3000 feet west of the Zeus Tres Containment location.
- No domestic water wells are located within 1,000 feet of the recycling area.
- No springs were identified in the area.
- The site is not within 500 feet of a spring or freshwater well used for domestic or stock watering purposes, in existence at the time of initial application.

Distance to Wetlands

Plate 9 demonstrates that the proposed site of the Zeus Tres site is not within the 300-foot setback distance of a wetland.

- The nearest wetland mapped by the USA database is a riverine wetland associated with an arroyo about 5 miles west of the Zeus Tres site. Typically, these are not wetlands when inspected on the ground but are brush covered arroyos.
- The nearest wetland mapped by the New Mexico database is about 0.55 miles north of the site. 1.05 miles to the southwest are wetlands associated with the School Section Tanks.

SITING CRITERIA DEMONSTRATION PLATES

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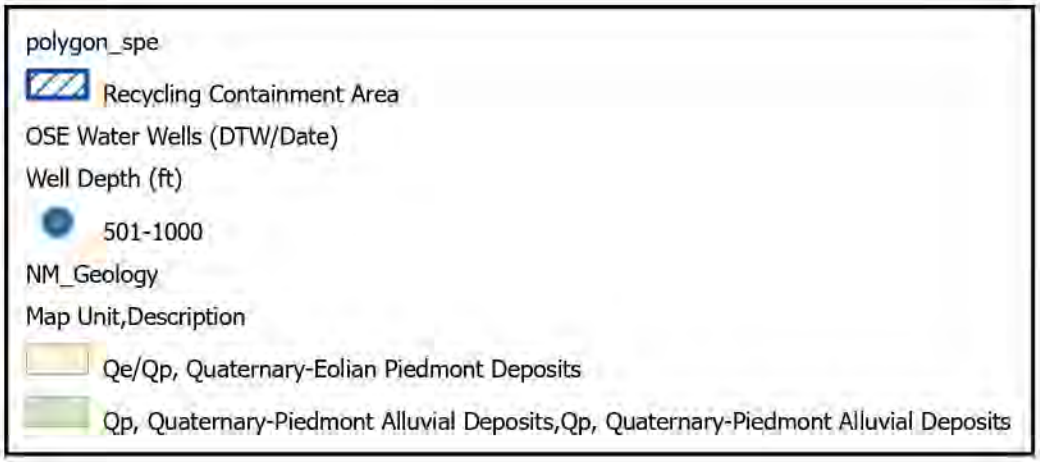

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Plates 1 & 2 Legend	
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

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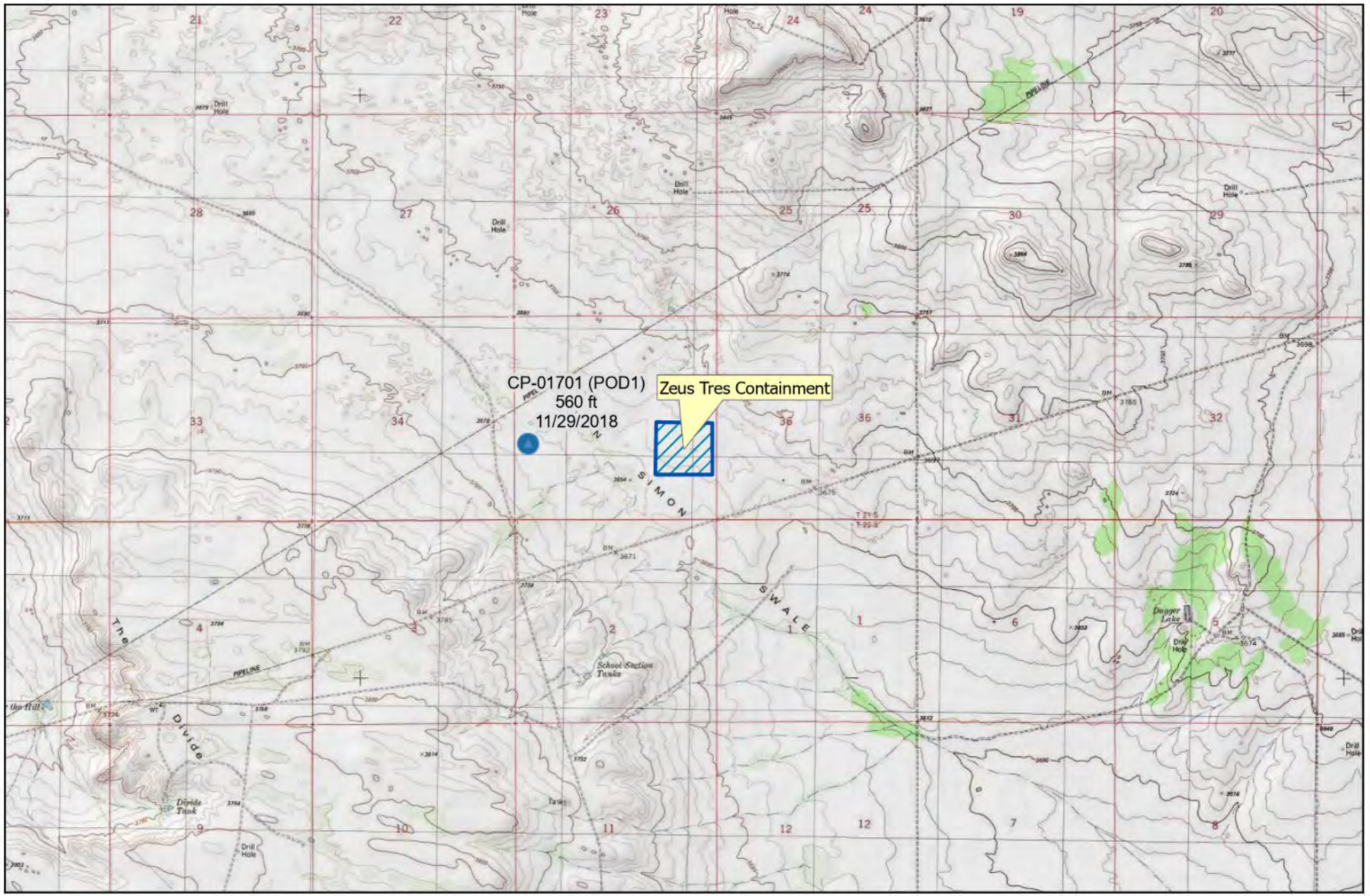

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Wells and Borings with Depth to Water	Plate 1
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

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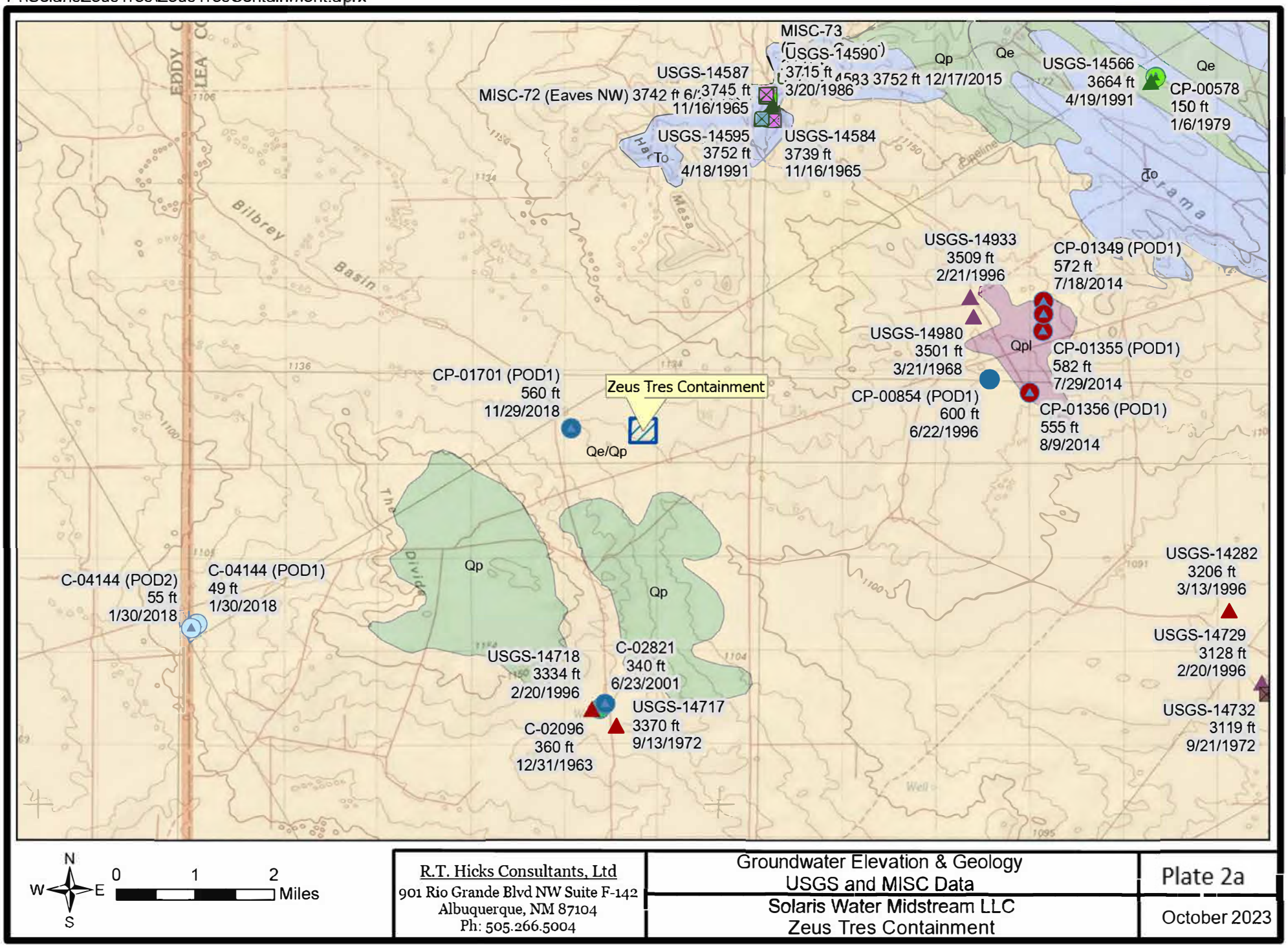

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation & Geology USGS and MISC Data Solaris Water Midstream LLC Zeus Tres Containment	Plate 2a October 2023

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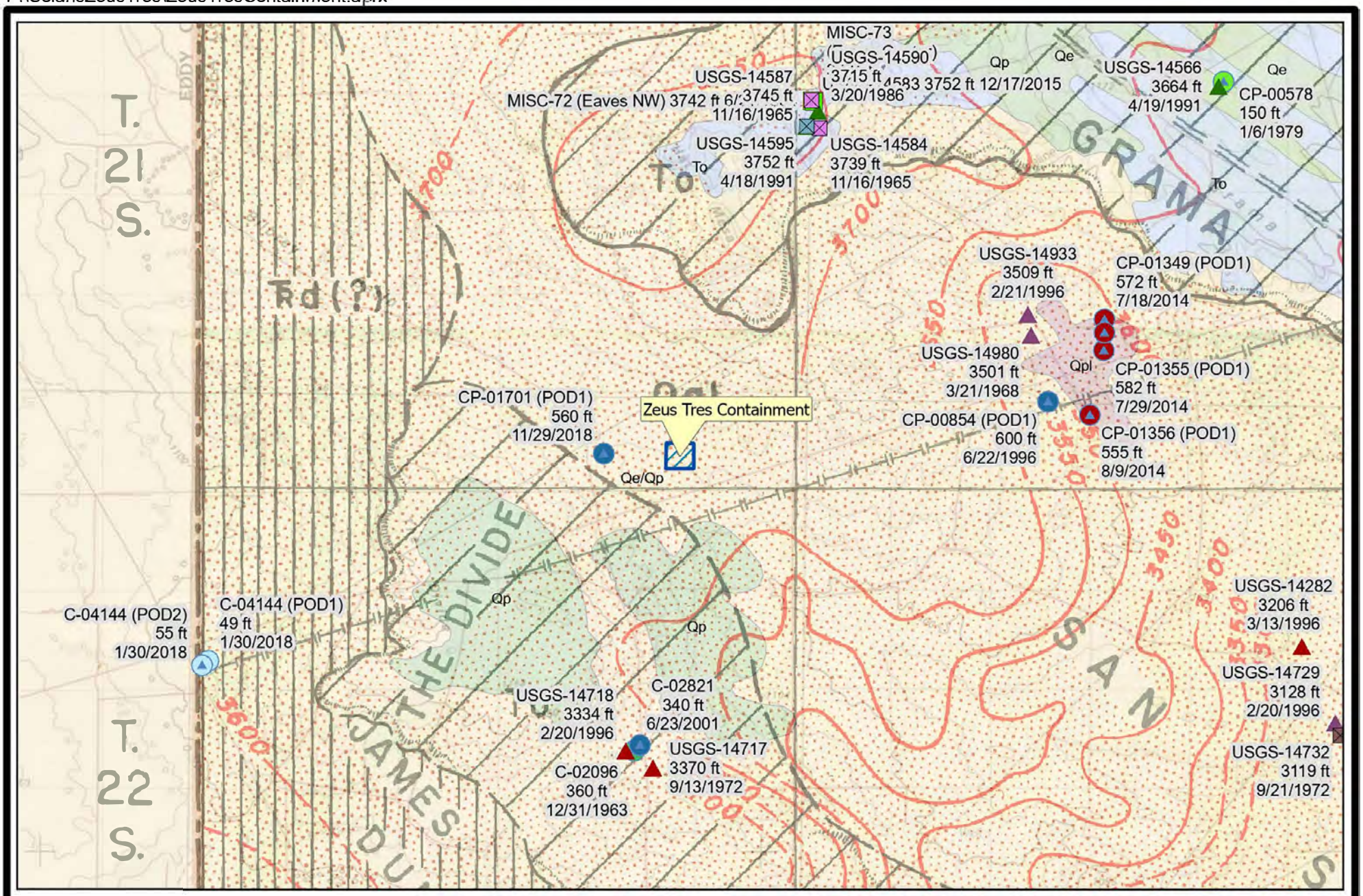

N W E S 0 1 2 Miles

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation & Geology USGS and MISC Data Solaris Water Midstream LLC Zeus Tres Containment	Plate 2b October 2023

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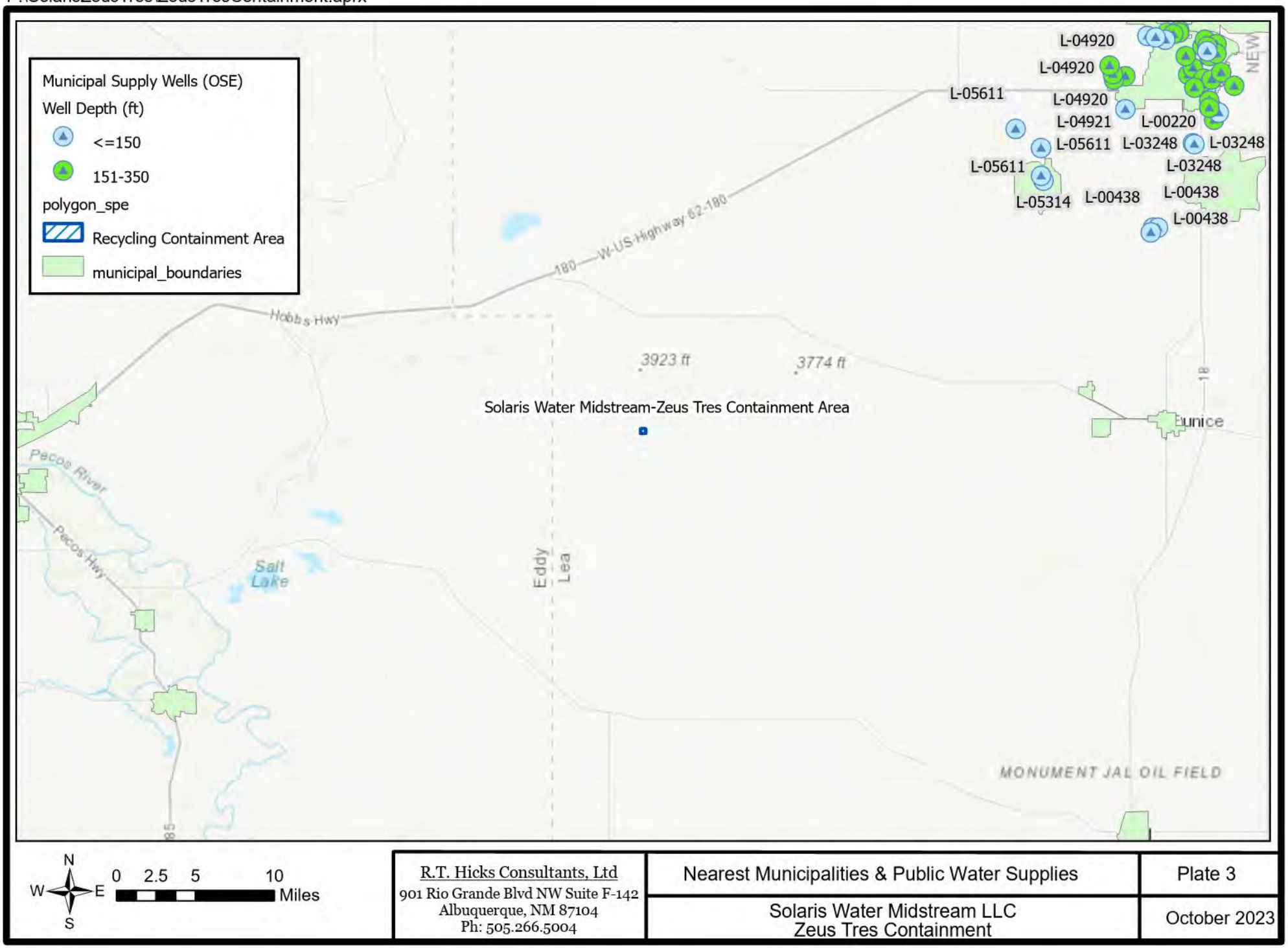

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearest Municipalities & Public Water Supplies	Plate 3
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

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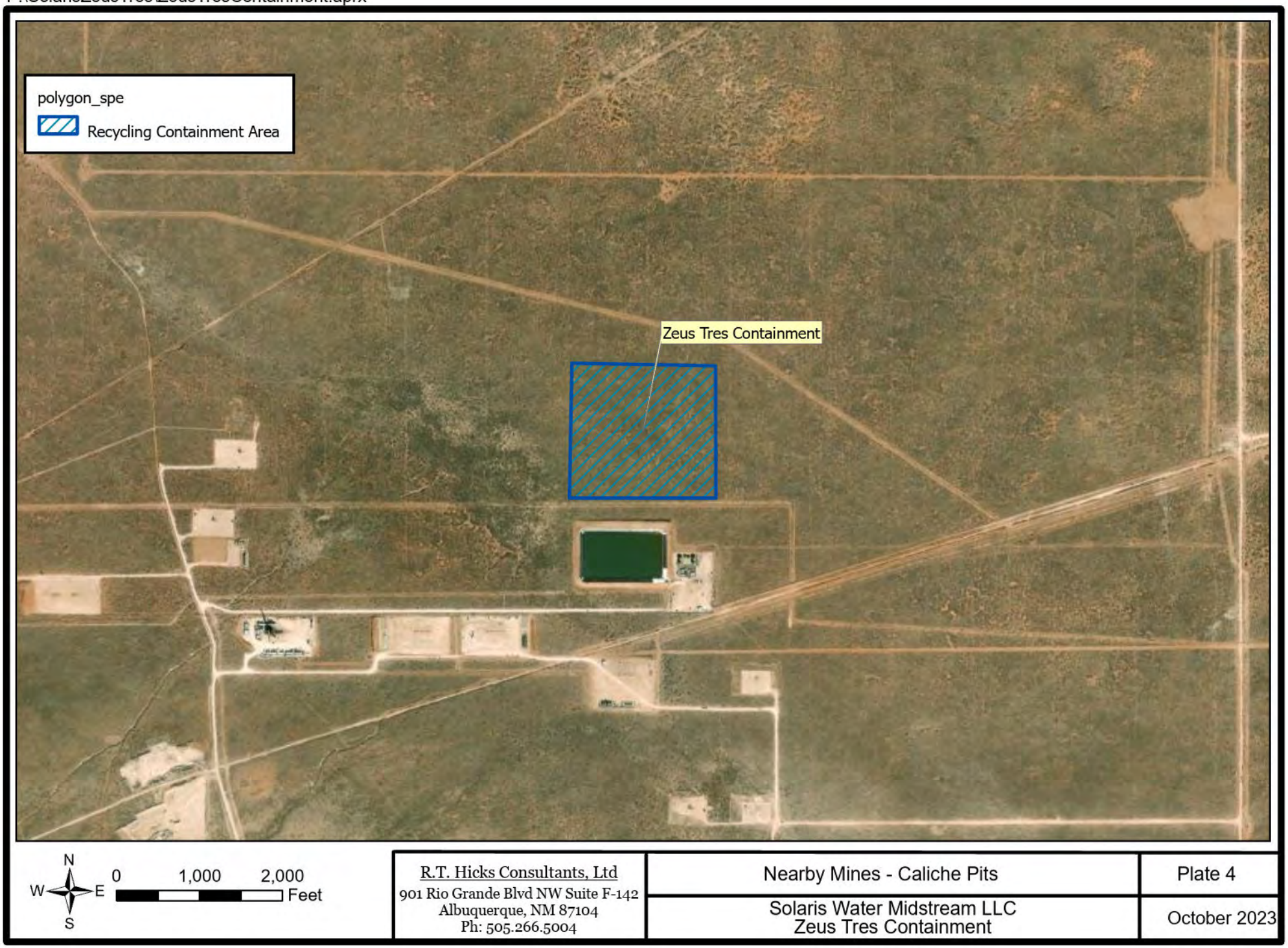

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Mines - Caliche Pits	Plate 4
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

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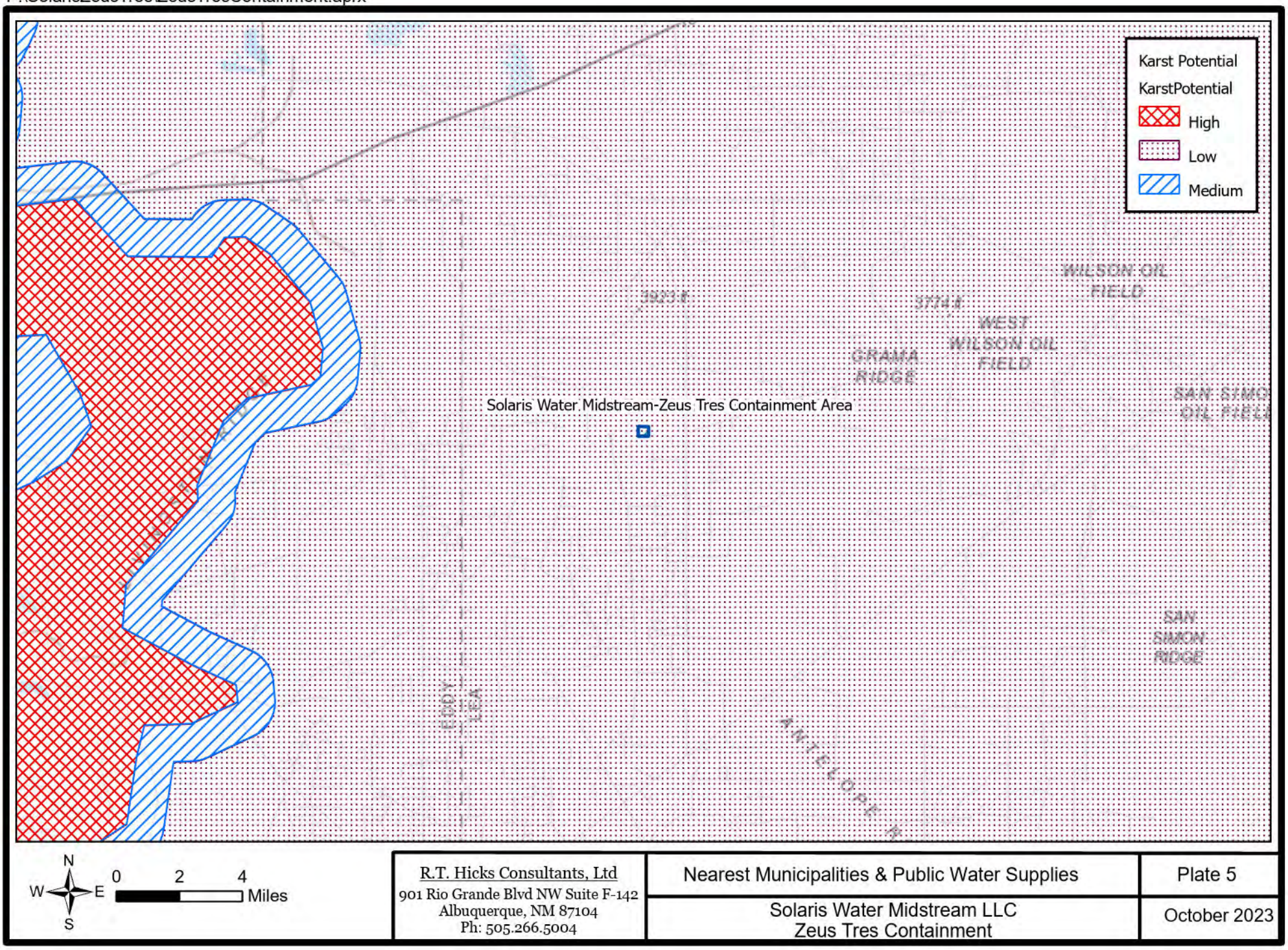
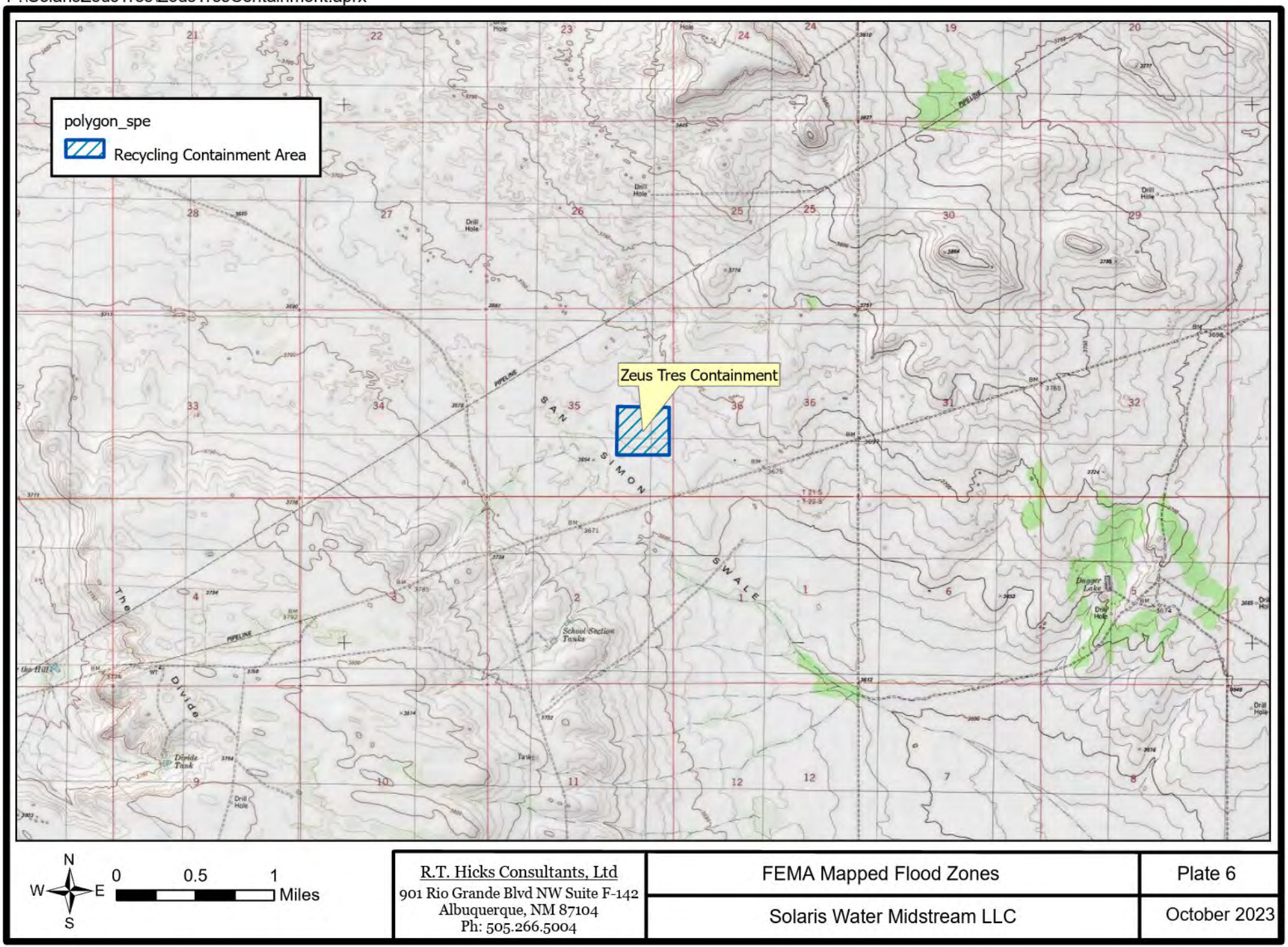


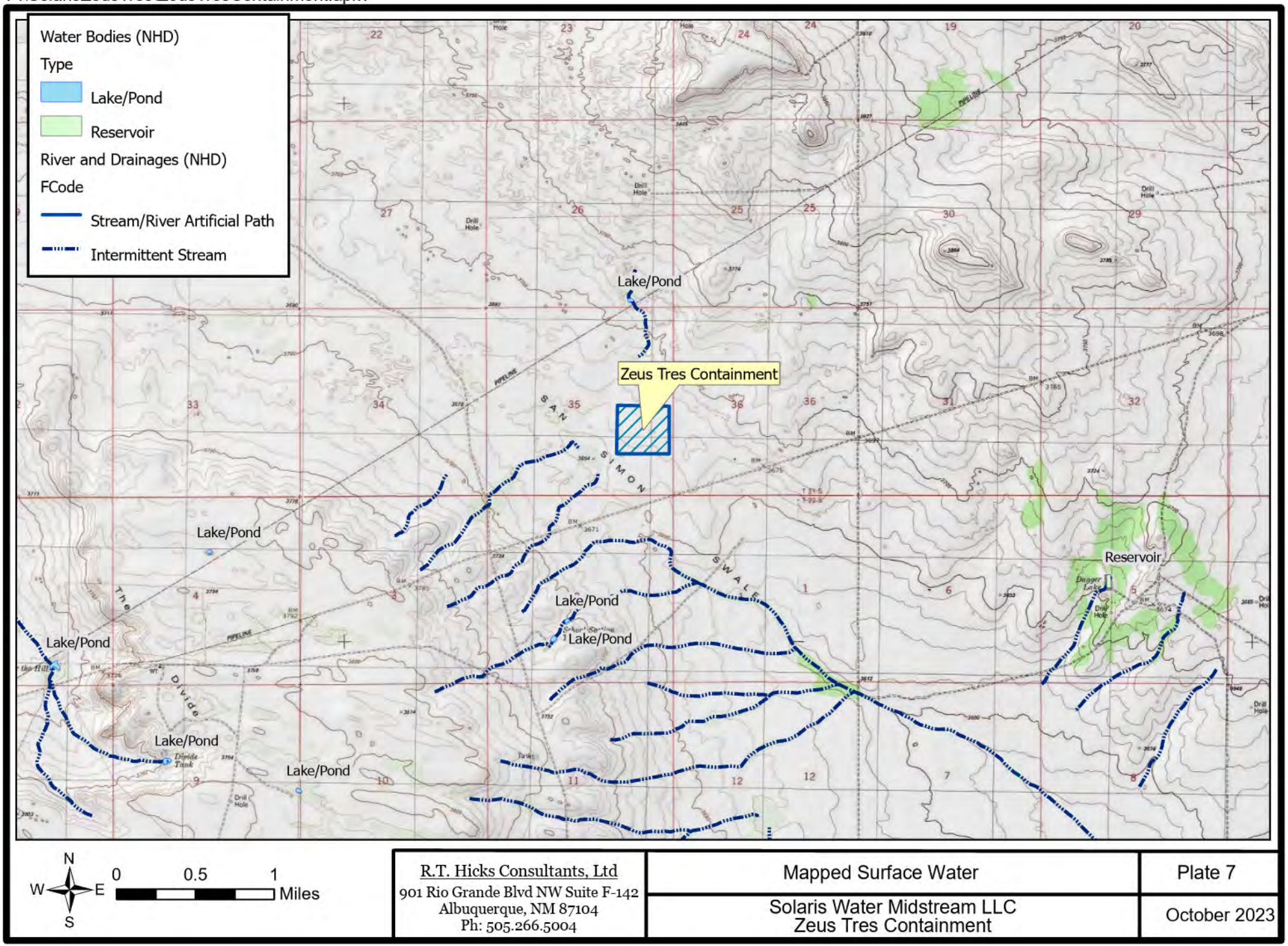
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearest Municipalities & Public Water Supplies	Plate 5
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

P:\SolarisZeusTres\ZeusTresContainment.aprx



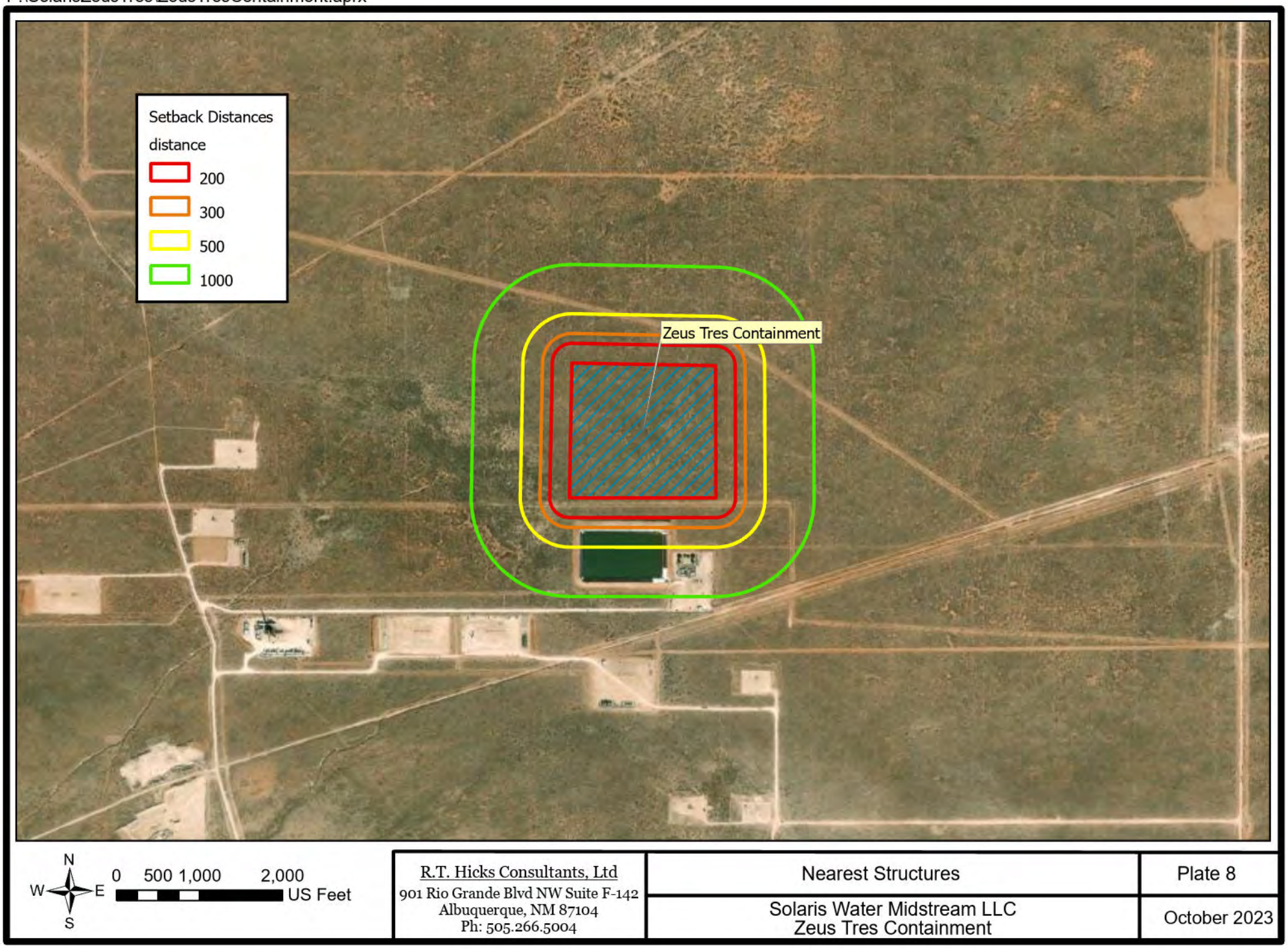
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	FEMA Mapped Flood Zones	Plate 6
	Solaris Water Midstream LLC	October 2023

P:\SolarisZeusTres\ZeusTresContainment.aprx



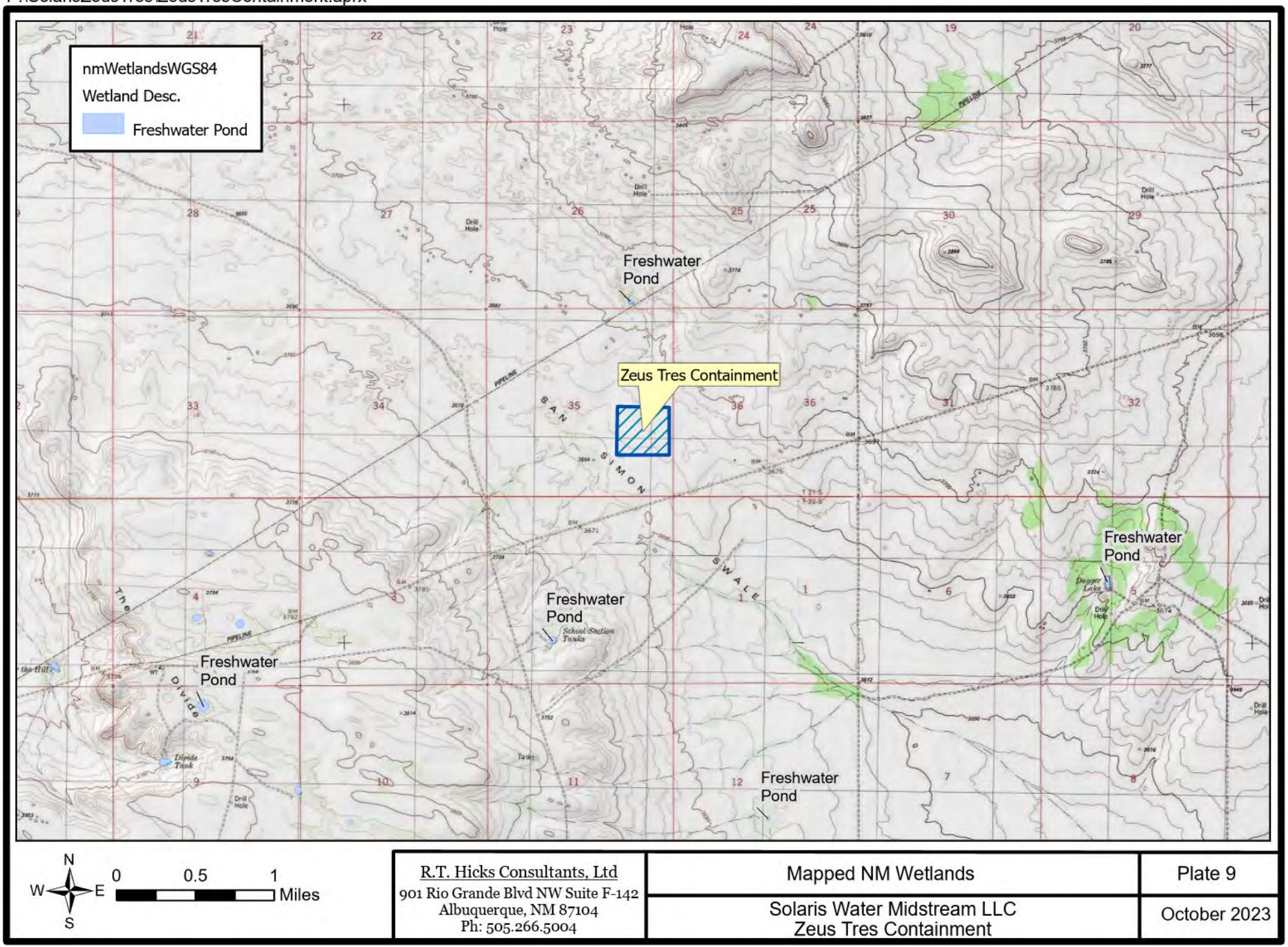
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Mapped Surface Water	Plate 7
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

P:\SolarisZeusTres\ZeusTresContainment.aprx



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearest Structures	Plate 8
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

P:\SolarisZeusTres\ZeusTresContainment.aprx



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Mapped NM Wetlands	Plate 9
	Solaris Water Midstream LLC Zeus Tres Containment	October 2023

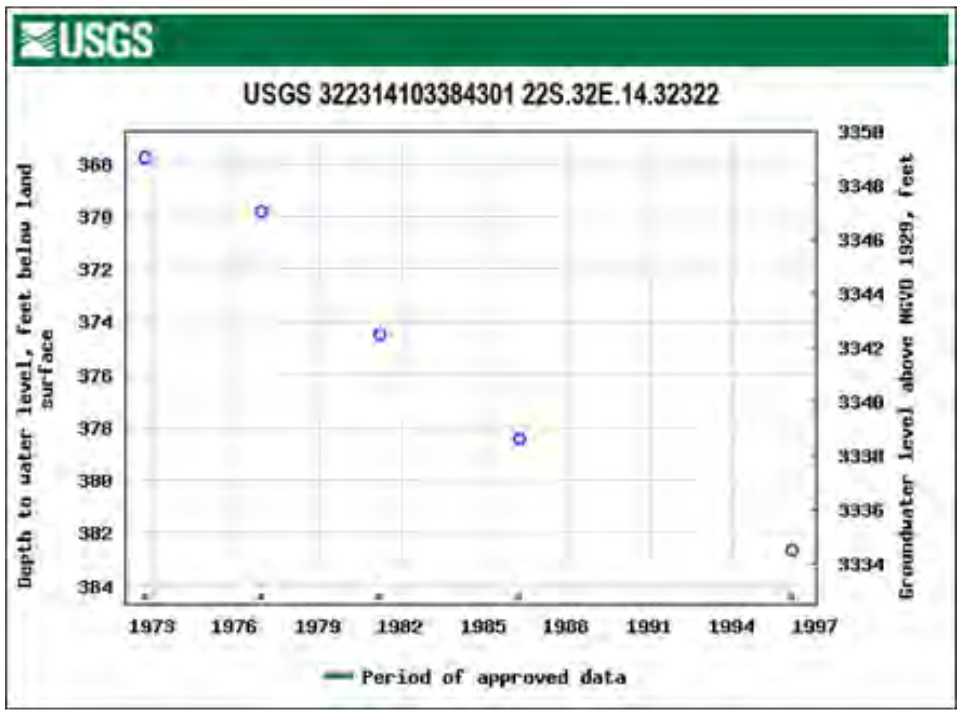
APPENDIX WELL LOGS & USGS DATA

USGS Well Data from wells near the Zeus Tres Containment Site

Groundwater Data

Water level data from the OSE database rely upon observed water levels by drillers during the completion of the water well. The OSE dataset provides some useful data in certain areas but were not used to generate groundwater elevations for the potentiometric surface. OSE well logs are attached to provide information regarding the lithology of the area.

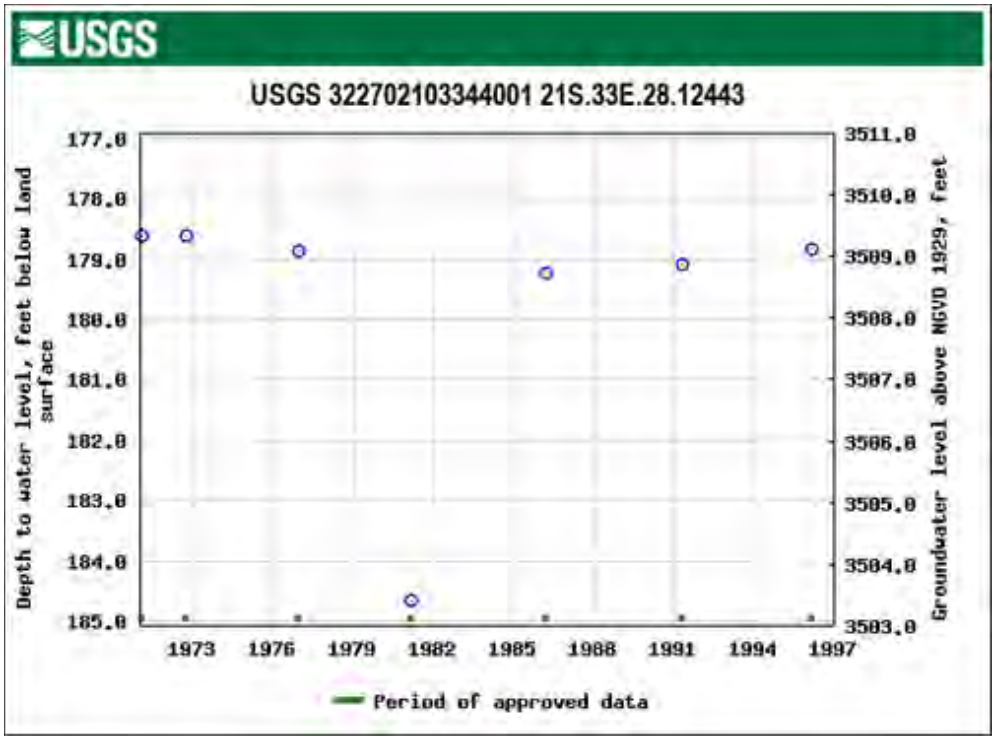
Information from the USGS database is provided below. The five-number USGS identifier used on the plates is provided to the right of the graph. The full USGS identifier is shown in bold, black type above the graph. Text is reproduced verbatim from the USGS data, as is the graph of the data.



This is **USGS 15223**, about 2.8 miles south of Zeus. The USGS description of this well is:

Latitude 32°23'23", Longitude 103°38'53" NAD27
Land-surface elevation 3,717.00 feet above NGVD29
The depth of the well is 435 feet below land surface.
This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.

The observed decline of the groundwater elevation over time is consistent with other Santa Rosa wells in the area.



The graph to the left is from **USGS-15373**, about 3.7 miles to the east-northeast. The USGS describes this well as:

Latitude 32°27'13", Longitude 103°34'42" NAD27
Land-surface elevation 3,688.00 feet above NGVD29
The depth of the well is 224 feet below land surface.
This well is completed in the Chinle Formation (231CHNL) local aquifer. This well lies southwest of the exposed Ogallala formation.

The relatively stable water level over time probably represents a hydraulic connection between the Ogallala and the Chinle formations.

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).
CP-1701-POD1		

WELL OWNER NAME(S)	PHONE (OPTIONAL)
The Jimmy Mills GST and 2005 GST Trusts	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
c/o Stacey Mills PO Box 1359	Loving	NM	88256-1358

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	26	0.5	N
LONGITUDE	103	39	10.1	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

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD1706	Bryce Wallace	Elite Drillers Corporation

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/15/18	11/29/18	840	880	560

COMPLETED WELL IS: [x] ARTESIAN [ ] DRY HOLE [ ] SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT): 457

DRILLING FLUID: [x] AIR [ ] MUD ADDITIVES – SPECIFY:

DRILLING METHOD: [x] 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	20	12.75	ASTM53 Grade B Steel	N/A	12.57	.188	
+2	460	12.25	ASTM53 Grade B steel	Welded	6.065	.28	
460	840	12.25	SDR17 PVC	Spline	6	SDR17	.032

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	20	12.75	Portland I/II Cement	17	Pour
0	453	12.25	Baroid Benseal Grout	247	Trimmie
453	860	12.25	8/16 Silica Sand	285	Pour

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO.	CP-1701	POD NO.	1	TRN NO.	619305
LOCATION	Exp1	21S.32E.35.31		WELL TAG ID NO.	—

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	Topsoil	Y N	
5	8	3	Caliche	Y N	
8	80	72	Tan/Red sandy caliche	Y N	
80	190	110	Red clay	Y N	
190	400	210	Tan/Red sandstone	Y N	
400	560	160	Red siltstone	Y N	
560	575	15	Red siltstone/Gyp	✓ Y N	5.00
575	750	175	Red siltstone	Y N	
750	770	20	Red siltstone/Gyp	✓ Y N	25.00
770	840	70	Red siltstone	Y N	
840	880	40	Red Shale	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): 30.00

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:

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:

Bryce Wallace — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

12/10/2018 — DATE

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

FILE NO. CP-1701	POD NO. 1	TRN NO. 619305	
LOCATION Exp1 215.32E.35.31		WELL TAG ID NO. —	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).
CP-1724-POD-1 OGS North		

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Merchant Livestock Company/Glenn's Water Well Service, Inc.	575-398-2424

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
PO Box 692	Tatum	NM	88267

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	23	44.39	N
	LONGITUDE	-103	31	1.34	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

SW1/4 NW1/4 NW1/4 Section 18, Township 22 South, Range 34 East on Merchant Livestock Company Land

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD 421	Corky Glenn	Glenn's Water Well Service, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
04/16/19	04/20/19	1,172'	1,172'	800'

COMPLETED WELL IS: [✓] ARTESIAN [ ] DRY HOLE [ ] SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 484'

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	40	20"	ASTM A53 Sch 40 Steel 16" OD	None	15.5	.25	---
0	799	14.75"	API Steel Grade J-55/K-55 10.75" OD	Thread & Collar	10.05	.35	---
752	1,172	9.875"	Steel Casing 8 5/8" / 8.625" OD	Plain End	8.125	.25	1/8"
			(420' Total) Bottom 378 Perforated				

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	40'	20"	Cemented	2 yards	Top Pour
0	799'	14.75"	Float and Shoe Cemented to Surface 29 Barrels	325 Sacks Pumped	Circulated

FOR OSE INTERNAL USE WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. CP-1724	POD NO.	TRN NO. 628588
LOCATION 22S.34E.18.113	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	Sand	Y ✓ N	
5	30	25	Caliche	Y ✓ N	
30	80	50	Sand & Red Clay	Y ✓ N	
80	450	370	Red Clay	Y ✓ N	
450	510	60	Red Shale	Y ✓ N	
510	580	70	Brown Shale	Y ✓ N	
580	799	219	Brown & Red Shale	Y ✓ N	
799	919	120	Sand Rock	✓ Y N	
919	950	31	Red & Blue Shales Stringers of Sand	✓ Y N	75.00
950	1,140	190	Sand Stone	✓ Y N	
1,140	1,172	32	Red Shale	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): 75.00

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:

0' to 799' drilled with mud.
799' to 1,172' drilled with air and foam.

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 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Corky Glenn — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

5/16/19 — DATE

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

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 2 OF 2

WELL RECORD & LOG

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		OSE FILE NUMBER(S): C 3717
WELL OWNER NAME(S): SLASH 46 INC.-STACEY MILLS		PHONE (OPTIONAL):
WELL OWNER MAILING ADDRESS: PO BOX 1548	CITY: LOVINGTON	STATE: NM ZIP: 88256

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	40	74.5	N
LONGITUDE	103	68	04	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

DIVIDE WELL-NE OF WIPP SITE SE SE NW S09 TS22S R 32E COUNTY LEE

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1058	CASEY KEY	KEYS DRILLING & PUMP SERVICE INC.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
8-4-14	8-12-14	650	650	55

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT):

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)
-1.5	20	14-1/2"	STEEL		10"	.250	

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	20	14-1/2"	CEMENT		HAND

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

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		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	TOP SOIL	☐ Y ■ N	
5	20	15	RED SAND	☐ Y ■ N	
20	25	5	HARD PINK SANDSTONE	☐ Y ■ N	
25	30	5	MULTI COLORED SANDSTONE	☐ Y ■ N	
30	55	25	RED CLAY	☐ Y ■ N	
55	72	17	MULTI COLORED SANDSTONE	■ Y ☐ N	
72	110	28	RED SANDSTONE	☐ Y ■ N	
110	125	15	TAN SANDSTONE	☐ Y ■ N	
125	150	25	RED CLAY	☐ Y ■ N	
150	480	330	RED SANDSTONE	☐ Y ■ N	
480	510	30	RED CLAY	☐ Y ■ N	
510	620	110	RED SANDSTONE	☐ Y ■ N	
620	630	10	CONGLOMERATE	■ Y ☐ N	
630	650	20	RED BED	☐ 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): 2

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 NOT COMPLETED, NOT ENOUGH WATER.

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

CASEY KEY

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:

Gary Key — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

8-26-14 — DATE

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

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

5X

Trans # Page 71 of 81

466507

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well JC Mills Ranch Owner's Well No. ______

Street or Post Office Address Box 1358

City and State Loving, NM 88256

Well was drilled under Permit No. C-2821 and is located in the:

a. NE ¼ NE ¼ SW ¼ ____ ¼ of Section 14 Township 22S Range 32E N.M.P.M.

b. Tract No. ______ of Map No. ______ of the ______

c. Lot No. ______ of Block No. ______ of the ______ Subdivision, recorded in ______ County.

d. X= ______ feet, Y= ______ feet, N.M. Coordinate System ______ Zone in the ______ Grant.

(B) Drilling Contractor Taylor Water Well Service License No. WD-1348

Address 7317 Etcheverry Rd., Carlsbad, NM 88220

Drilling Began 6/12/01 Completed 6/23/01 Type tools Air Rotary Size of hole 7 7/8 in.

Elevation of land surface or ______ at well is UK ft. Total depth of well 540 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 340 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
410	540	130	Very thin silt stone+sand stone layers	1.5

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
5	SCH 40	PVC	+2	540	542	Cap	410	430
							440	540

STATE ENGINEER OFFICE ROSWELL NEW MEXICO 2001 OCT -4 AM 9:56

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor ______

Address ______

Plugging Method ______

Date Well Plugged ______

Plugging approved by:

______ State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received 10-04-2001

Quad ______ FWL ______ FSL ______

File No. C-2821 Use Domestic/Stock Location No. 22S.32E.14.322

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	4	4	Sandy Soil
4	14	10	Caliche+Pnk Shdy Congl
14	26	12	Clay:pnk,rd,sndy
26	30	4	Limestone:yel brn,dns
30	36	6	Conglomerate:wht,pnk,sndy,lmy
36	68	32	Clay:rd,sndy
68	72	4	Conglomerate:rd,sndy,vfn-fn grn,wl consl
72	166	94	Clay:rd,smth,stky
166	170	4	Siltstone:gry,fria,calc
170	184	14	Clay:rd,smth,stky
184	188	4	Siltstone:gry,fria,calc
188	194	6	Clay:rd,sft
194	238	44	Shale:rd,blky,sme rd sandstone
238	266	28	Sandstone:rd,gry,frstd,fn-med grn,shly in prt
266	290	24	Conglomerate:rd,gry,vfn grn ss+sh gravel,calc
290	302	12	Sh:rd,blky,slty,sndy
302	310	8	Conglomerate:yel brn,vry sndy,lmy
310	386	76	Shale:rd,sme lt gn+bent,blky-tblr,slty
386	390	4	Clay:rd,vry stky
390	476	86	Shale:rd,blky,slty,thin layers of sandstone
476	482	6	Sandstone:gry,vfn grn,slty,fria
482	518	36	Shale:rd,blky,slty,sme gry ss
518	522	4	Sandstone:gry,vfn grn,slty,fria,calc
522	532	10	Sh:rd,blky,slty
532	538	6	Sandstone:gry,vfn grn,slty,fria,calc
538	540	2	SH:rd,blky,slty

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section [redacted] and Section 5 need be completed.

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER): CP-1356 (JD-33 East)	OSE FILE NUMBER(S):
WELL OWNER NAME(S): Merchants/Glenn's Water Well Service, Inc.	PHONE (OPTIONAL): 575-398-2424
WELL OWNER MAILING ADDRESS: P. O. Box 692	CITY: Tatum STATE: NM ZIP: 88267

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	26	20.9	N
LONGITUDE	103	34	7	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

SE1/4NE1/4NE1/4 Section 33, Township 21 South, Range 33 East on Merchants Livestock Land

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD 421	Corky Glenn	Glenn's Water Well Service, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
08/01/14	08/09/14	1,098'	1,098'	765'

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

STATIC WATER LEVEL IN COMPLETED WELL (FT): 555.2'

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)
0'	40'	20"	16"	None	15 1/2"	.250	
0'	760'	14 3/4"	9 5/8"	Thread & Collar	8.921"	36 lbs.	none
735'	1,098'	8 3/4"	7"	Thread & Collar	6.366"	23 lbs.	1/8"

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'	40'	20"	Cemented	2 yds.	Top Pour
0'	760'	14 3/4"	Float and shoe cemented to surface	655 cu ft	Circulated

FOR OSE INTERNAL USE

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

FILE NUMBER	CP-1356	POD NUMBER	1	TRN NUMBER	549453
LOCATION	Exp1	21S.33E.33.224			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	Soil	N	
3	34	31	Caleche	N	
34	275	241	Red Clay	N	
275	760	485	Red & Brown Shale	N	
760	765	5	Red Shale & Sandrock	N	
765	795	30	Water Sand	Y	
795	825	30	Red Shale & Sandrock	Y	
825	920	95	Water Sand	Y	
920	935	15	Red Shale & Sandrock	Y	
935	968	33	Water Sand & Sandrock	Y	
968	976	8	Red Shale & Sandrock	Y	
976	1005	29	Water sand & strips of red shale	Y	
1005	1092	87	Water sand fine	Y	
1092	1098	6	Red Shale	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:

0' to 760' drilled with mud.
760' to 1,098' drilled with air and foam.

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:

[signature] Corky Glenn — 8/21/14

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

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

FILE NUMBER: CP-1356	POD NUMBER: 1	TRN NUMBER: 549453	
LOCATION: Expl	21S.33E.33.224		PAGE 2 OF 2

APPENDIX SITE PHOTOGRAPHS

Figures

The figures below are from Hicks Consultants site visits of August 12, 2022 and June 22, 2023.

Figure 1: *View to the southeast from the northwest corner of the site. The shallow eolian sand forms the hummocky terrain (2023).*

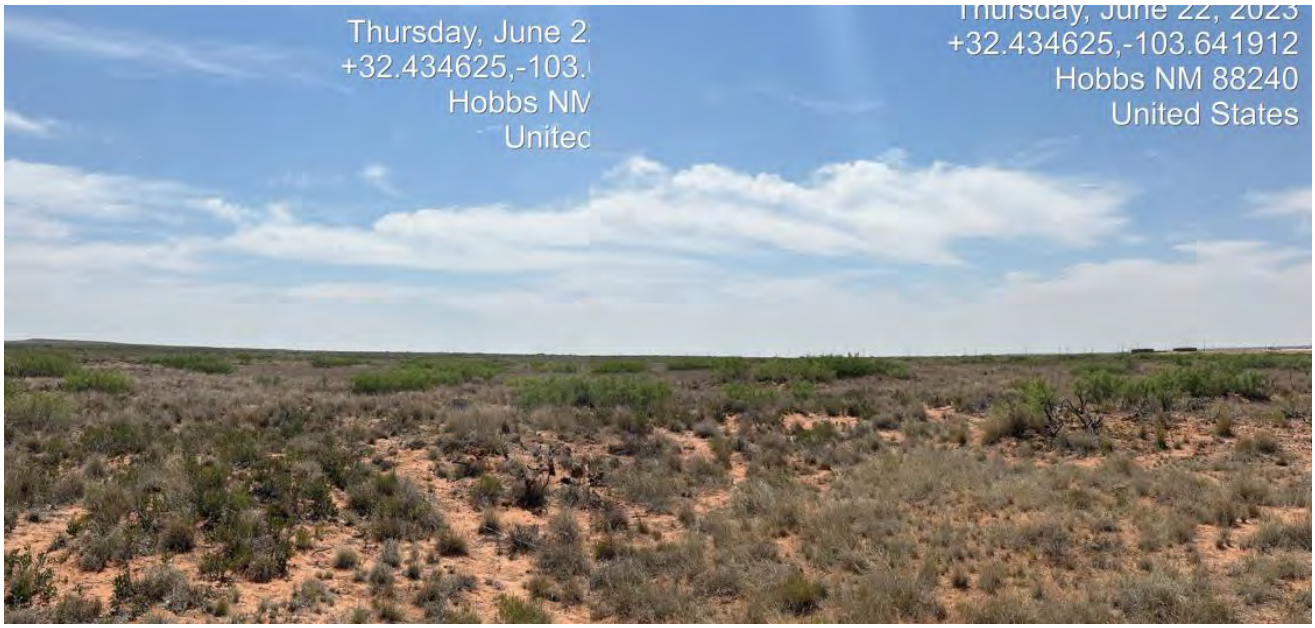
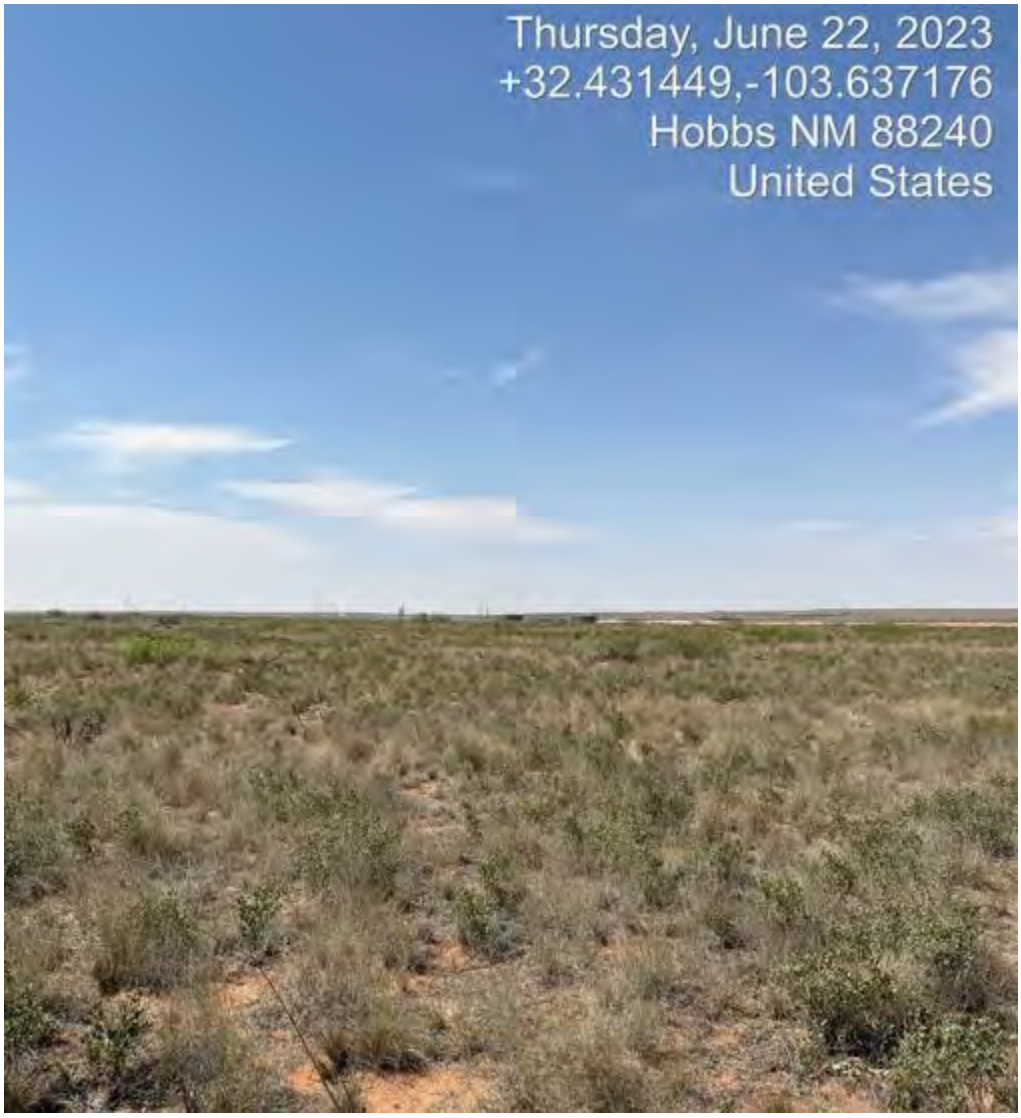


Figure 2: *Looking to the southwest from the northeastern corner of the area containing the Zeus Deuce and Zeus Tres sites. The Zeus Containment can be seen on the left horizon (2022).*

Figure 3: *Looking north into the Zeus Tres (to the left) and Zeus Deuce (to the right) sites from the northern embankment of the Zeus Containment immediately south of the Zeus Tres site (2022).*

Figure 4: *Looking north towards the center of the Zeus Tres site near the southwestern corner.*

Figure 5: *View is to the west northwest from near the southeast corner of the site area.*



Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Tuesday, April 16, 2024 2:45 PM
To: 'Chad Gallagher'; Drew Dixon
Subject: 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352]
Attachments: C-147 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] 04.16.2024.pdf

1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352]

Good afternoon Mr. Gallagher.

NMOCD has reviewed the recycling containment permit application and related documents, submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on March 17, 2024, for 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] in I-35-21S-32E, Lea County, New Mexico. The form C-147 and related documents for 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] is approved with the following conditions of approval:

- [371643] SOLARIS WATER MIDSTREAM, LLC shall construct, operate, maintain, close, and reclaim 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] in compliance with 19.15.34 NMAC.
- 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] is approved for five years of operation from the date of permit application. 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] permit expires on March 17, 2029. If [371643] SOLARIS WATER MIDSTREAM, LLC, wishes to extend operations past five years, an annual permit extension request must be submitted using an NMOCD form C-147 through OCD Online by February 17, 2029.
- 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] consists of one (1) earthen containment of 1,120,000 BBL of capacity @3' freeboard.
- Per Rule 19.15.34.15.A.(1) operators without existing financial assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost. The total closure cost estimate provided in the application in the amount of $760, 333.00 for 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] meets the requirements of NMAC 19.15.34.15.A.(1).
- [371643] SOLARIS WATER MIDSTREAM, LLC cannot receive produced water in 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] until after the original copy of the financial assurance has been accepted by NMOCD.
- The financial assurance should be mailed to the Oil Conservation Division; Bonding and Compliance; 1220 South St Frances Drive; Santa Fe, NM 87505. NMOCD will notify you when the bond has been received and approved.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall notify OCD when construction of 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] commences.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall notify OCD when recycling operations commence and cease at 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352].
- A minimum of 3-feet freeboard must be maintained at 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352], at all times during operations.
- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operation of the facility is considered ceased and notification of cessation of operations should be sent electronically to OCD Online. An extension to extend the cessation of operation, not to exceed six months, may be submitted using a C-147 form through OCD Online.

- [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 through OCD Online even if there is zero activity.
- [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 wastes at 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352].
- Per 19.15.34.14.G. The re-vegetation and reclamation obligations imposed by federal, state trust land or tribal agencies on lands managed by those agencies shall supersede these provisions and govern the obligations of any operator subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.

Please reference number 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] in all future communications.
Regards,

Victoria Venegas ● Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
506 W. Texas Ave. Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@emnrd.nm.gov
https://www.emnrd.nm.gov/ocd/

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 323907

CONDITIONS

Operator: SOLARIS WATER MIDSTREAM, LLC 9651 Katy Fwy Houston, TX 77024	OGRID: 371643
	Action Number: 323907
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	• [371643] SOLARIS WATER MIDSTREAM, LLC shall construct, operate, maintain, close, and reclaim 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] in compliance with 19.15.34 NMAC. • 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] is approved for five years of operation from the date of permit application. 1RF-517 - ZEUS TRES CONTAINMENT FACILITY ID [fVV2410750352] permit expires on March 17, 2029. If [371643] SOLARIS WATER MIDSTREAM, LLC, wishes to extend operations past five years, an annual permit extension request must be submitted using an NMOCD form C-147 through OCD Online by February 17, 2029.	4/16/2024