April 2025

Rule 34 Registration: Volume 2
Librarian RF & In Ground Containments
Section 24, T24S, R35E, Lea County

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

The West Winmill (about 1.5 miles southeast of the project area) taps confined groundwater within Chinle Formation sandstone. Sound geologic data permit a conclusion that a water table groundwater zone does not exist beneath the proposed Librarian RF and Containments

Prepared for:
Hydrosource Logistics
Midland, Texas

Prepared by:

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

Cascade Services
Midland, Texas

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: Hydrosource Logistics Waste Management, LLC (For multiple operators attach page with information) OGRID #: 332820

Address: 600 Marienfeld, Suite 800, Midland, Texas 79701

Facility or well name (include API# if associated with a well): Librarian In-Ground Containments North and South

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

U/L or Qtr/Qtr C, D, E, F Section 24 Township 24S Range 35E County: Lea

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

2.

☑ **Recycling Facility:**

Location of recycling facility (if applicable): Latitude 32.207986 Longitude -103.326302 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:** in Ground Containments North and South

☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)

Center of Recycling Containment (if applicable): Latitude 32.208131 Longitude -103.326097 NAD83

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

☑ Lined ☐ Liner type: Thickness _____mil ☐ LLDPE ☑ HDPE ☐ PVC ☐ Other 60 mil primary 40 mil secondary

☐ String-Reinforced

North = 531K South = 531K bbls

Liner Seams: ☑ Welded ☐ Factory ☐ Other _____ Volume: _____bbl Dimensions: L_____ x W_____ x D_____

See Design Drawings

☐ Recycling Containment Closure Completion Date:_____

4.

Bonding:

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

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

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

5.

Fencing:

☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet

☑ Alternate. Please specify Game Fence

6.

Signs:

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

☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

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

8.

Siting Criteria for Recycling Containment

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

General siting

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

9.
Recycling Facility and/or Containment Checklist:
Instructions: Each of the following items must be attached to the application. Indicate, by a check mark in the box, that the documents are attached.

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

10.
Operator Application Certification:
I hereby certify that the information and attachments submitted with this application are true, accurate and complete to the best of my knowledge and belief.

Name (Print): Hunter Redman Title: General Manager

Signature: Date: 4/7/2025

e-mail address: hunter@hydrosonicelogistics.com Telephone: 432 230 9149

11.
OCD Representative Signature: Victoria Venegas **Approval Date:** 04/22/2025

Title: Environmental Specialist **OCD Permit Number:** 1RF-539

☒ OCD Conditions

☒ Additional OCD Conditions on Attachment

CLOSURE COST ESTIMATE

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

Librarian In-Ground Containment Financial Assurance Cost Estimate

Attached is the cost estimate for reclamation of the Librarian Recycling In-Ground and AST containments.

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

The attached cost sheet shows closure sampling and analysis cost is estimated at $1725 (sampling) plus $2,700 (laboratory cost) to "test the soils beneath the containment for contamination with a five-point composite sample which includes stained or wet soils, if any, and that sample shall be analyzed for the constituents listed in Table I" of Rule 34. RT Hicks Consultants will assist with the sampling as necessary and prepare the Closure Report for the site. Total closure sampling costs are estimated at $7500. The cost estimates from Cascade Services (attached) and from RT Hicks Consultants are presented below.

Cascade Services

All work elements required by Rule 34	$574,771.80
Attached estimate includes provision for AST pad reclamation	

RT Hicks Consultants

Preparation of sampling results and closure report	$ 7500.00

Total for Containment Closure Bond	**$ 582,271.80**

Cascade Services, LLC
952 Echo Ln
Ste 375
Houston, TX 77024-2814
www.cascadeservicesllc.com

Estimate

ADDRESS
Hunter Redman
Hydrosource Logistics, LLC
600 N. Marienfield St. Ste 800
Midland, TX 79701

SHIP TO
Hunter Redman
Hydrosource Logistics, LLC
600 N. Marienfield St. Ste 800
Midland, TX 79701

ESTIMATE 2017
DATE 04/09/2025

CUSTOMER PROJECT NAME
Librarian Closure

PROJECT LOCATION COORDINATES
32.208131 -103.326097

DESCRIPTION	QTY	UNIT	RATE	AMOUNT
This is pricing a package to reclaim the dual 531k ponds and treatment pad on the East of the ponds Mobilize equipment to site. Dirt reclaim of pond consist of- Bury all material (Caliche, Gypsum, Sand, ect.) below ground level, backfill pond area with uncontaminated soil from pond walls. Pond area will be reclaimed to natural elevations and water flow patterns. All stockpiled strippings will be put down last to ensure ground has been completely returned to native design.	102,287		2.00	204,574.00
Environmental soil sampling This will include digging 6 sample locations for each containment. One composite sample from 0-4 feet below surface and one discrete sample from each location at 4.25 feet Cost include trip, labor, materials, and laboratory testing	1		1,725.00	1,725.00
Environmental Soil testing Before earthwork can begin the soil must be tested for contamination in case of liner leakage. Cost include trip, labor, materials, and laboratory testing of 18 tests.	1		2,700.00	2,700.00
Broadcast seeding of pond area Seed will be a native mix for Lea County NM Includes purchase of seed mix and placement	1		3,000.00	3,000.00

Fence removal and disposal Fence estimated at 3,860 ft This includes removal of all posts, braces, wire, fabric, gates, and hardware.	3,860	4.00	15,440.00
Remove and dispose of all four layers. Textile, 40 mil, net, and 60 mil	2,315,552	0.15	347,332.80

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

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

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

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

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

Questions? Email AR@Cascadeservicesllc.com

SUBTOTAL	574,771.80
TAX	0.00
TOTAL	**$574,771.80**

Accepted By

Accepted Date

RECYCLING CONTAINMENT DESIGN DRAWINGS
LINER EQUIVELANCY DEMONTRATION
LINER SPECIFICATIONS

LIBRARIAN RECYCLE CONTAINMENT

HYDROSOURCE LOGISTICS

SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST

LEA COUNTY, NEW MEXICO

32° 12' 29.2716" N, 103° 19' 33.9492" W

32.208131°, -103.326097°

HYDROSOURCE

LOGISTICS

INDEX TO DRAWINGS

CONTACTS

GALEN KELLEY - HYDROSOURCE LOGISTCS - (316)-701-8465

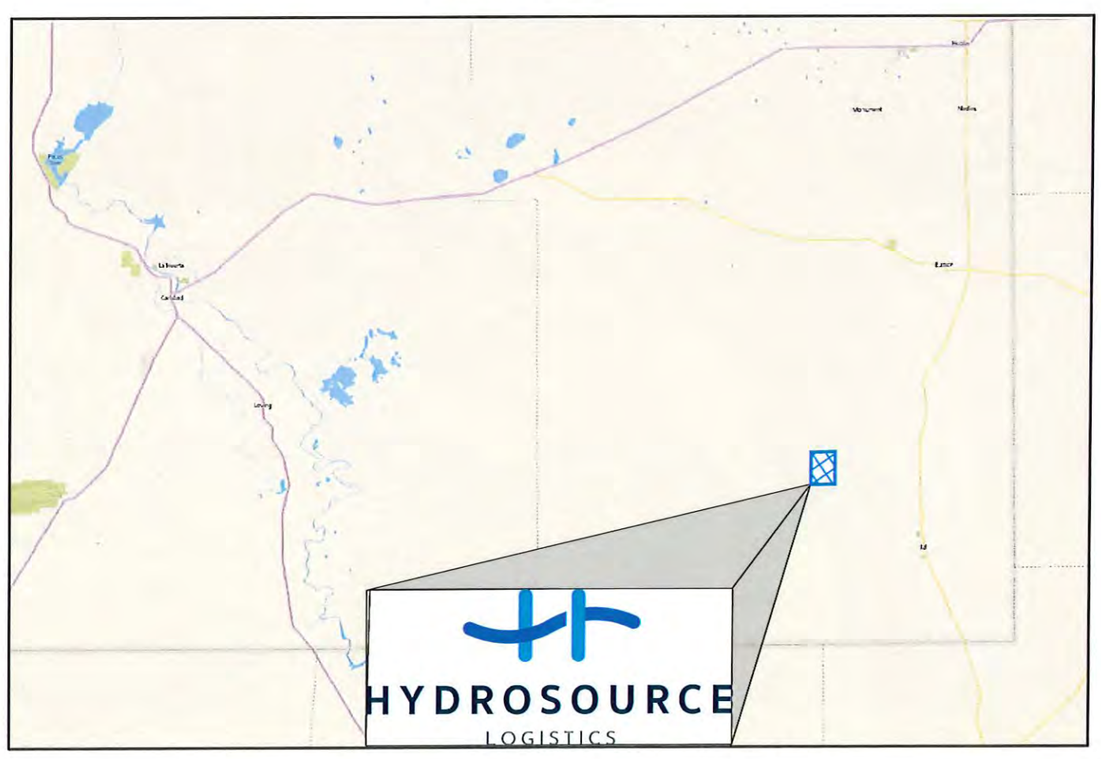
ENVIROTECH ENGINEERING & CONSULTING - ROSHAN MOHAN (580)-234-8780 (DESIGN ENGINEER)

ENVIROTECH ENGINEERING & CONSULTING - DOUG SCHRANTZ, PE (580)-234-8780 (SUPERVISING ENGINEER)

nm811 Professional Resources for Damage Prevention

UTILITY CAUTION

THE CONTRACTOR IS CAUTIONED THE LOCATION AND DEPTH OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON PUBLICLY AVAILABLE RECORDS OF THE VARIOUS UTILITY COMPANIES AND FIELD MEASUREMENTS. THE INFORMATION PROVIDED IS NOT TO BE RELIED ON AS BEING PRECISE OR COMPLETE. THE CONTRACTOR MUST CONTACT THE LOCAL UTILITY LOCATION CENTER AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES.



ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER

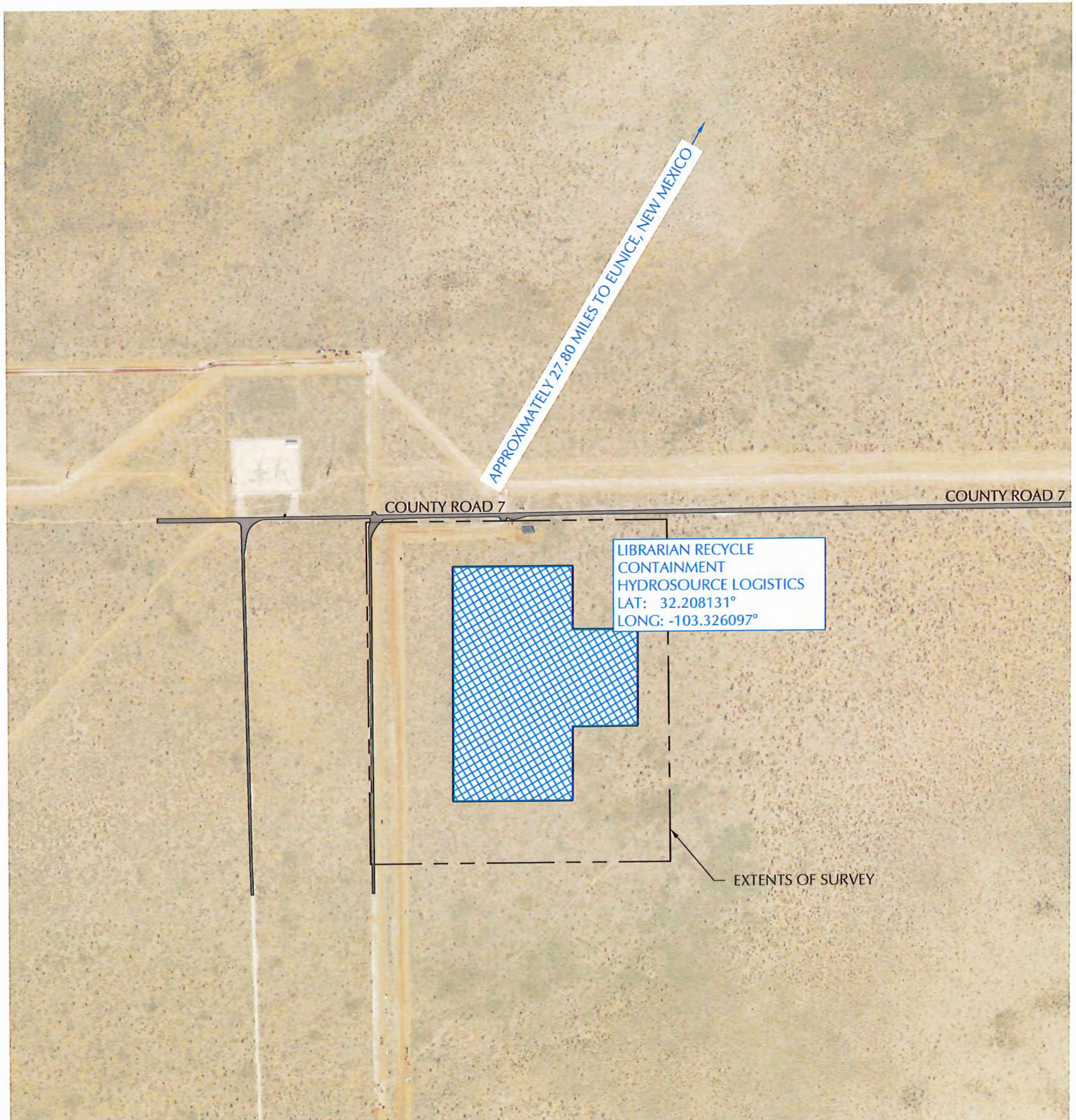
4/9/25

ENVIROTECH

ENGINEERING

2500 N. Eleventh Street Enid, OK 73701 • 580.234.8780 • envirotechconsulting.com

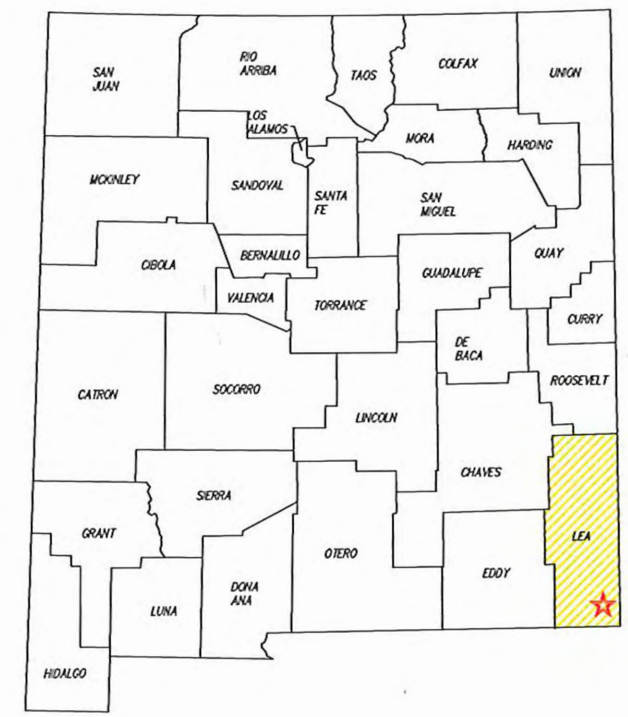
P.E. 29284 - Expiration Date: 12-31-2026



NORTH

0 250 500

Scale: 1"=500'
Bar Scale is intended for 11" x 17" (Full Size)



ENVIROTECH ENGINEERING
2500 North Eleventh Street
Enid, Oklahoma
580.234.8780
envirotechconsulting.com
P.E. #29284 - Expiration Date: 12-31-2026

NO.	DATE	DESCRIPTION

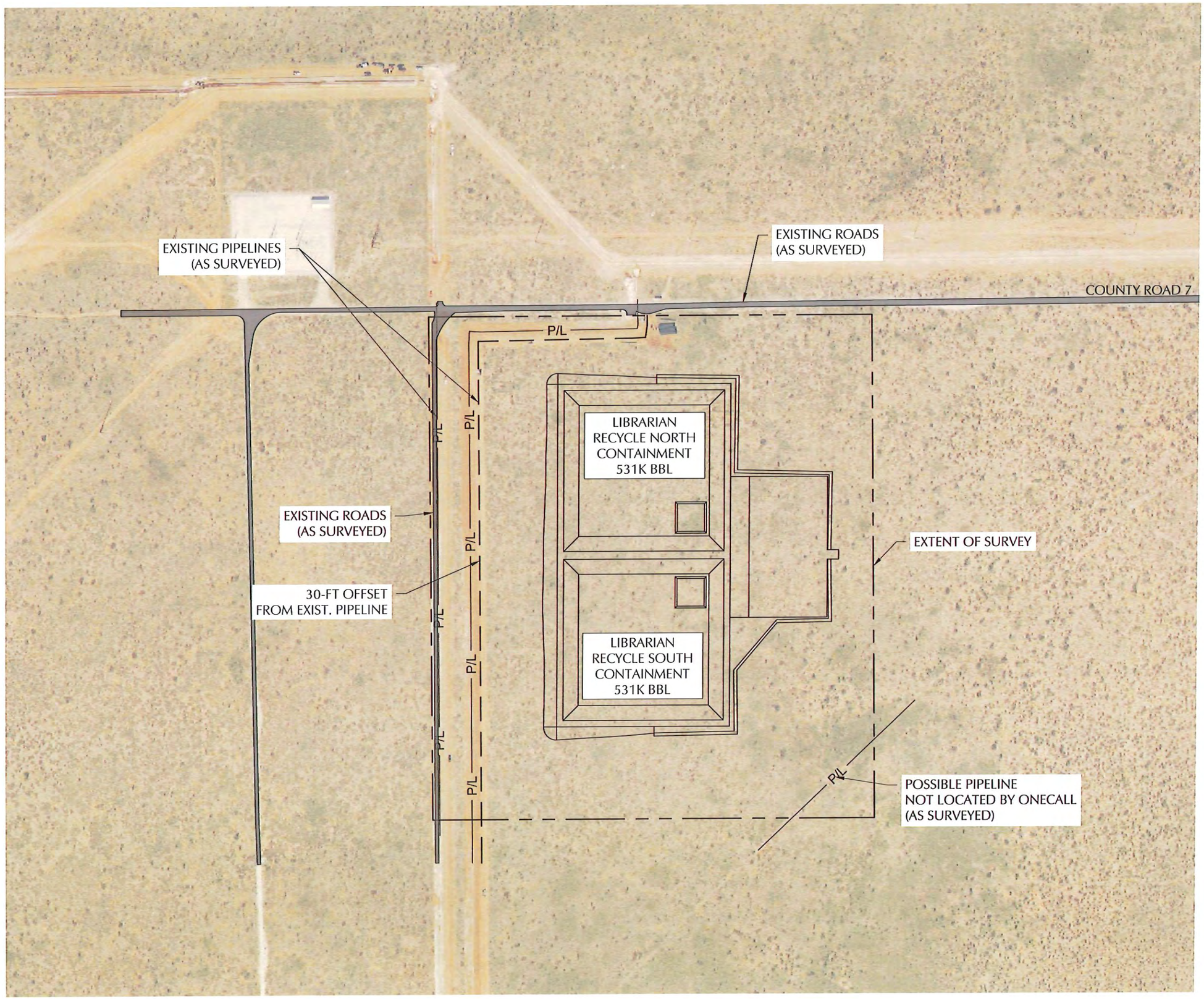
HYDROSOURCE LOGISTICS

PROJECT LOCATION

LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER
4/4/25

DATE:	APRIL 2025
SCALE:	1" = 500'
DESIGNED BY:	R. MOHAN
DRAWN BY:	K. TALBOTT
CHECKED BY:	D. SCHRANTZ
PROJECT NO.	025113-00
SHEET NO.	2 OF 12



N
NORTH
0 150 300
Scale 1"=300'
Bar Scale is intended for 11"x 17" (Full Size)

ENVIROTECH ENGINEERING
2500 North Eleventh Street
Enid, Oklahoma
580.234.8780
envirotechconsulting.com
P.E. #29284 - Expiration Date: 12-31-2026

NO.	DATE	DESCRIPTION

HYDROSOURCE LOGISTICS

EXISTING SITE FEATURES
LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER
4/4/25

DATE:	APRIL 2025
SCALE:	1" = 300'
DESIGNED BY:	R. MOHAN
DRAWN BY:	K. TALBOTT
CHECKED BY:	D. SCHRANTZ
PROJECT NO.	025113-00
SHEET NO.	3 OF 12

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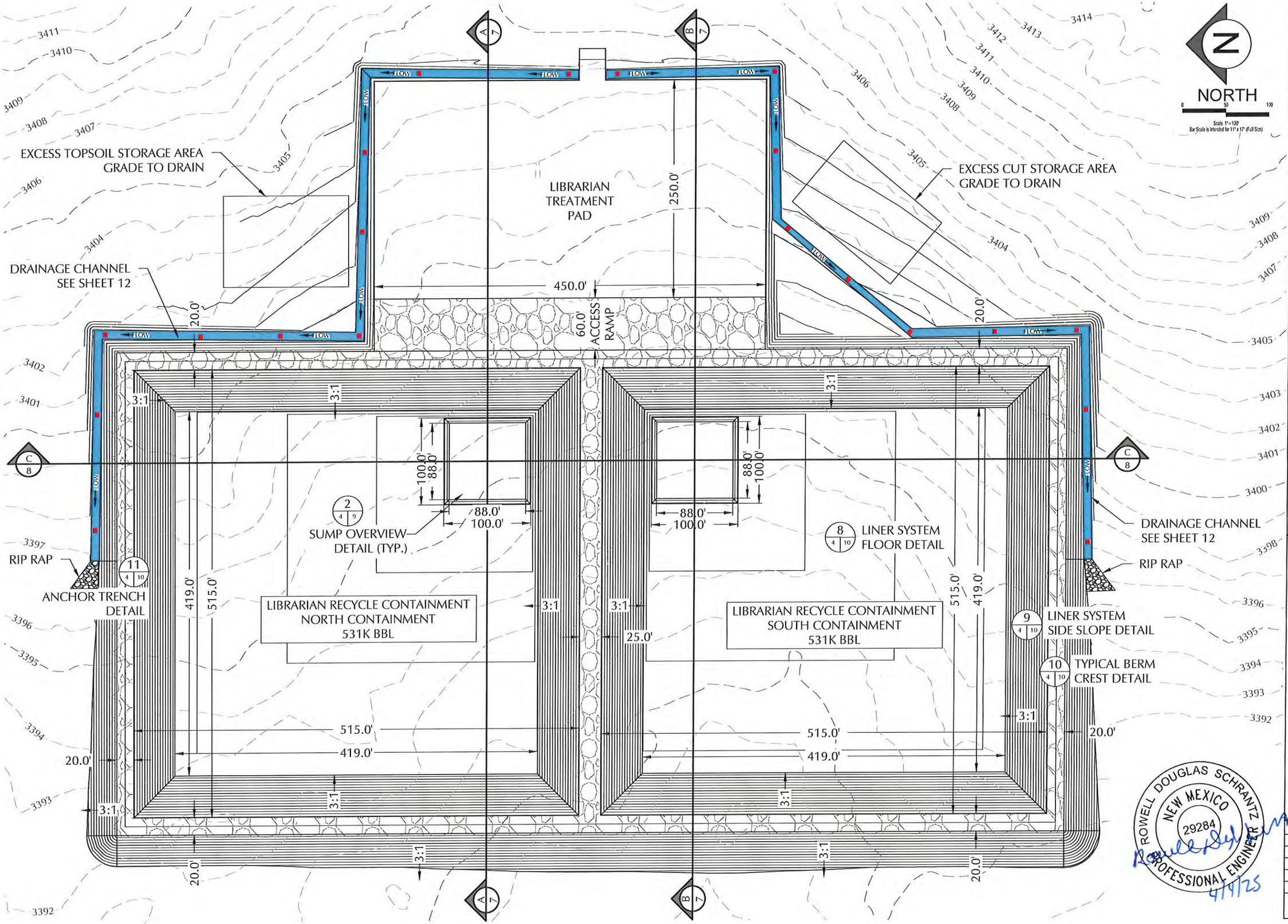

ENVIROTECH
ENGINEERING
2500 North Eleventh Street
Enid, Oklahoma
580.234.8760
envirotechconsulting.com
P.E. #29284 - Expiration Date: 12-31-2026

NO.	DATE	DESCRIPTION

HYDROSOURCE LOGISTICS

SITE PLAN

LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER
4/14/25

DATE:	APRIL 2025
SCALE:	1" = 100'
DESIGNED BY:	R. MOHAN
DRAWN BY:	K. TALBOTT
CHECKED BY:	D. SCHRANTZ
PROJECT NO.	025113-00
SHEET NO.	4 OF 12

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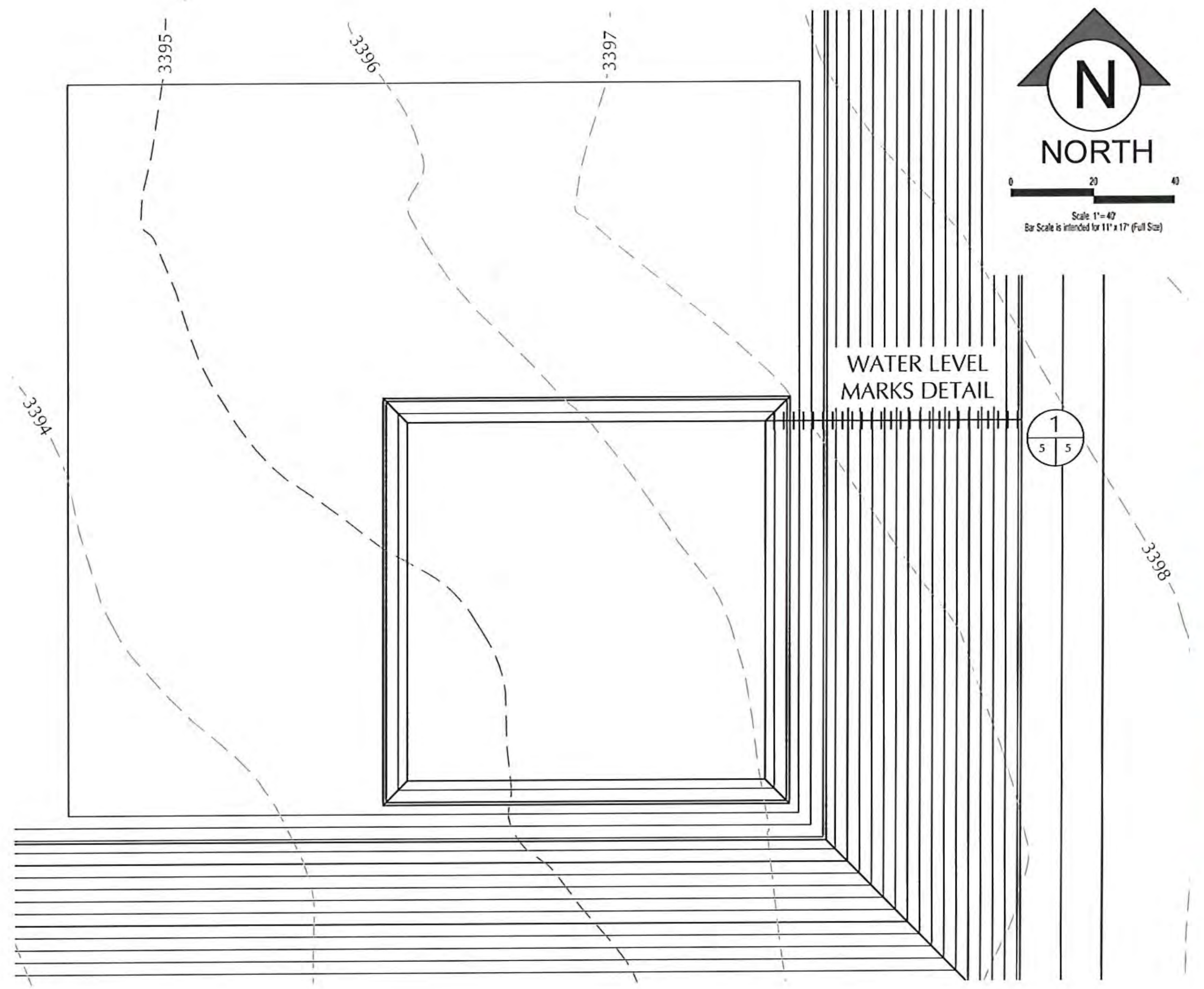
x:\Projects\2025\025113-00-000 cascade librarian recycle facility site design\permit work\permit set\CAD\SHEETS\4_SITE PLAN.dwg

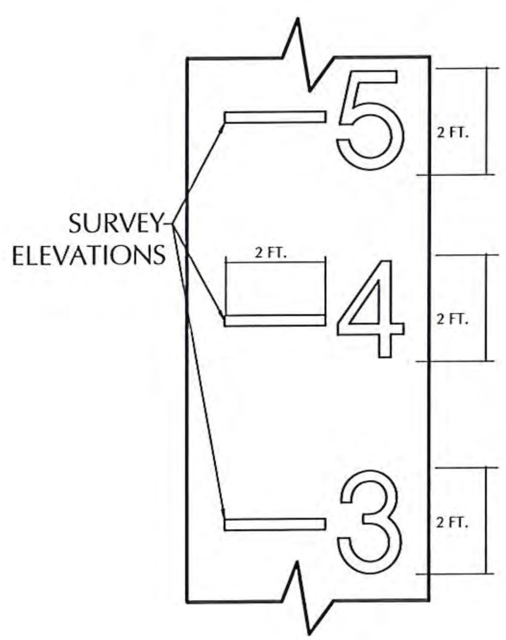


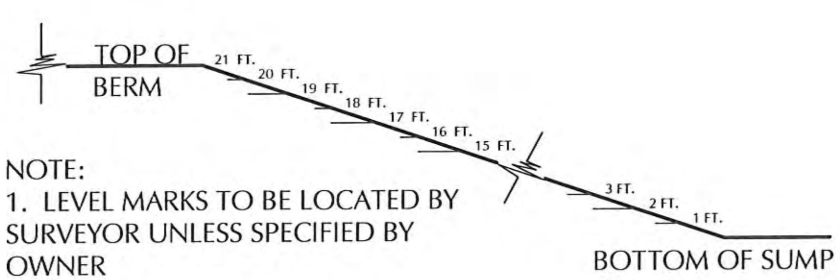
Owner	HYDROSOURCE LOGISTCS
Site Name	LIBRARIAN RECYCLE FACILTY NORTH AND SOUTH CONTAINMENT EACH

Lagoon Features	Top	Bottom	Max Liq. Level
Side slope Ratio	3		3
Maximum Depth (ft)	21		18.0
Lagoon Top Width (ft)	515	419	497
Lagoon Top Length (ft)	515	419	497
Maximum Total Vol (ft^3)	3,746,368		2,978,282
Maximum Total Vol (bbls)	667,300		530,489

Legend: Freeboard; Maximum Capacity; Storage Volume; Floor; Sump

Elevation ft	Lagoon Liq Depth ft	Storage ft	Remaining Stor Vol ft3	Gallons Storage gal	BBLS Storage bbls	Percent of Total Volume %	Vol in lagoon ft^3	Gallons Storage gal	Vol in Lagoon bbls	Vol in Lagoon ac-ft	Percent Total Vol %
3404.25	21.0	0.0	-	-	-	0.0%	3,746,368	28,026,581	667,300	86.00	100%
3403.25	20.0	1.0	262,112	1,960,860	46,687	7.0%	3,484,256	26,065,721	620,612	79.99	93%
3402.25	19.0	2.0	518,117	3,876,032	92,286	13.8%	3,228,251	24,150,548	575,013	74.11	86%
3401.25	18.0	3.0	768,086	5,746,055	136,811	20.5%	2,978,282	22,280,526	530,489	68.37	79%
3400.25	17.0	4.0	1,012,093	7,571,466	180,273	27.0%	2,734,275	20,455,115	487,027	62.77	73%
3399.25	16.0	5.0	1,250,208	9,352,806	222,686	33.4%	2,496,160	18,673,775	444,614	57.30	67%
3398.25	15.0	6.0	1,482,504	11,090,611	264,062	39.6%	2,263,864	16,935,970	403,237	51.97	60%
3397.25	14.0	7.0	1,709,053	12,785,423	304,415	45.6%	2,037,316	15,241,158	362,885	46.77	54%
3396.25	13.0	8.0	1,929,926	14,437,777	343,757	51.5%	1,816,442	13,588,804	323,543	41.70	48%
3395.25	12.0	9.0	2,145,196	16,048,214	382,100	57.3%	1,601,172	11,978,367	285,199	36.76	43%
3394.25	11.0	10.0	2,354,935	17,617,272	419,459	62.9%	1,391,433	10,409,309	247,841	31.94	37%
3393.25	10.0	11.0	2,559,215	19,145,487	455,845	68.3%	1,187,153	8,881,094	211,455	27.25	32%
3392.25	9.0	12.0	2,758,107	20,633,401	491,271	73.6%	988,261	7,393,180	176,028	22.69	26%
3391.25	8.0	13.0	2,951,684	22,081,551	525,751	78.8%	794,684	5,945,030	141,548	18.24	21%
3390.25	7.0	14.0	3,140,018	23,490,477	559,297	83.8%	606,350	4,536,104	108,002	13.92	16%
3389.25	6.0	15.0	3,323,181	24,860,717	591,922	88.7%	423,187	3,165,864	75,378	9.72	11%
3388.25	5.0	16.0	3,501,244	26,192,806	623,638	93.5%	245,124	1,833,775	43,661	5.63	7%
3387.25	4.0	17.0	3,636,002	27,200,932	647,641	97.1%	110,366	825,649	19,658	2.53	3%
3386.25	3.0	18.0	3,704,276	27,711,687	659,802	98.9%	42,093	314,894	7,497	0.97	1%
3385.25	2.0	19.0	3,728,675	27,894,214	664,148	99.5%	17,694	132,367	3,152	0.41	0%
3384.25	1.0	20.0	3,738,085	27,964,618	665,824	99.8%	8,283	61,963	1,475	0.19	0%
3383.25	0.0	21.0	3,746,368	28,026,581	667,300	100.0%	-	-	-	-	0%





NOTE:

1. LEVEL MARKS TO BE LOCATED BY SURVEYOR UNLESS SPECIFIED BY OWNER
2. MARKS TO BE MADE BY AN EXTRUSION WELDER USING BLACK FILAMENT (OR WHITE FILAMENT ON BLACK LINER).
3. MARKS SHOULD BEGIN AT THE TOP OF BERM AND CONTINUE TO THE BOTTOM OF THE SUMP. (TOP OF BERM SHOULD READ 21-FT, BOTTOM OF SUMP +1-FT SHOULD READ 1-FT)
4. REFERENCE PIT CAPACITY TABLES FOR ACCURATE ELEVATIONS

WATER LEVEL MARKS DETAIL 1 5 5
NOT TO SCALE

ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER
4/4/25

ENVIROTECH ENGINEERING
2500 North Eleventh Street
Enid, Oklahoma
580.234.8780
envirotechconsulting.com
P.E. #29284 - Expiration Date: 12-31-2026

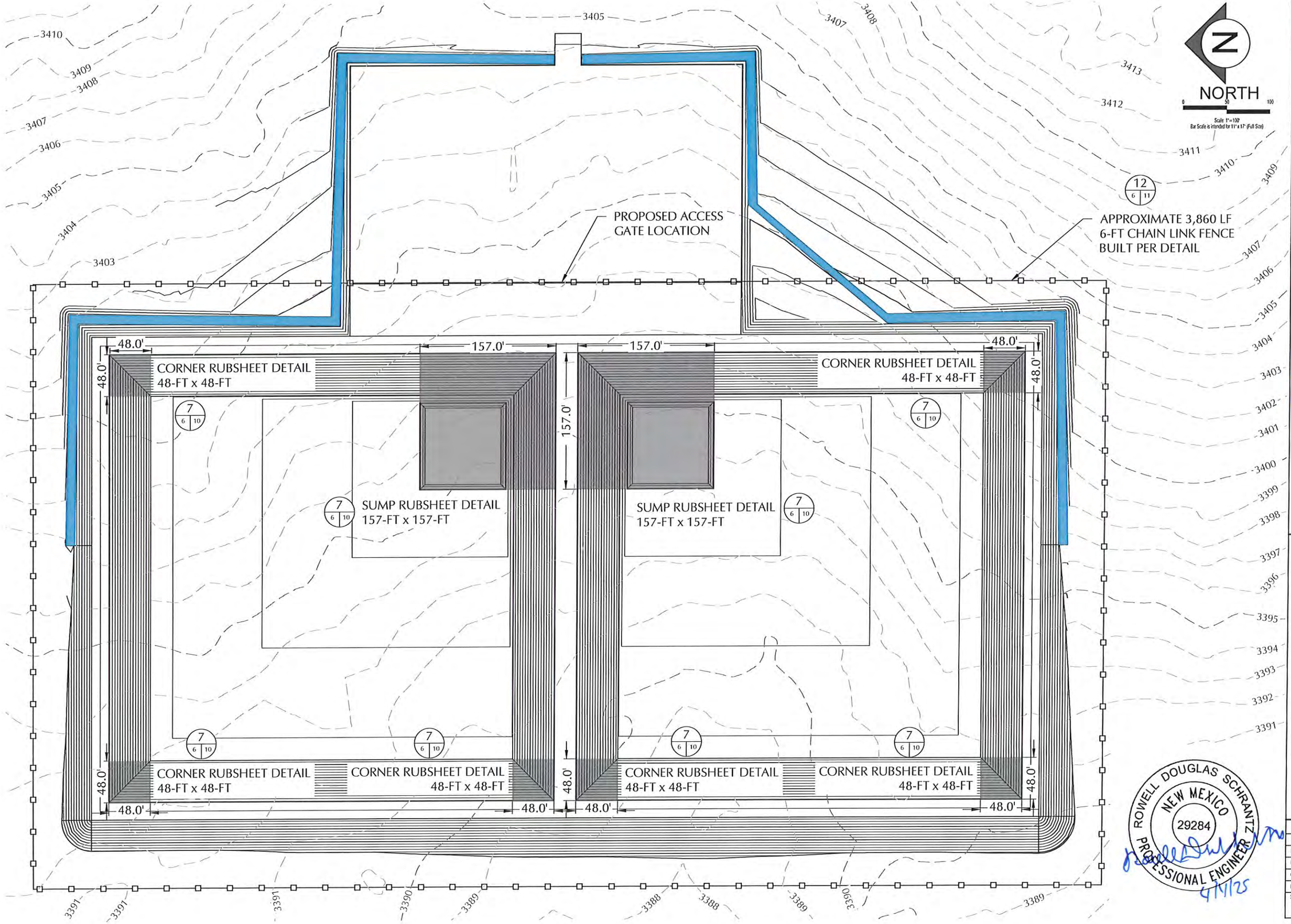
NO.	DATE	DESCRIPTION

HYDROSOURCE LOGISTICS

PIT CAPACITIES

LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

DATE:	APRIL 2025
SCALE:	1" = 40'
DESIGNED BY:	R. MOHAN
DRAWN BY:	K. TALBOTT
CHECKED BY:	D. SCHRANTZ
PROJECT NO.	025113-00
SHEET NO.	5 OF 12



ENVIROTECH ENGINEERING
2500 North Eleventh Street
• Enid, Oklahoma •
580.234.8700
envirotechconsulting.com
P.E. #29284 - Expiration Date: 12-31-2026

NO.	DATE	DESCRIPTION

HYDROSOURCE LOGISTICS

RUBSHEET & FENCE PLAN
LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

DATE:	APRIL 2025
SCALE:	1" = 100'
DESIGNED BY:	R. MOHAN
DRAWN BY:	K. TALBOTT
CHECKED BY:	D. SCHRANTZ
PROJECT NO.	025113-00
SHEET NO.	6 OF 12

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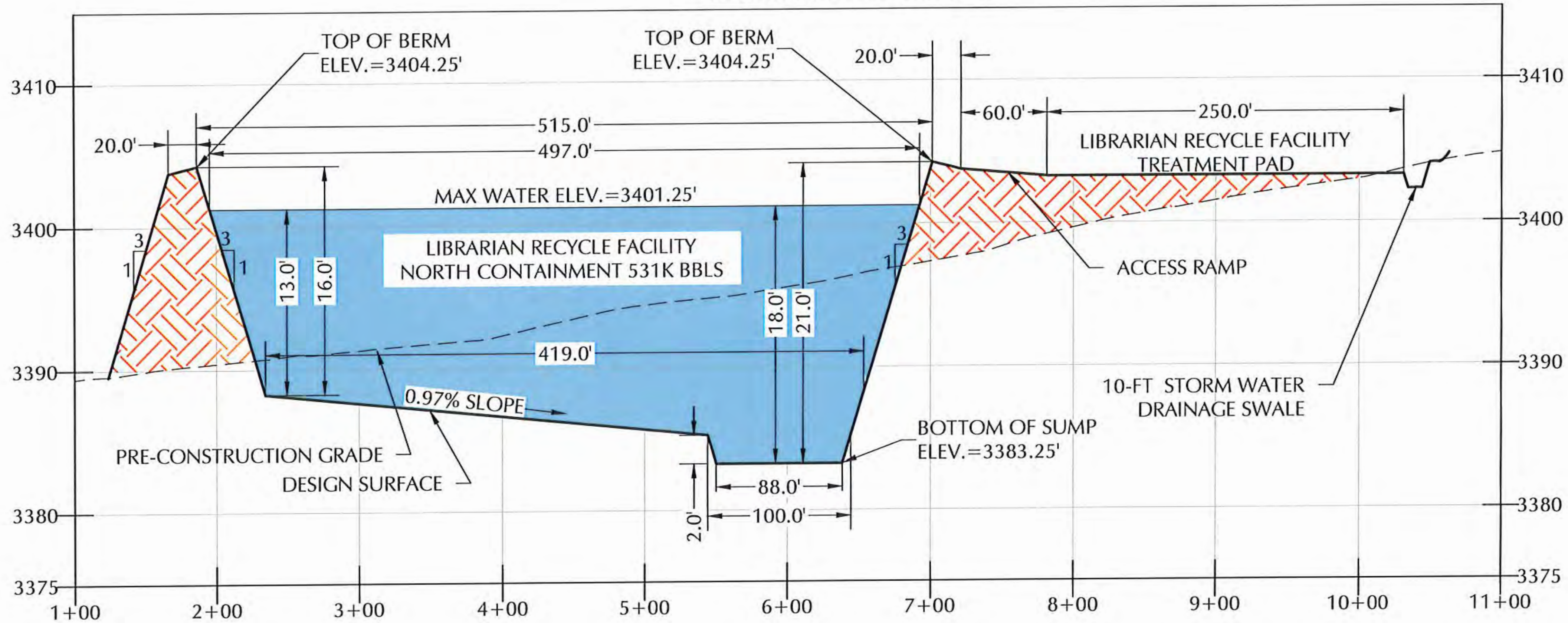
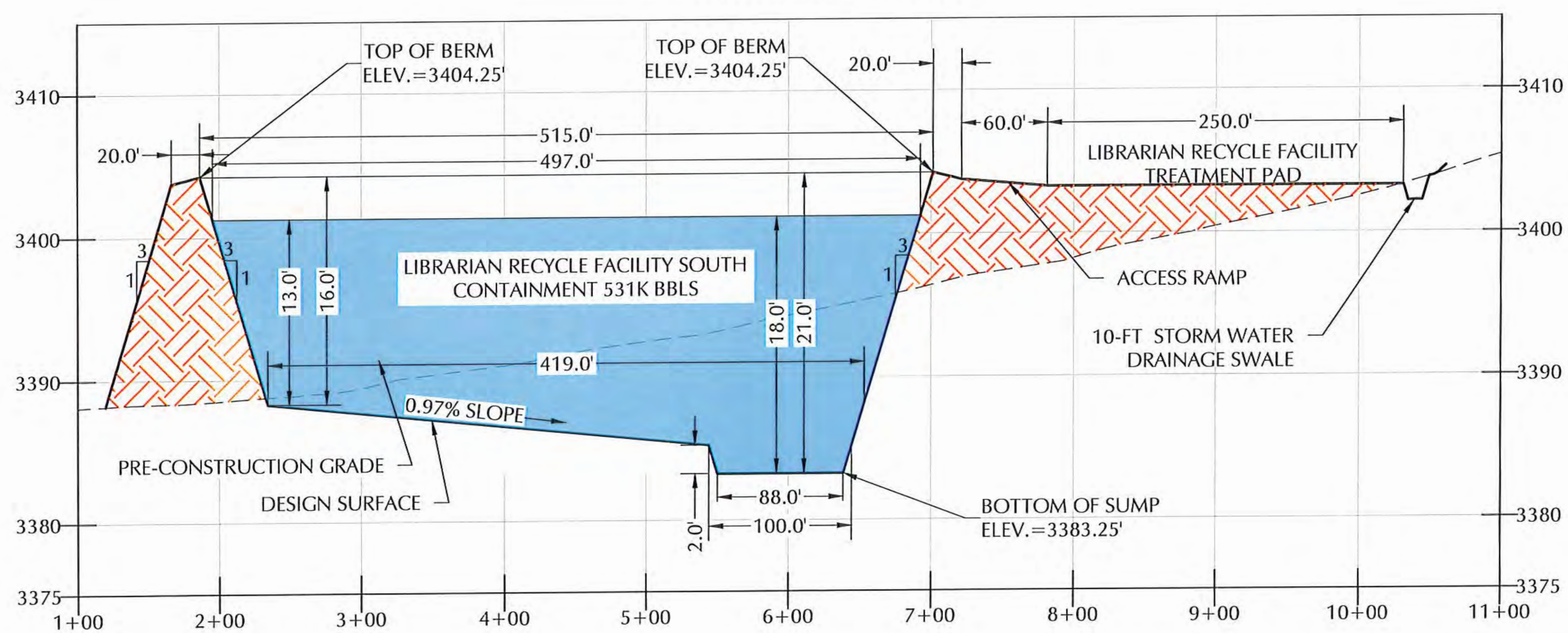
ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER
4/1/25

CROSS SECTION A-A



CROSS SECTION B-B



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Vertical Scale: 1"=10'
Bar Scale is intended for 11" x 17" (Full Size)

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ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
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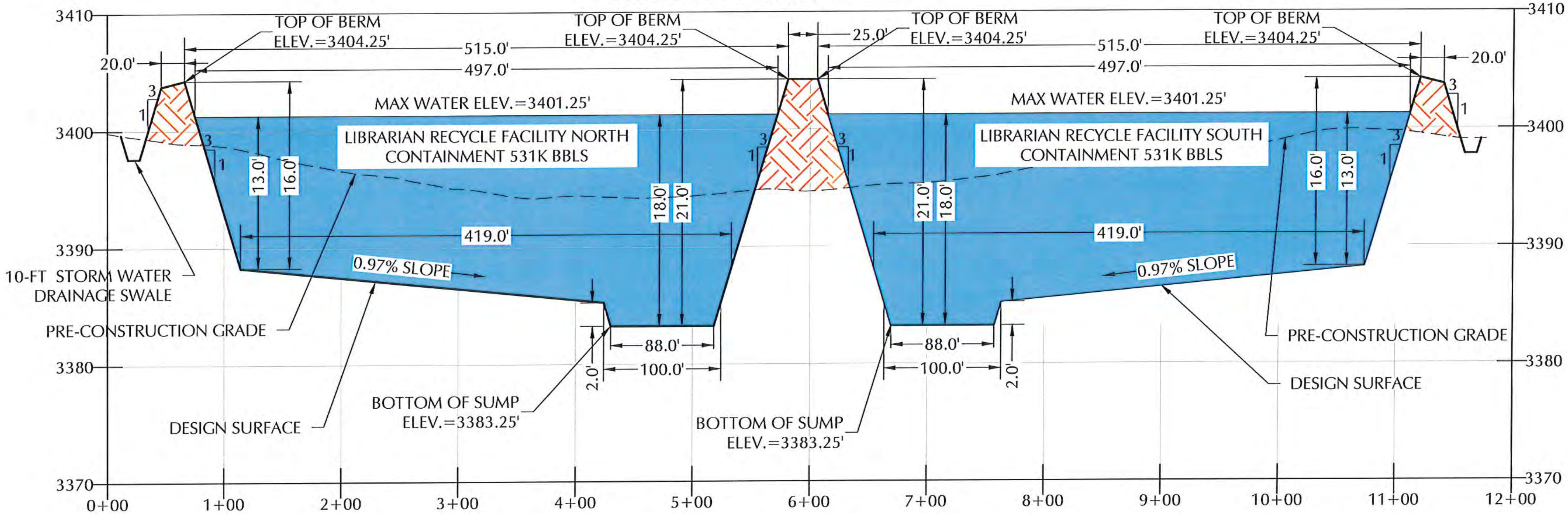
4/4/25

CROSS SECTIONS A & B
LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

DATE:	APRIL 2025
SCALE:	HORTIZONTAL 1'=100' VERTICAL 1'=10'
DESIGNED BY:	R. MOHAN
DRAWN BY:	K. TALBOTT
CHECKED BY:	D. SCHRANTZ
PROJECT NO.	025113-00
SHEET NO.	7 OF 12

4/4/2025 3:38:38 PM

CROSS SECTION C-C



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HYDROSOURCE LOGISTICS

CROSS SECTION C
LIBRARIAN RECYCLE CONTAINMENT
HYDROSOURCE LOGISTICS
SECTION 24, TOWNSHIP 24 SOUTH, RANGE 35 EAST
LEA COUNTY, NEW MEXICO

ROWELL DOUGLAS SCHRANTZ
NEW MEXICO
29284
PROFESSIONAL ENGINEER
4/11/25

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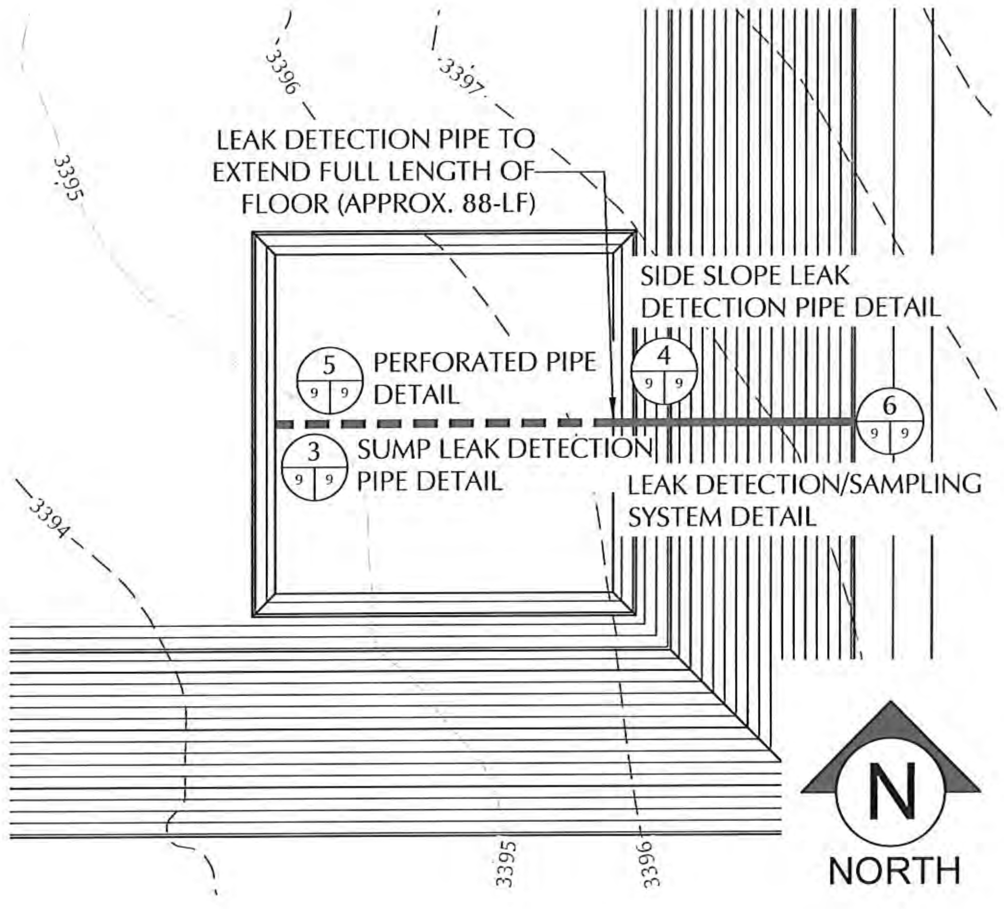
PROJECT NO.	025113-00
SHEET NO.	8 OF 12



SUMP OVERVIEW DETAIL (2/4)
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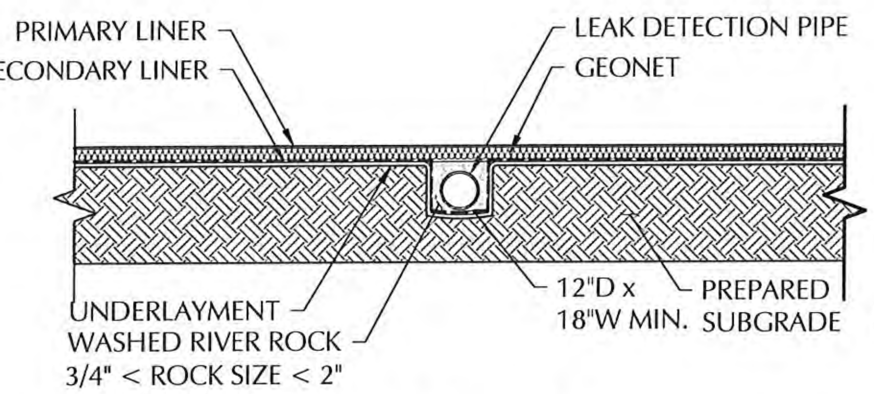

SUMP LEAK DETECTION PIPE DETAIL (3/9)
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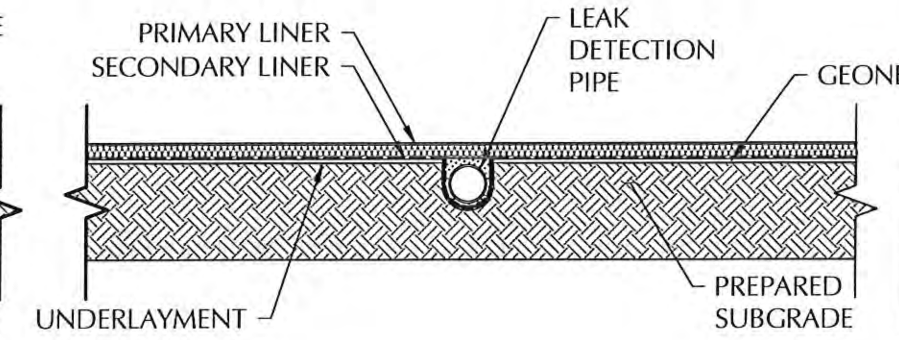

SIDE SLOPE LEAK DETECTION PIPE DETAIL (4/9)
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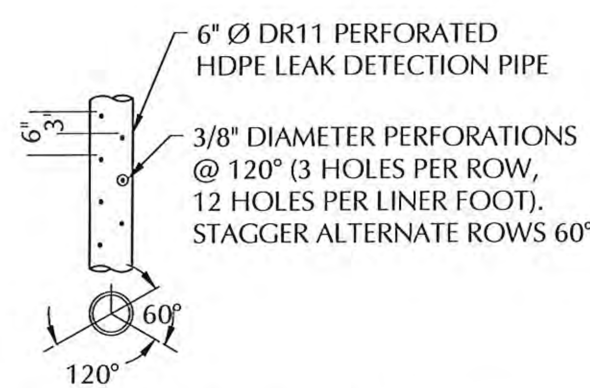

PERFORATED PIPE DETAIL (5/9)
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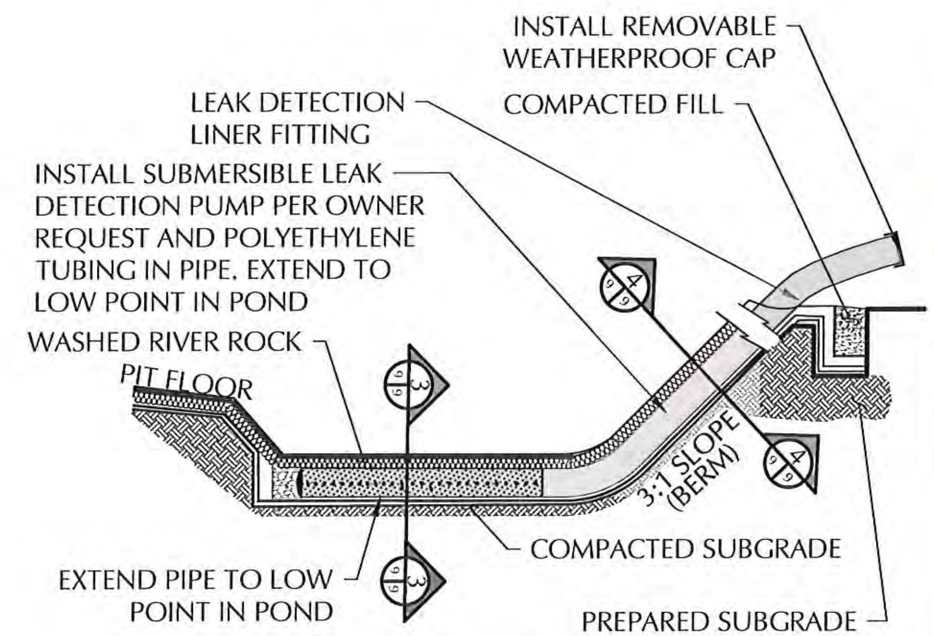

LEAK DETECTION/SAMPLING SYSTEM DETAIL (6/9)
NOT TO SCALE

PROPOSED PIT REFERENCE TABLE

DETAIL	DESCRIPTION
PRIMARY LINER	60- MIL HDPE SMOOTH LINER
LEAK DETECTION	200-MIL GEONET
SECONDARY LINER	40-MIL HDPE SMOOTH LINER
UNDERLAYMENT	8 OZ GEOTEXTILE
SUMP	3383.25-FT ELEVATION
BERM (ROAD CREST)	DESIGN ELEV. 3404.25 FT- RD CREST (20-FT)
LEAK DETECTION PIPING	6-IN DR11.X PERFORATED HDPE LEAK DETECTION PIPE

NOTES:

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

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SUMP DETAILS
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HYDROSOURCE LOGISTICS
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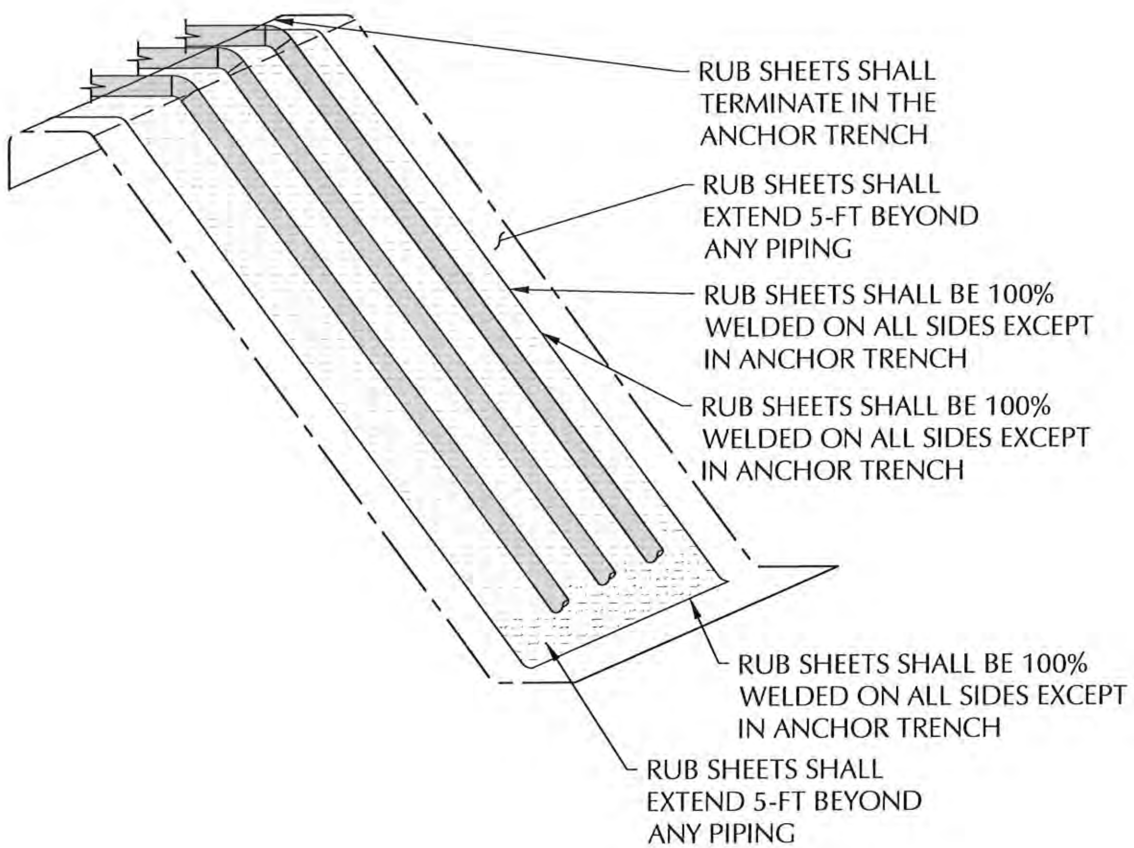
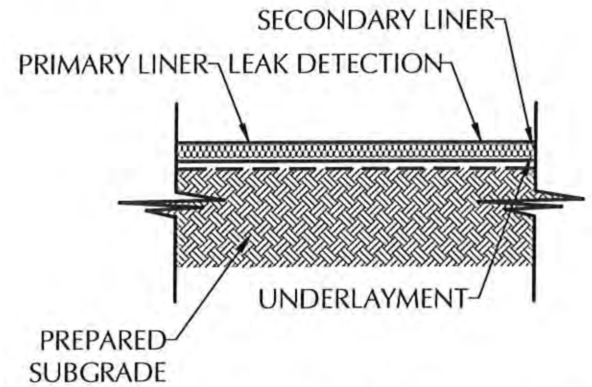
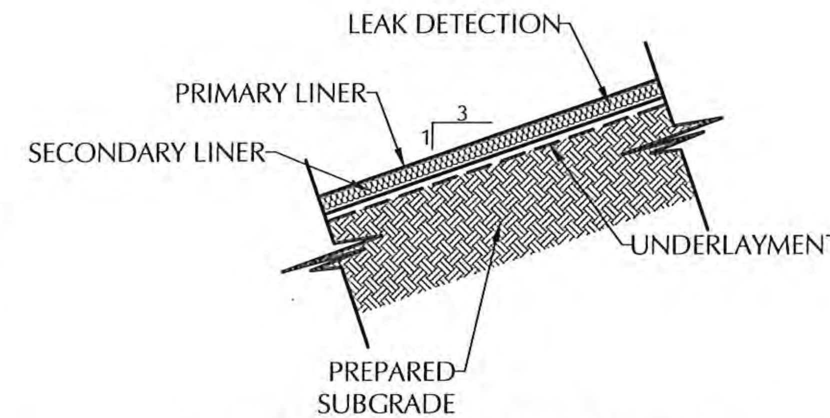


SUMP/CORNER RUB SHEET DETAIL (7 — 6 | 10)
NOT TO SCALE



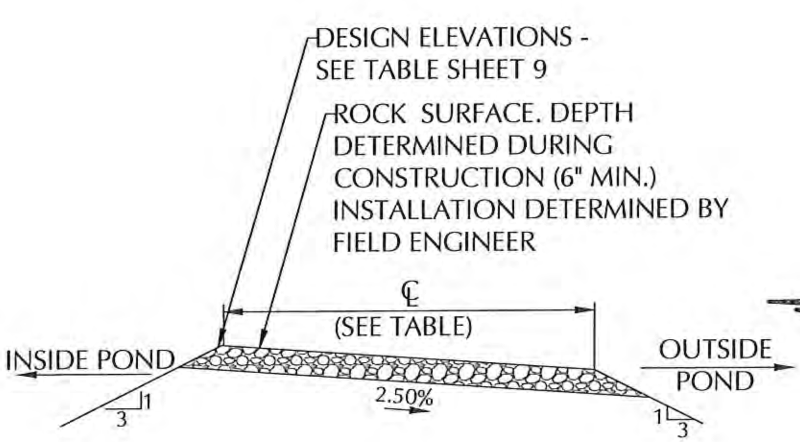
LINER SYSTEM FLOOR DETAIL (8 — 4 | 10)
NOT TO SCALE



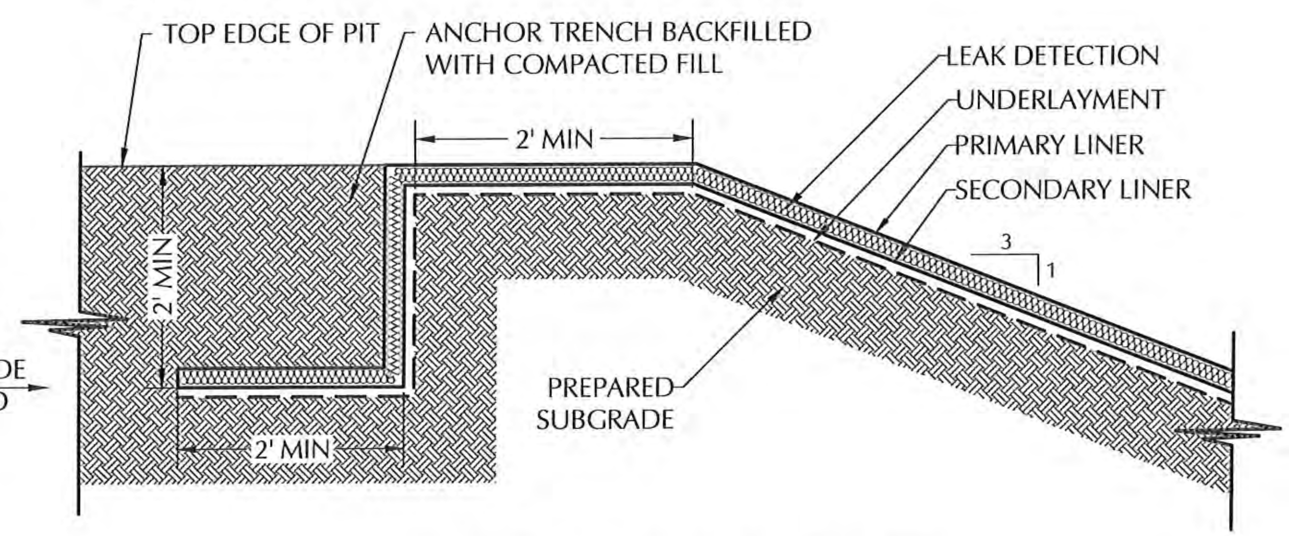
LINER SYSTEM SIDE SLOPE DETAIL (9 — 4 | 10)
NOT TO SCALE

GENERAL NOTES:

1. SEE REFERENCE TABLES SHEET 9 FOR LINER SPECIFICATIONS
2. PREPARED SUBGRADE MEANS COMPACTED SMOOTH SUBGRADE FREE OF ROCK, ROOTS, WOOD DEBRIS, CONCRETE RUBBLE AND ANY SHARP OBJECTS THAT MIGHT PUNCTURE THE HDPE LINER.
3. ALL INTERIOR SLOPES AND TOP OF BERMS TO BE SMOOTH DRUM ROLLED.
4. ALL EMBANKMENT SLOPES SHALL HAVE A RATIO OF 3:1, COMPACTED EARTH EMBANKMENTS TO BE CONSTRUCTED WITH 8 INCH (MAXIMUM LOOSE LIFTS), COMPACTED TO 95% STANDARD PROCTOR DENSITY (ASTM D698), AND MOISTURE CONDITIONS TO +/- 2% OPTIMUM MOISTURE (ASTM D698)
5. PERFORM GEOTECHNICAL ANALYSIS ON EXISTING SOIL TO CONFIRM SOIL IS SUITABLE FOR USE IN THE LEVEE.
6. ALL BOTTOM OF PITS SHALL SLOPE TO THE SUMP.



TYPICAL BERM CREST DETAIL (10 — 4 | 10)
NOT TO SCALE



ANCHOR TRENCH DETAIL (11 — 4 | 10)
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LINER DETAILS

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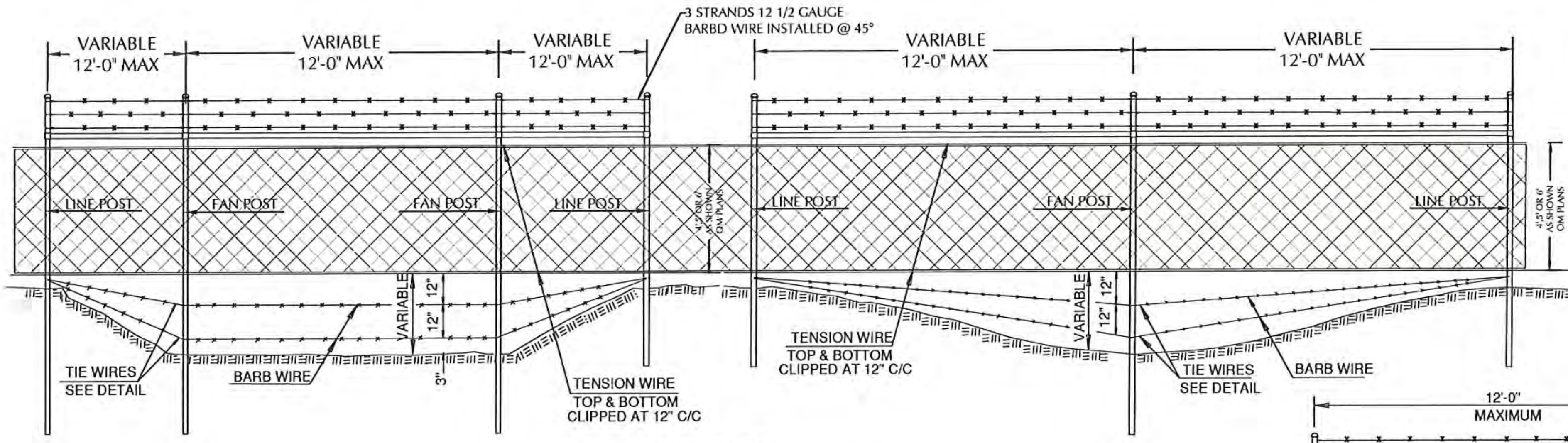
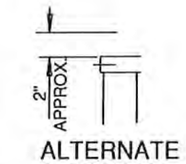


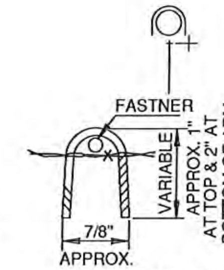
FAN DETAILS

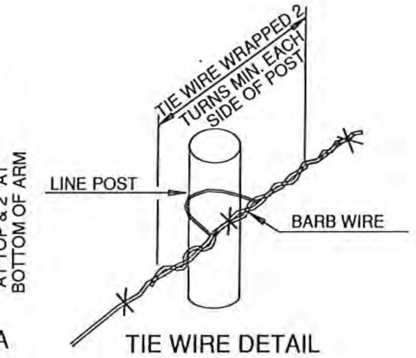
NOT IN CURRENT DESIGN. INCLUDED IN PLAN SET IN THE EVENT A DRAINAGE FAN IS NEEDED

BARRIER FENCE

Not to Scale







	LINE POST				END, CORNER, OR STRETCHER POSTS		GATE POSTS ○			TOP RAIL OR POST BRACE RAIL		GATE FRAMES		
							6' WIDE & LESS	OVER 6' TO 12' WIDE	OVER 12' TO 18' WIDE			GATES UP TO 6' WIDE	GATES OVER 6' TO 12'	GATES OVER 12' TO 18'
SHAPE	○	C	C	I	○	▲	○	○	○	○	∏	○	○	○
NOMENCLATURE	1.5" PIPE	ROLL FORMED HEAVY "C"	ROLL FORMED STAND. "C"	"H" RAIL	2" PIPE	ROLL FORMED	2.5" PIPE	3.5" PIPE	5.0" PIPE	1 1/4" PIPE	ROLL FORMED	1 1/4" PIPE	1 1/2" PIPE	1 1/2" PIPE
DIMENSIONS	1.9" O.D. 1.6" I.D. 0.145" THK	2.25" x 1.7" 0.121" THK	1.875" x 1.625" 0.105" THK	2.25" x 1.7" 0.125" THK	2.38" O.D. 2.07" I.D. 0.154" THK	3.5" x 3.5" 0.128" THK	2.88" O.D. 2.47" I.D. 0.203" THK	4.0" O.D. 3.55" I.D. 0.226" THK	5.563" O.D. 5.047" I.D. 0.258" THK	1.66" O.D. 1.44"I.D. 0.11" THK	1.625" x 1.25" 0.075" THK	1.66" O.D. 1.44" I.D. 0.11" THK	1.9" O.D. 1.67" I.D. 0.114" THK	1.9" O.D. 1.61" I.D. 0.145" THK
CRITICAL AXIS SEC. MODULUS	.326 IN. ^{3}	.506 IN. ^{3}	.368 IN. ^{3}	.661 IN. ^{3}	.561 IN. ^{3}	1.00 IN. ^{3}	1.06 IN. ^{3}	2.39 IN. ^{3}	▼ 5.45 IN. ^{3}	◐ 0.195 IN. ^{3}	0.165 IN. ^{3}	◐ 0.195 IN. ^{3}	◐ 0.270 IN. ^{3}	▼ 0.326 IN. ^{3}
WEIGHT	2.72 LBS./LIN. FT.	2.64 LBS./LIN. FT.	1.85 LBS./LIN. FT.	3.26 LBS./LIN. FT.	3.65 LBS./LIN. FT.	4.85 LBS./LIN. FT.	5.79 LBS./LIN. FT.	9.11 LBS./LIN. FT.	14.62 LBS./LIN. FT.	1.81 LBS./LIN. FT.	1.35 LBS./LIN. FT.	1.81 LBS./LIN. FT.	2.17 LBS./LIN. FT.	2.72 LBS./LIN. FT.
LENGTH FOR GIVEN FENCE FAB. HT 4	6'-10" W/CONC. FOOTING; 7'- 4" WHEN DRIVEN.				7'-4" W/CONC. FOOTING				7'-10"					
5	8'- 1" W/CONC. FOOTING; 8'- 7" WHEN DRIVEN.				8'-7" W/CONC. FOOTING				9'- 1"					
6	9'- 4" W/CONC. FOOTING; 9'-10" WHEN DRIVEN.				9'-10" W/CONC. FOOTING				10'- 4"					
EMBEDMENT FOR GIVEN FENCE FAB. HT 4	24" IN CONC. FOOTING; 30" WHEN DRIVEN.				30" IN CONC. FOOTING				36"					
5	27" IN CONC. FOOTING; 33" WHEN DRIVEN.				33" IN CONC. FOOTING				39"					
6	30" IN CONC. FOOTING; 36" WHEN DRIVEN.				36" IN CONC. FOOTING				42"					
FOOTING DIM. IN EARTH	9" DIA.				9" DIA.	14" DIA.	12" DIA.	16" DIA.	18" DIA.					
	36" DEEP													
FOOTING DIM. IN ROCK	4" DIA.				4" DIA.	6" DIA.	5" DIA.	6" DIA.	8" DIA.					
	9" DEEP				9" DIA.	16" DIA.	12" DIA.	16" DIA.	24" DIA.					

○ MAXIMUM WIDTH OF SINGLE SWING GATE TO BE 18 FT.; OPENING MAY BE UP TO 36 FT. WIDE DIAMETERS AS SHOWN ARE MINIMUM VALUES. DEPTHS FOR ROCK ARE MINIMUMS. DEPTHS SHOWN FOR CONCRETE FOOTINGS IN EARTH ARE MINIMUM FOR 6 FT. HIGH FENCE, AND MAY BE REDUCED 3 IN. FOR EACH FOOT OF FENCE HEIGHT LESS THAN 6 FT. HIGH.

▲ WIRE FABRIC TO BE WOVEN INTO LOCK LOOPS FOR THE ENTIRE WIDTH OF THE FABRIC.

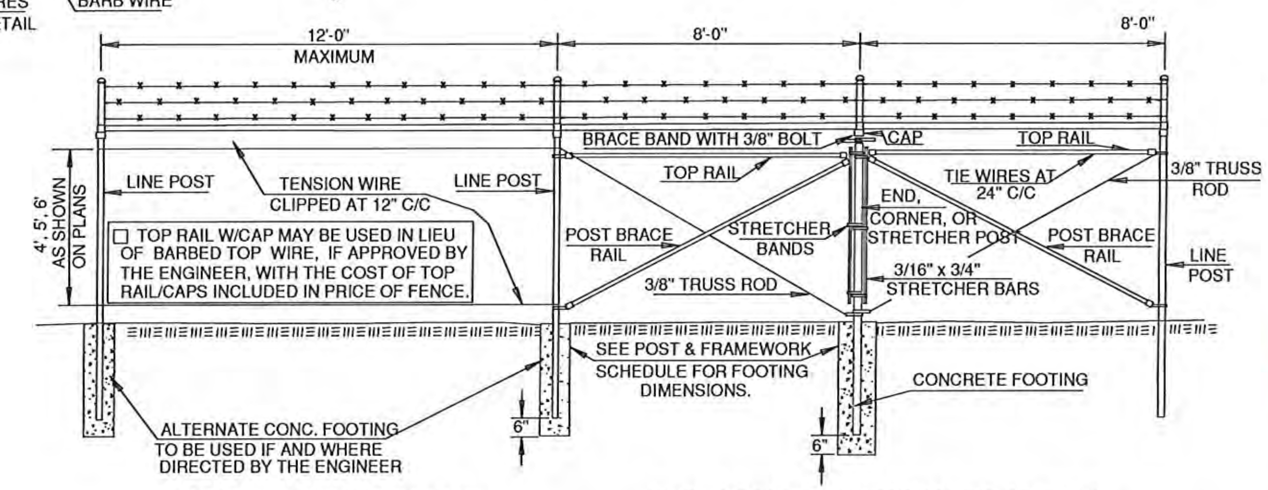
▼ SECTION MODULUS AS SHOWN IS BASED UPON ASTM A53, AND AASHTO M181. SEE SPECIFICATIONS FOR SUBSTITUTION FORMULA ON CLASS 2 COLD FORMED STEEL PIPE.

◐ SECTION MODULUS AS SHOWN IS BASED UPON ASTM A 501 AND AASHTO M 181. SEE SPECIFICATIONS FOR SUBSTATION FORMULA ON CLASS 2 COLD FORMED STEEL PIPE.

6-FT CHAIN LINK FENCE DETAIL

NOT TO SCALE

12 / 5 / 11

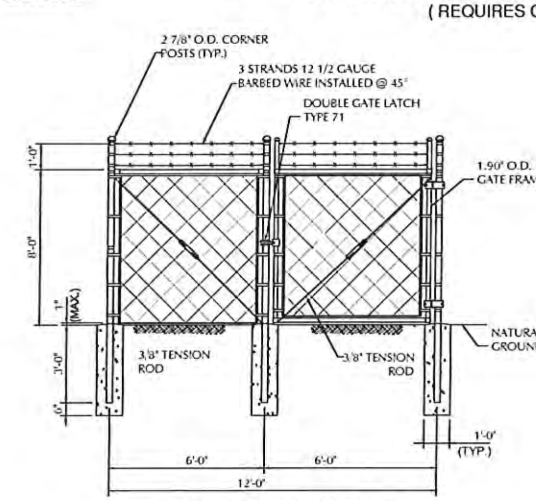


TYPICAL LINE POST DETAIL

END, CORNER, & STRETCHER DETAILS

NOTE: LINE POSTS MAY BE DRIVEN OR EARTH EMBEDDED SEE SPECIFICATIONS

USE STRETCHER DETAILS AT ALL CORNERS, BENDS IN R/W, ON HILLTOPS, IN VALLEYS OR DEEP DEPRESSIONS, AND AT 500' MAXIMUM SPACING. (REQUIRES CONCRETE FOOTING)



MAN GATE DETAIL

Not to Scale

GENERAL NOTES:

1. AT EACH LOCATION WHERE AN ELECTRIC TRANSMISSION, DISTRIBUTION OR SECONDARY LINE CROSSES A BARRIER FENCE, THE CONTRACTOR SHALL FURNISH AND INSTALL A GROUND CONFORMING TO ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE- THE GROUND ROD SHALL 0E A MINIMUM DIAMETER OF 1\2-IN. AND 8-FT. IN LENGTH, AND DRIVEN AT LEAST 7 1/2 FT. INTO THE GROUND. THE ROD SHALL BE CONNECTED TO EACH WIRE WITH A MINIMUM AWG NO. 8 STRANDED COPPER WIRE. GROUNDING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
2. LINE BRACE POSTS SHALL BE SPACED AT 400 FT. INTERVALS, WHERE FENCING IS CONTINUOUS AND WHERE END, CORNER AND LINE BRACE POSTS ARE NOT SPECIFIED.
3. ALL LINE POSTS SHALL BE 5 IN. MIN. DIAMETER AND 12 FT. LONG. ALL END, CORNER AND LINE BRACE POSTS SHALL BE 6 IN. MIN. DIAMETER AND 12 FT. LONG.
4. BARBED WIRE SHALL BE DOUBLE WRAPPED AND TIED OFF AT END POSTS, CORNER POSTS AND LINE BRACE POSTS. WOVEN WIRE SHALL BE SINGLE WRAPPED AND TIED OFF. FENCE TO BE CONTINUED, SHALL BE RESTARTED IN LIKE MANNER.
5. WOVEN WIRE FENCE FABRIC SHALL CONFORM TO AASHTO M 279 (ASTM A 116) DESIGN NO. 1047-6-11 WITH CLASS I COATING.
6. STEEL BARBED WIRE SHALL CONFORM TO AASHTO M 200 (ASTM A 121) 12-1/2 GAGE WITH CLASS 1 COATING.
7. ALL FENCE WIRE TIES, BRACE WIRES, STAPLES AND OTHER WIRE APPURTENANCES SHALL BE GALVANIZED IN CONFORMANCE WITH AASHTO M 232.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING DISTURBED OR DESTROYED SURVEY MONUMENTS TO THE APPROPRIATE ACCURACY.
9. ALL MISCELLANEOUS HARDWARE SHALL BE FURNISHED GALVANIZED OR ALUMINUM COATED. ALL METAL PIPE POSTS SHALL BE CAPPED.
10. READY MIX CONCRETE MAY BE USED AS A SUBSTITUTE FOR CLASS "A" CONCRETE FOR THE CONCRETE FOOTING IF APPROVED BY THE ENGINEER.

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FENCE DETAILS

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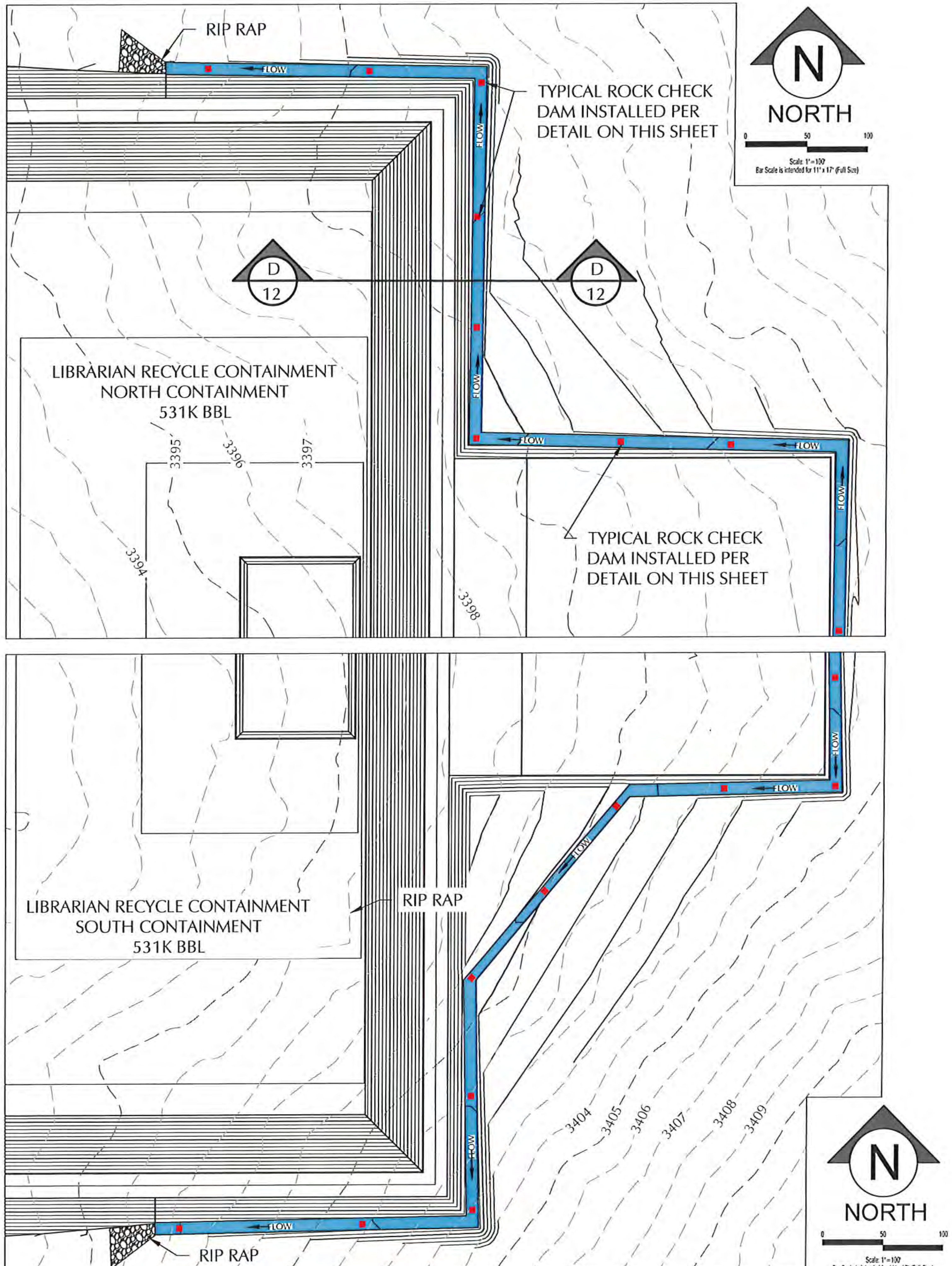
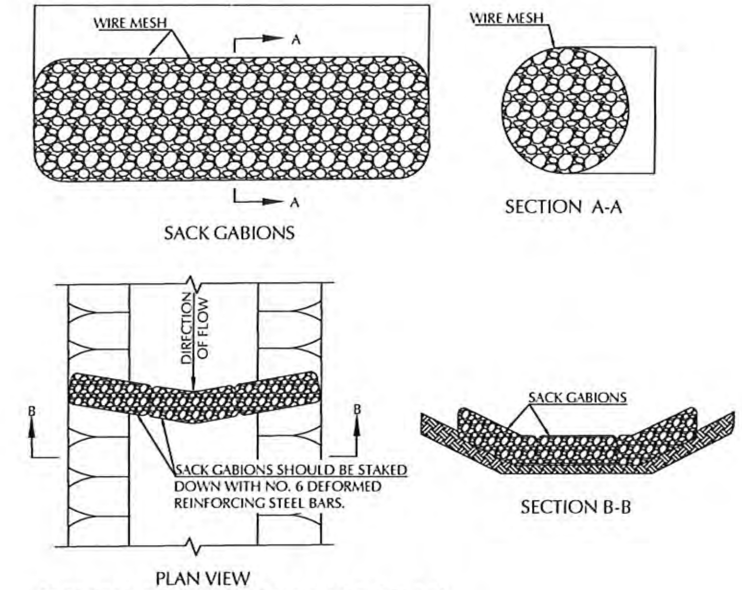
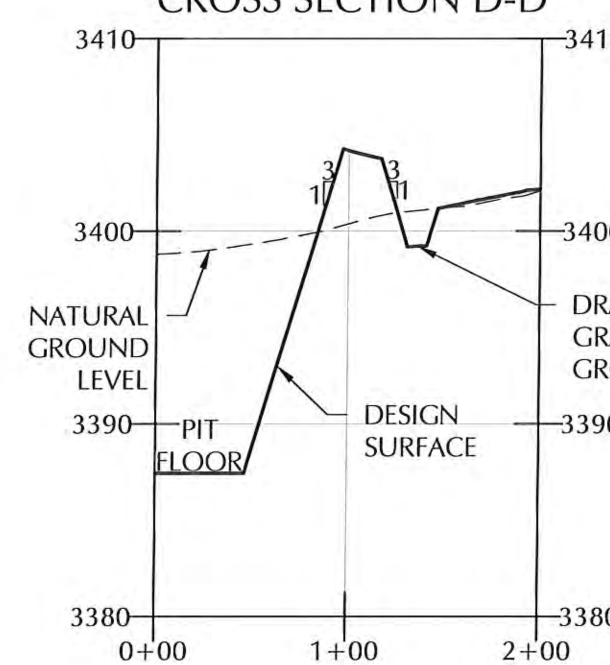




ROCK CHECK DAM DETAIL

Not to Scale

CROSS SECTION D-D



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HYDROSOURCE LOGISTICS

STORMWATER DIVERSION CHANNEL DETAIL
LIBRARIAN RECYCLE CONTAINMENT
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LEA COUNTY, NEW MEXICO

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ROWELL DOUGLAS SCHRANTZ NEW MEXICO 29284 PROFESSIONAL ENGINEER
4/14/25

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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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

SKAPS HD-40S NOM HDPE GEOMEMBRANE Smooth

SKAPS INDUSTRIES
571 Industrial Pkwy
Commerce, GA 30529
Phone: (706) 336-7000
Fax: (706) 336-7007
E-Mail: contact@skaps.com

SKAPS HD-40S NOM Geomembrane is manufactured utilizing the highest quality standards to provide the greatest durability in geomembrane applications. The geomembrane is formulated to meet the requirements of GRI GM13 specifications.

PROPERTY	TEST METHOD	FREQUENCY	VALUE	QUALIFIER
Thickness, mil	ASTM D 5199	Per Roll	40	NOM
Density, g/cc	ASTM D 1505	200,000 lb	0.940	MIN
Tensile Properties (both directions)	ASTM D6693 Type IV Specimen, 2 in/min	20,000 lb		
Strength at Yield, lb/in width			84	NOM
Elongation at Yield, % (1.3 in. GL)			12	NOM
Strength at Break, lb/in width			152	NOM
Elongation at Break, % (2 in. GL)			700	NOM
Tear Resistance, lb	ASTM D 1004	45,000 lb	28	NOM
Puncture Resistance, lb	ASTM D 4833	45,000 lb	72	NOM
Carbon Black Content, %	ASTM D 4218	20,000 lb	2-3	Range
Carbon Black Dispersion (Category)	ASTM D 5596	45,000 lb	Note (1)	NOM
ROLL DIMENSIONS				
Roll Length, ft			900	NOM
Roll Width, ft			23.5	
Roll Area, sf			21,150	

Notes:

(1) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

SKAPS HD-60S NOM HDPE GEOMEMBRANE Smooth

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SKAPS HD-60S NOM Geomembrane is manufactured utilizing the highest quality standards ensuring that our blown-film flexible geomembranes can be used in a wide-array of environmental protection and civil engineering containment applications requiring high chemical resistance and superior longevity.

PROPERTY	TEST METHOD	FREQUENCY	VALUE	QUALIFIER
Thickness, mils	ASTM D 5199	Per Roll	60	NOM
Thickness (minimum avg), mils			54	MAV(1)
Density, g/cc	ASTM D 1505	200,000 lb	0.940	MIN
Tensile Properties (both directions)	ASTM D 6693 Type IV Specimen, 2 in/min	20,000 lb		
Strength at Yield, lb/in width			126	NOM
Elongation at Yield, % (1.3 in. GL)			12	NOM
Strength at Break, lb/in width			228	NOM
Elongation at Break, % (2 in. GL)			700	NOM
Tear Resistance, lb	ASTM D 1004	45,000 lb	42	NOM
Puncture Resistance, lb	ASTM D 4833	45,000 lb	108	NOM
Carbon Black Content, %	ASTM D 4218	20,000 lb	2-3	Range
ROLL DIMENSIONS				
Roll Length, ft			600	NOM
Roll Width, ft			23.5	
Roll Area, sf			14,100	

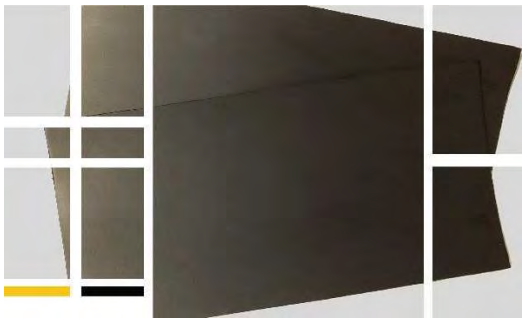
Notes:
(1) Minimum average value

This information is provided for reference purposes only and is not intended as a warranty or guarantee.
SKAPS assumes no liability in connection with the use of this information.

11/19/2020

HDPE GEOMEMBRANE SMOOTH

SKAPS HDPE Geomembranes are manufactured utilizing the highest quality standards to provide the greatest durability in geomembrane applications. The geomembrane is formulated to meet the requirements of GRI GM13 specifications.



PROPERTY	TEST METHOD	FREQUENCY	VALUE				QUALIFIER
Thickness (minimum avg), mil	ASTM D 5199	Per Roll	30	40	60	80	MAV(1)
Thickness (minimum), mil			27	36	54	72	MIN
Density, g/cc	ASTM D 1505	200,000 lb	0.940	0.940	0.940	0.940	MIN
Tensile Properties (both directions)	ASTM D 6693 Type IV Specimen, 2 in/min	20,000 lb					
Strength at Yield, lb/in width			63	84	126	168	MAV
Elongation at Yield, % (1.3 in. GL)			12	12	12	12	MAV
Strength at Break, lb/in width			114	152	228	304	MAV
Elongation at Break, % (2 in. GL)			700	700	700	700	MAV
Tear Resistance, lb	ASTM D 1004	45,000 lb	21	28	42	56	MAV
Puncture Resistance, lb	ASTM D 4833	45,000 lb	54	72	108	144	MAV
Carbon Black Content, %	ASTM D 4218	20,000 lb	2-3				Range
Carbon Black Dispersion (Category)	ASTM D 5596	45,000 lb	Note (2)				Category
Stress Crack Resistance, hr.	ASTM D 5397, Appendix	200,000 lb	500				MIN
Oxidative Induction Time, minutes	ASTM D 3895 200°C, 1 atm O_2	200,000 lb	100				MIN
ROLL DIMENSIONS							
Roll Length, ft			1,100	820	550	410	NOM
Roll Width, ft			23.5	23.5	23.5	23.5	
Roll Area, sf			25,850	19,270	12,925	9,635	

Notes:
(1) Minimum average value.
(2) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

This information is provided for reference purposes only and is not intended as a warranty or guarantee. SKAPS assumes no liability in connection with the use of this information.

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SKAPS TRANSNET™

HDPE GEONET TN 220

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

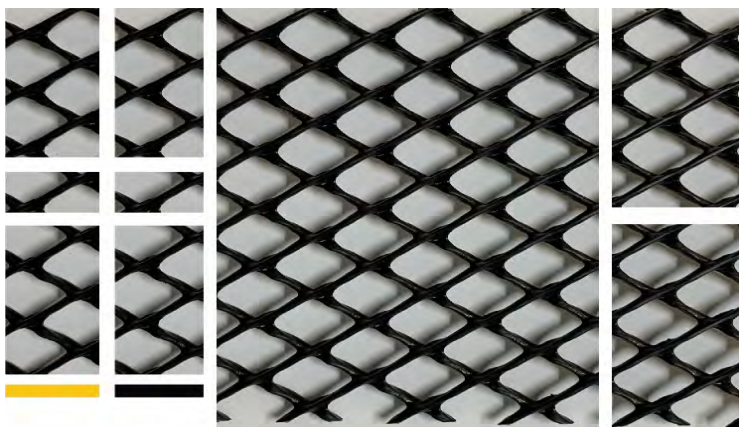
PROPERTY	TEST METHOD	UNIT	VALUE	QUALIFIER
Thickness	ASTM D 5199	mm	5.08	MAV(3)
Carbon Black	ASTM D 4218	%	2.0	MAV
Tensile Strength	ASTM D 7179	N/mm	7.87	MAV
Melt Flow	ASTM D 1238(2)	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm^3	0.94	MAV
Transmissivity(1)	ASTM D 4716	m^2/sec	2.0×10^{-3}	MAV

Notes:

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

(2) Condition 190/2.16

(3) Minimum average value



This information is provided for reference purposes only and is not intended as a warranty or guarantee.

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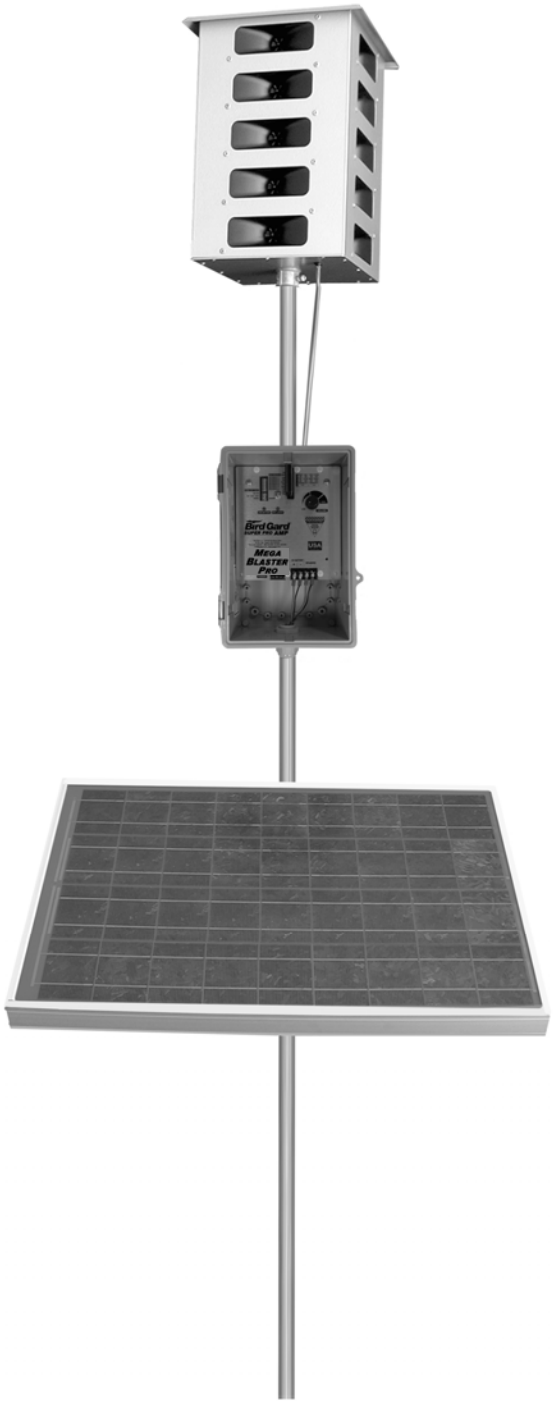
AVIAN DETERRENT SYSTEM

MEGA BLASTER PRO

BIRD-X

User's Manual



Overview

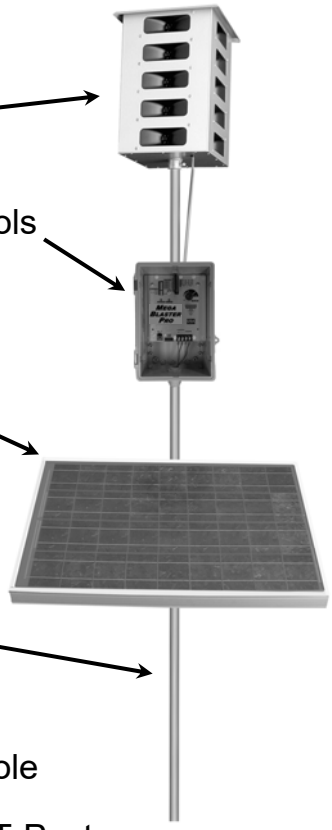
The Bird-X Mega Blaster Pro utilizes the innate power of the natural survival instincts of birds to effectively repel them. Digital recordings of distressed and alarmed birds, along with the sounds made by their natural predators are broadcast through high fidelity weather-resistant speakers over the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

Your Bird-X Mega Blaster Pro system consists of:

20-Speaker Tower broadcasts the bird sounds

Control Unit produces the bird sounds and contains all operational controls

Solar Panel recharges the 12-volt deep cycle battery



Items needed but <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).

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.

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.

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.

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).

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…

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.

April 2025

Rule 34 Registration: Volume 1
Librarian RF & Containments
Section 24, T24S, R35E, Lea County

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

The West Winmill (about 1.5 miles southeast of the project area) taps confined groundwater within Chinle Formation sandstone. Sound geologic data permit a conclusion that a water table groundwater zone does not exist beneath the proposed Librarian RF and Containments

Prepared for:
Hydrosource Logistics
Midland, Texas

Prepared by:

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

Cascade Services
Midland, Texas

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

April 7, 2025

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

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

RE: Hydrosource Logistics Waste Management, LLC
Librarian Recycling Facility and Containments
Section 24, T24S, R35E, Lea County

Dear Ms. Barr and Ms. Venegas:

On behalf of Hydrosource Logistics LLC, R.T. Hicks Consultants is pleased to submit the complete C-147 package for the referenced project. Hydrosource anticipates construction of the In-Ground Containment (Volume 2) will commence as soon as possible, as this part of the submission is a registration. Produced water will flow into the containment immediately after OCD approval of the closure cost estimate and receipt of the bond. We will submit a C-147 permit (Volume 3) for the AST as a modification to this submission. The contents of Volume 3 are outlined below.

Volume 1 of the C-147 package contains:

- Transmittal Letter
- Siting Criteria Demonstration with Plates and Appendices

Volume 2 is a registration that contains.

- C-147 Form and Closure Cost Estimate for the AST and In-Ground Containments
- Stamped Design Drawings
- Recently Approved Plans for Design/Construction, O&M, Closure

Volume 3 is a permit that contains

- C-147 Form & AST Design Sketch
- Stamped Design Drawings and Specifications
- Plans for Design/Construction, O&M, and Closure
- AST Set Up SOP
- Variances for AST Storage Containments

Volume 2 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.

Hydrosource will transmit the registration package to OCD via the OCD.Online portal. In compliance with 19.15.34.10 of the Rule, Hydrosource provided this package to 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: Hydrosource Energy Partners, LLC
Cascade Services

SITING CRITERIA DEMONSTRATION

Distance to Groundwater

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

Plate 1 is a topographic map that shows:

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

Two wells in the northeastern quadrant of Plate 1 show depth to water greater than 3899 feet. Skelley Oil Company drilled CP-435 in 1968 for secondary recover of oil. These data are not useful for the discussion herein.

Plate 2 is a topographic and geologic map that shows:

A. The Librarian Containment area identified by the blue striped rectangle with a label listing the surface elevation of 3445.
B. Water wells measured by the USGS, the date of the measurement and the calculated elevation of the groundwater elevation surface (8 wells listed in the database).
C. MISC water wells measured by professionals and documented in published reports or by staff of Hicks Consultants (3 wells).
D. Tertiary Ogallala Formation (To) is exposed at the surface throughout much of the eastern half of Plates 1 &2.
E. Quaternary Eolian and Piedmont deposits (Qe/Qp) are a veneer covering the underlying Ogallala.
F. Quaternary Piedmont deposits, which are alluvial sediments associated with erosion of the Ogallala Formation, are exposed in the southern margin of Plates 1 & 2.

Hydrogeology and Groundwater Data

More than 100 feet of pediment deposits (Qp) and ancestral Pecos River alluvium cover all bedrock in Plate 2. Two aquifers exist near the project area and the Roswell Basin in general. The artesian aquifer are Permian bedrock, typically the San Andres Formation. However, as shown in Plate 2 and described below, wells also penetrate other Permian units, such as the Grayburg Formation. Artesian wells cannot be impacted by the containment and are not discussed further.

Six driller's logs in the OSE database exist within the Plate 1 area. As stated earlier, two wells are deep for secondary recovery of oil. CP-326 does not contain useful information. CP-543

may or may not exist at the plotted location. Three wells with reasonable driller's logs are discussed below.

- CP-543 began drilling in November of 1974 with completion of the well in July of 1975. Our examination of Google Earth images did not find any evidence of this well. The recorded surface elevation is 50 feet lower that where this well plots using OSE latitude and longitude data. The Section Township Range data accurately plots the well. Assuming the location of this well is near the Librarian RF & Containments, the drillers log provides the following information:
  - Surface to 87 feet is light red soft/sand rock with two horizons of caliche, which is typical of the Ogallala, which is exposed at the mapped site for this well.
  - At 87-88 feet "quick sand" may be saturated fine sand that flows into the boring or dry fine sand that collapses into the boring. This strata may be the reason that drilling required 9 months.
  - 88-97 feet below surface is "sand rock" that is probably Ogallala Formation. Given the depth to water after completion is 97 feet, this unit may be unsaturated.
  - from 97 and 125 feet below surface "only a seep of water, maybe a quart per minute". The next entry of the driller's log suggests this unit is the base of the Ogallala.
  - 125-127 is red bed. This unit is easily identified in cable tool drilling, air or mud by drillers with experience in the area.
- CP-970 was drilled in 2008 using air rotary. While we do not see evidence of a well at the plotted location, Lonestar Oil and as is the well owner and the drilled an oil well within 1000 feet of the plotted well. The driller's log records the following:
  - Topsoil from 0-5 feet depth, which is mapped as Qe/Qp on Plate 1
  - 5-25 is caliche, typical of Ogallala Formation
  - 25-180 is "unstable sand", which is also typical of unsaturated Ogallala reported by a driller with minimal attention to lithologic detail
  - 180-198 is "tan water sand"
  - 180 is the depth to water at completion recorded in the lot. The Ogallala is typically a water table aquifer
- CP-573 was drilled in 1978 with cable tool methods and Getty Oil was the well owner. The reasonable driller's log shows:
  - 0-15 feet of soil (4 feet) and caliche, which is mapped as Qe/Qp on Plate 1, the caliche commonly caps the Ogallala in this area.
  - 15-122 feet of sand and sandstone of the Ogallala, which did not yield water for a well
  - 122 feet is the top of the red bed, and the bottom of red bed (claystone) was 350 feet with groundwater encountered at 300 feet
  - 350-394 is sand and sandstone, typical of the Chinle
  - 394-405 was deeper red bed (claystone).

As shown in Plate 2b, the elevation of the top of the Chinle red bed at the West Winmill is about 3275 feet, which is (3275-3255=) 20 feet above the recorded groundwater elevation in this well in 1996. Thus, this well does not draw water from the Ogallala and must tap the underlying and confined Chinle sandstone – as reported in the USGS database.

These data suggest that the Ogallala is the uppermost groundwater zone in the south and east areas of Plate 1 and in a localized depression of the Chinle red bed surface in the northwest corner of Plate 1 and 2. The underlying and confined Chinle (red bed) sandstones yield water to wells in the northwestern portion of Plate 1 and southeast of the project area.

The USGS data well database provides information about groundwater-bearing units. Recent USGS data are in *Appendix USGS Data* and are discussed clockwise from southeast of the project area to northwest.

- USGS-14449 is the same well as MISC- 307 (West Windmill) which is about 2500 feet north of the plotted location. The USGS database states
  - this well draws water from the Chinle Formation,
  - Over the 30+ years of record, water levels vary by less than 5 feet
- USGS-14235 is a Capitan Reef Aquifer monitoring well (former oil well see *Appendix USGS Data and Well Logs*).
- USGS-14315 and USGS-14303 are the same well. The 40+ years of record show groundwater levels rising by 6 feet.
- USGS-14308 is adjacent to an oil well drilled in 1978 and the data suggest this well could be a recompletion of the plugged and abandoned oil well for monitoring secondary oil recovery activities mentioned above in the oil reservoir.
- USGS-14320/MISC-305 is an oil test well and probably draws water from a Permian oil reservoir.
- USGS-14302/MISC-306 are the West Dublin Windmill. Groundwater elevations reflect perched water within a small structural depression identified by the top of red bed elevation map shown in Plate 2b (from

From these data we conclude:

A. Southeast of the project area the closest well (West Windmill) records a steady groundwater elevation over the 30+ years of about 3255 feet. This well is completed in the Chinle formation, not the Ogallala.
B. In the northeast corner of Plates 1, 2a and 2b a localized, water table groundwater zone exists around the West Dublin Windmill (MISC-306 and USGS-14302) within a small structural depression expressed by the mapped top of red beds in Plate 2b. This water table is at an elevation of about 3200 feet.
C. Outside of this structural depression, the uppermost groundwater in the northwest portion of the maps is confined within Chinle sandstone and the potentiometric surface is about 3100 feet in 1970 and 1976.
D. The Chinle well 1.5 miles northwest of the project area records groundwater elevations of about 3350 in 1970 and 1976.
E. As shown in Plate 2b, the elevation of the top of the Chinle red bed at the West Winmill is about the same as below the project area. Thus, groundwater in the Ogallala probably does not exist in this area.

Finally, we conclude the data support the absence of a water table aquifer beneath the site. Rather, confined groundwater in the Chinle represents the uppermost water-bearing unit. Assuming the data are incorrect thus flawing our evaluation, the minimum depth to an

unconfined water bearing unit is (3395-3255=) 140 feet. This estimate is based upon the known accuracy of Figure 2b and groundwater elevation measured in the West Windmill.

Distance to Municipal Boundaries and Fresh Water Fields

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

- The closest municipality is Jal, NM approximately 9 miles southeast of the Librarian Containment.
- The closest public water system is within the municipal boundary of Jal and about 10 miles southeast.

Distance to Subsurface Mines

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

- The closest caliche pit is 6500 feet northwest.
- There are no subsurface mines in Plate 4

Distance to High or Critical Karst Areas

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

- The proposed containment is located within a “No Karst” area.
- The nearest “high” or “critical” potential karst area is located approximately 30 miles west of the proposed containment.

Distance to 100-Year Floodplain

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

- FEMA describes the location as an area with possible but undetermined flood hazards. No flood hazard analysis has been conducted.
- The closest FEMA-mapped flood zone is within the Jal municipal boundary, about 9 miles southeast.

Distance to Surface Water

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

- Plate 7 shows a Lake/Pond at the West Windmill to the southeast. We believe this natural depression was “improved” decades ago to the stock tank that it is today.
- The closest mapped watercourse is about ¾ mile southeast.
- Our examination documented that there are no next order tributaries to the mapped features within the 300 foot setback distance.

Distance to Permanent Residence or Structures

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

- The nearest structures are lease roads, a production pad to the northwest and several pipelines.

Distance to Non-Public Water Supply

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

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

Distance to Wetlands

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

- A Palustrine wetland that is the stock tank at the West Windmill
- Riverine wetlands that lie within arroyos in the southeast quadrant of Plate 9

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

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

Many wetlands in New Mexico mapped by the USFW Service database do not meet the NM OCD definition of a wetland. The Hicks Consultants team has more than 100 years of combined field experience in Eddy, Lea, and Chaves Counties and have rarely seen a mapped wetland with vegetation adapted for saturated soil conditions.

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

SITING CRITERIA DEMONSTRATION PLATES

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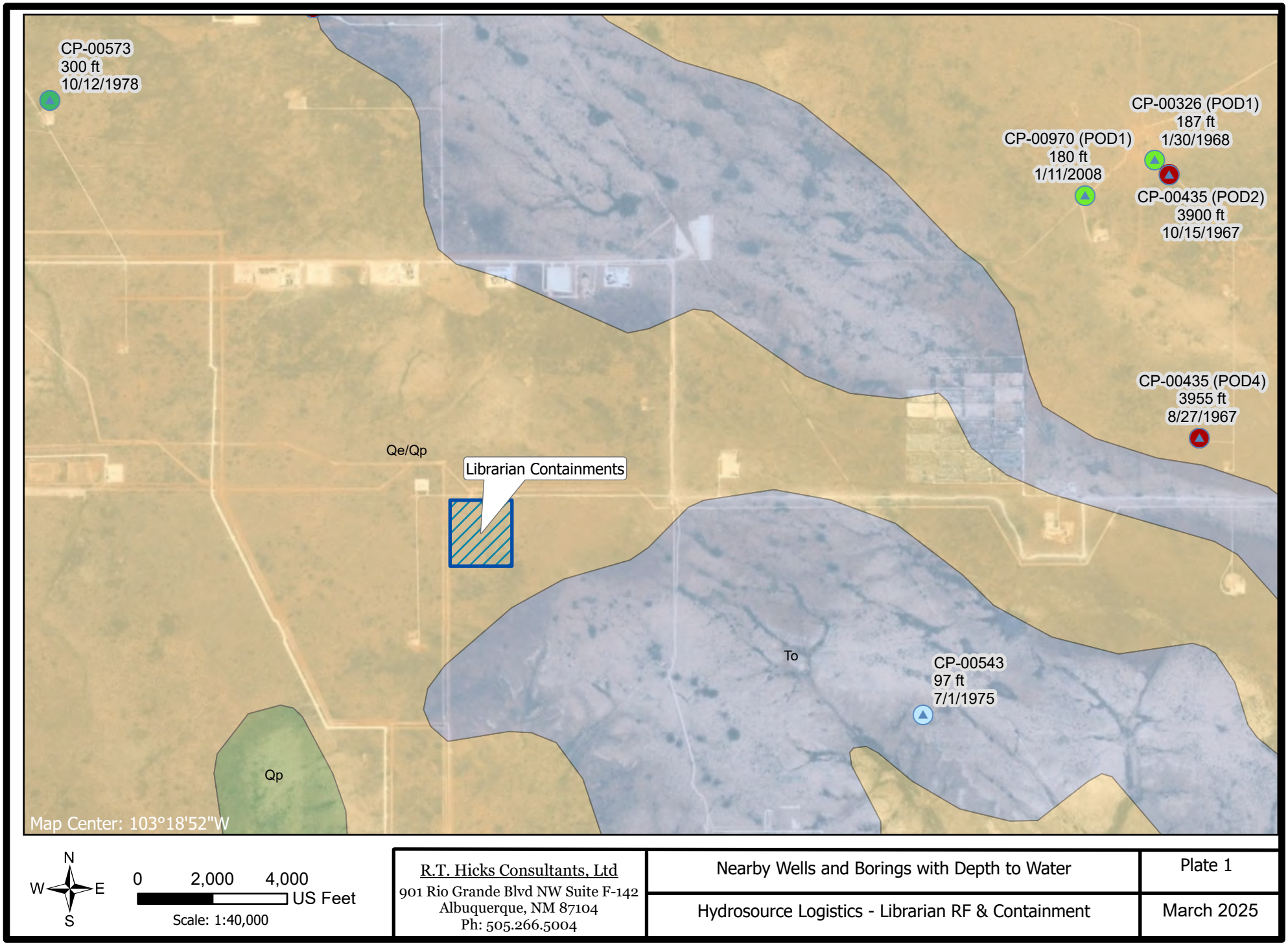

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nearby Wells and Borings with Depth to Water	Plate 1
	Hydrosource Logistics - Librarian RF & Containment	March 2025

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Recycling Containment Area

USGS Gauging Station (GW Elev, Date)

- Alluvium/Bolsom
- Chinle
- Santa Rosa
- Not Defined

OSE Water Wells (DTW/Date)

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

Other

Misc. Water Wells (GW Elev, Date)

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

NM_Geology

- Qe/Qp, Quaternary-Eolian Piedmont Deposits
- Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits
- To, Tertiary-Ogallala Formation,To, Tertiary-Ogallala Formation

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Albuquerque, NM 87104
Ph: 505.266.5004

Legend Plates 1, 2a &2b

Hydrosource Logistics - Librarian RF & Containment

March 2025

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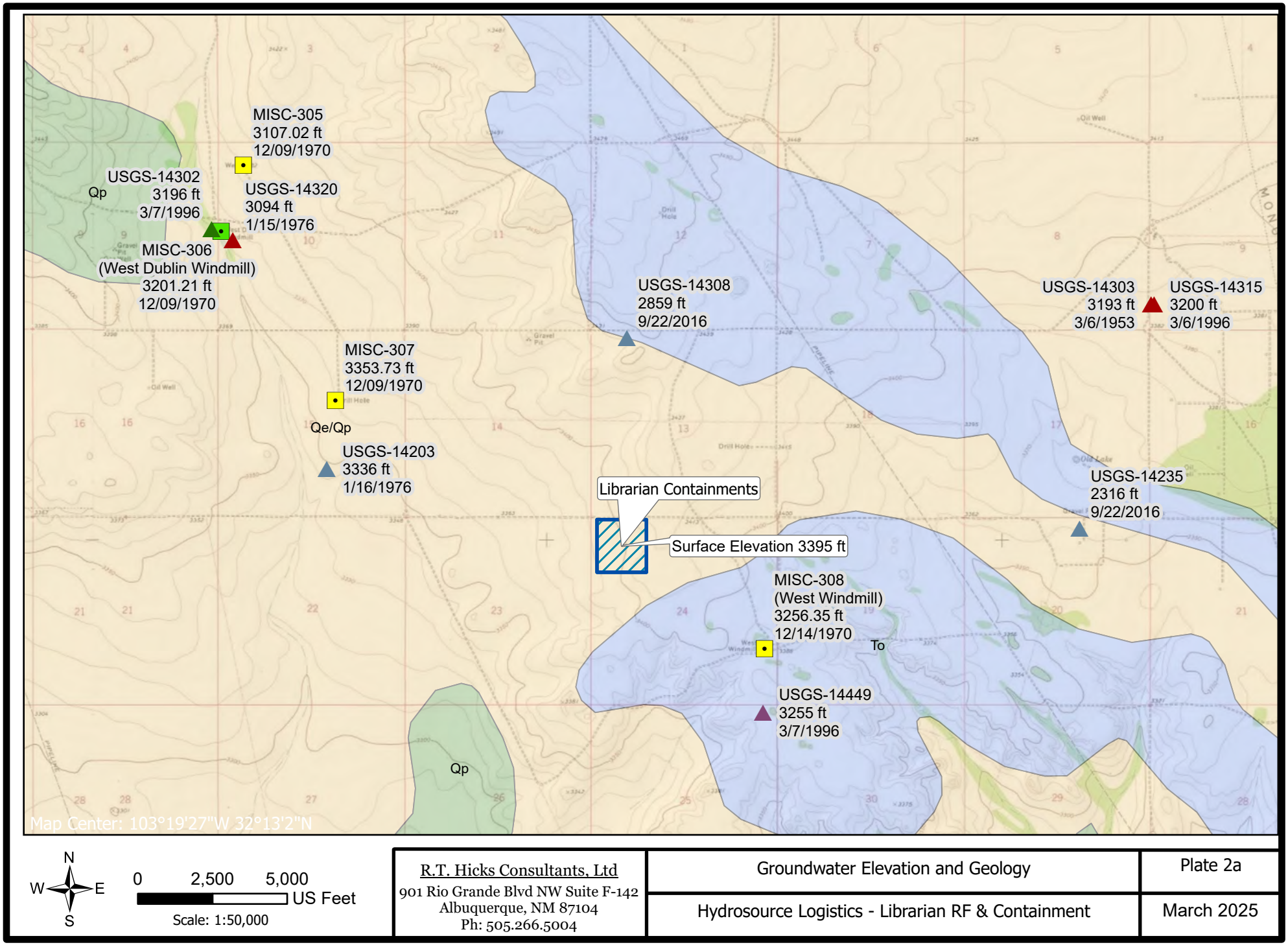

N
W E
S

0 2,500 5,000 US Feet

Scale: 1:50,000

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Groundwater Elevation and Geology	Plate 2a
	Hydrosource Logistics - Librarian RF & Containment	March 2025

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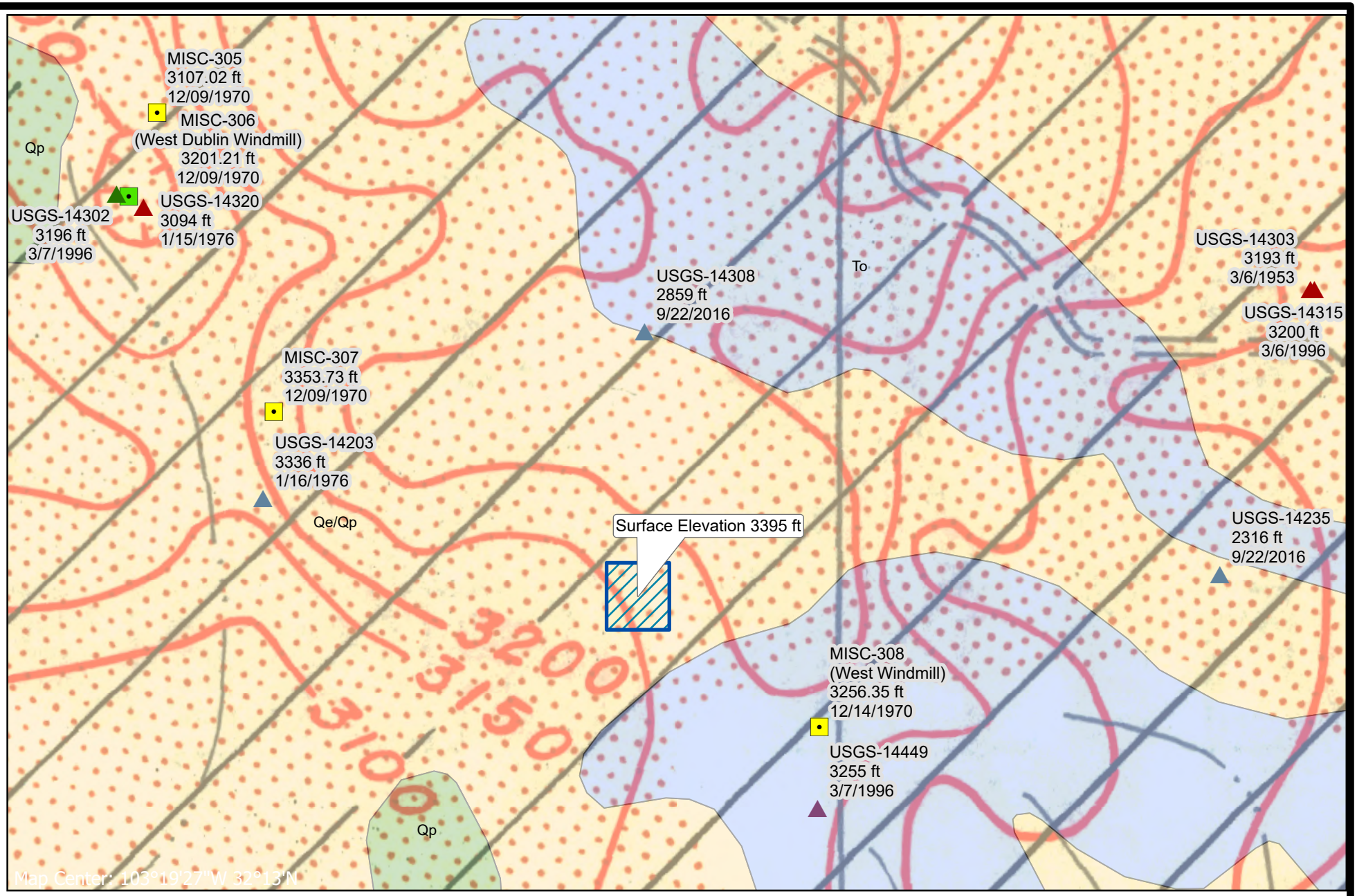

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0 2,000 4,000 US Feet

Scale: 1:42,000

R.T. Hicks Consultants, Ltd
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Albuquerque, NM 87104
Ph: 505.266.5004

Groundwater Elevation, Geology & Red Bed Top Elevation	Plate 2b
Hydrosource Logistics - Librarian RF & Containment	March 2025

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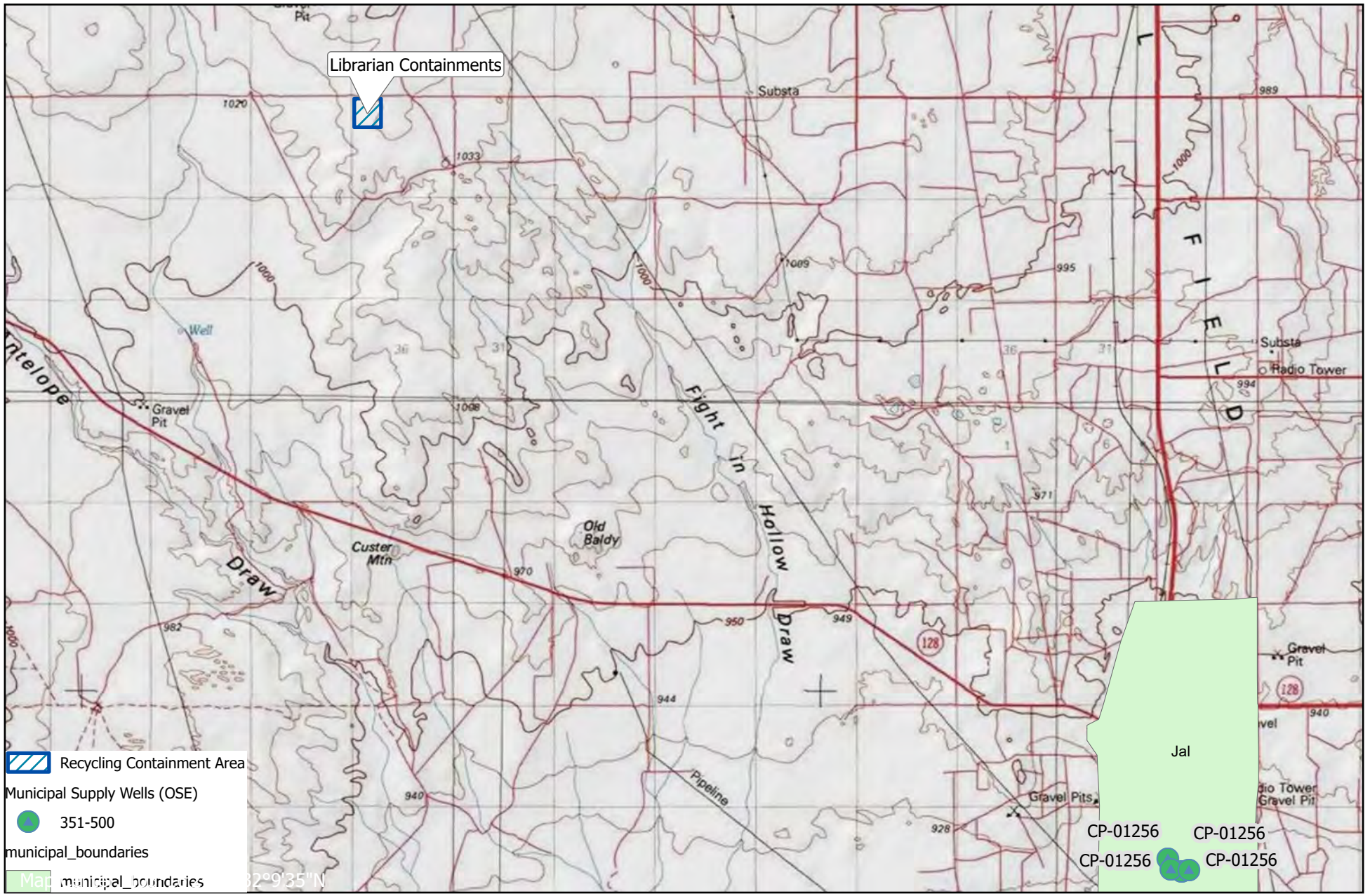

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0 5,000 10,000 US Feet

Scale: 1:100,000

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

Hydrosource Logistics - Librarian RF & Containment

March 2025

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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
	Hydrosource Logistics - Librarian RF & Containment	March 2025

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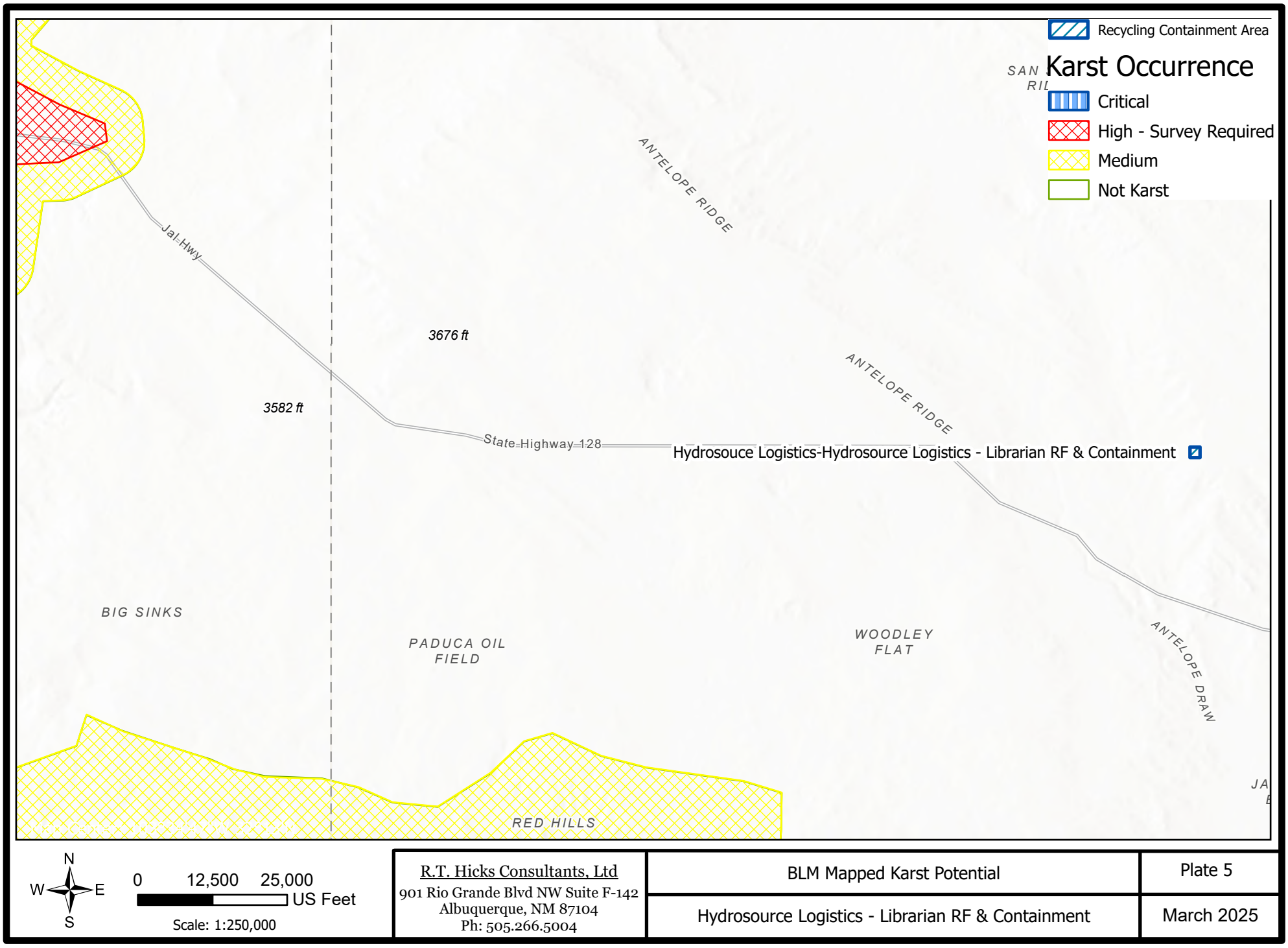

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

BLM Mapped Karst Potential	Plate 5
Hydrosource Logistics - Librarian RF & Containment	March 2025

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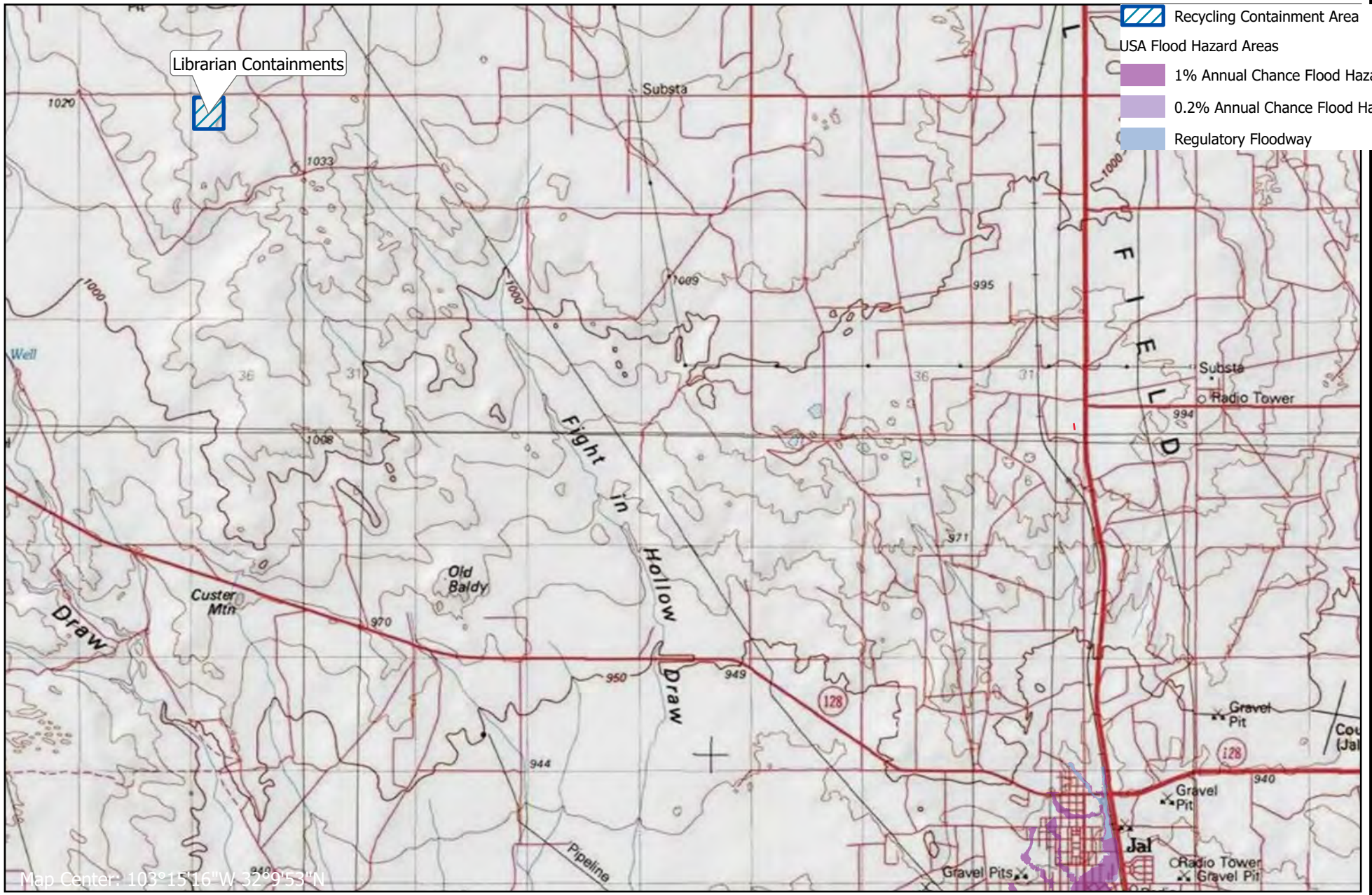

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0 4,500 9,000 US Feet

Scale: 1:90,000

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

Hydrosource Logistics - Librarian RF & Containment

March 2025

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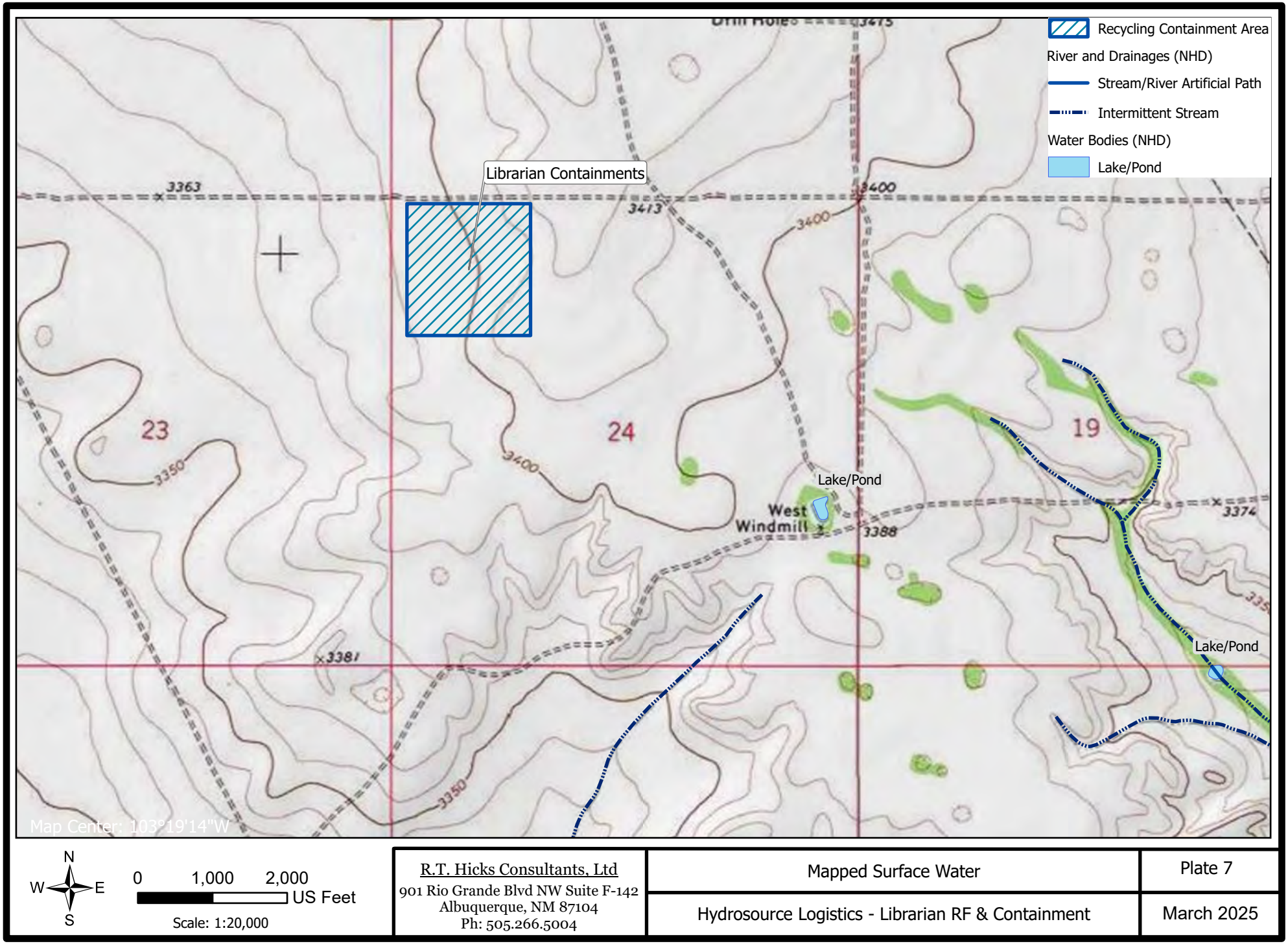

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Mapped Surface Water	Plate 7
Hydrosource Logistics - Librarian RF & Containment	March 2025

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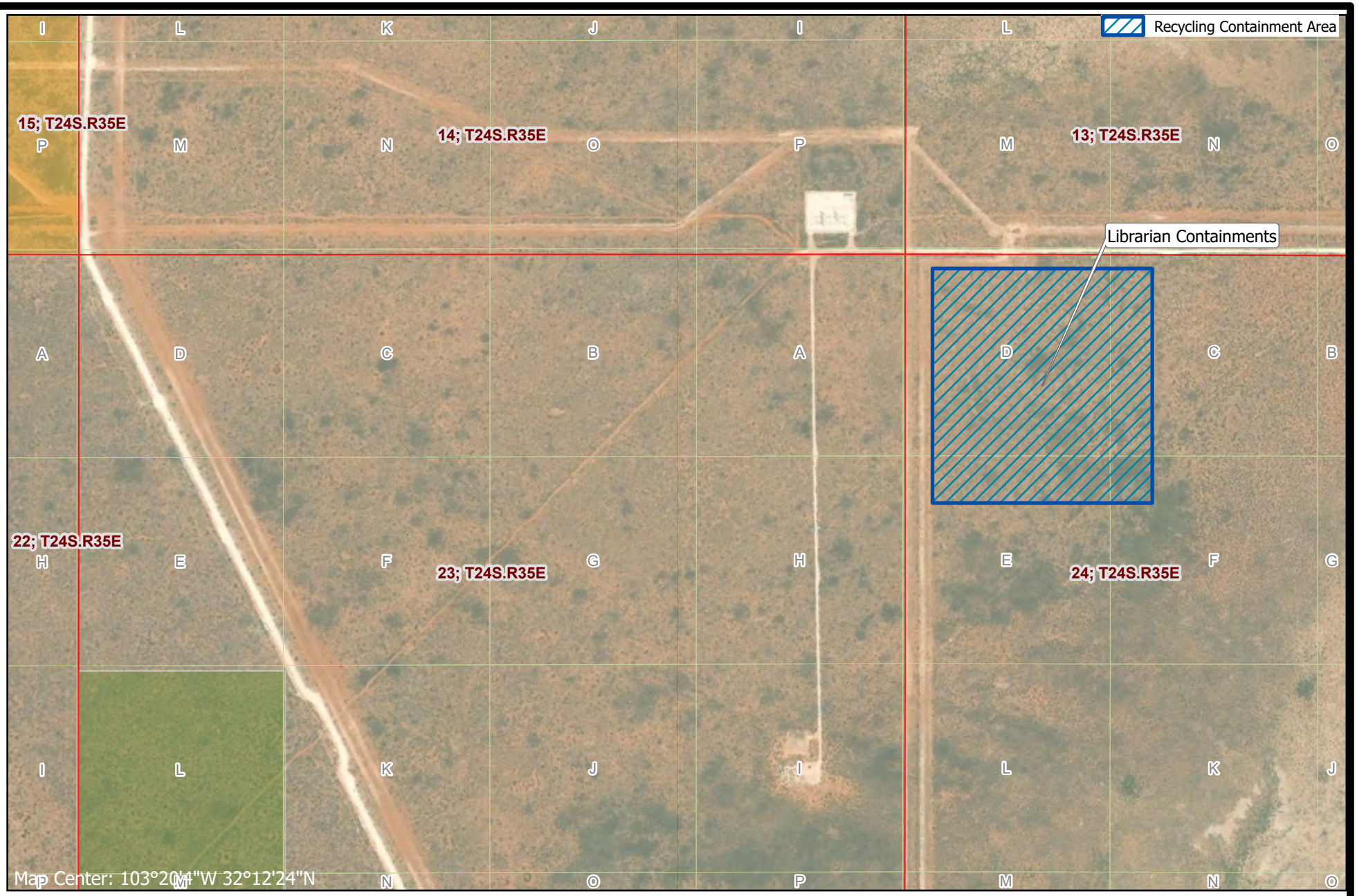

N
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0 500 1,000 US Feet

Scale: 1:12,000

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

Nearest Structures	Plate 8
Hydrosource Logistics - Librarian RF & Containment	March 2025

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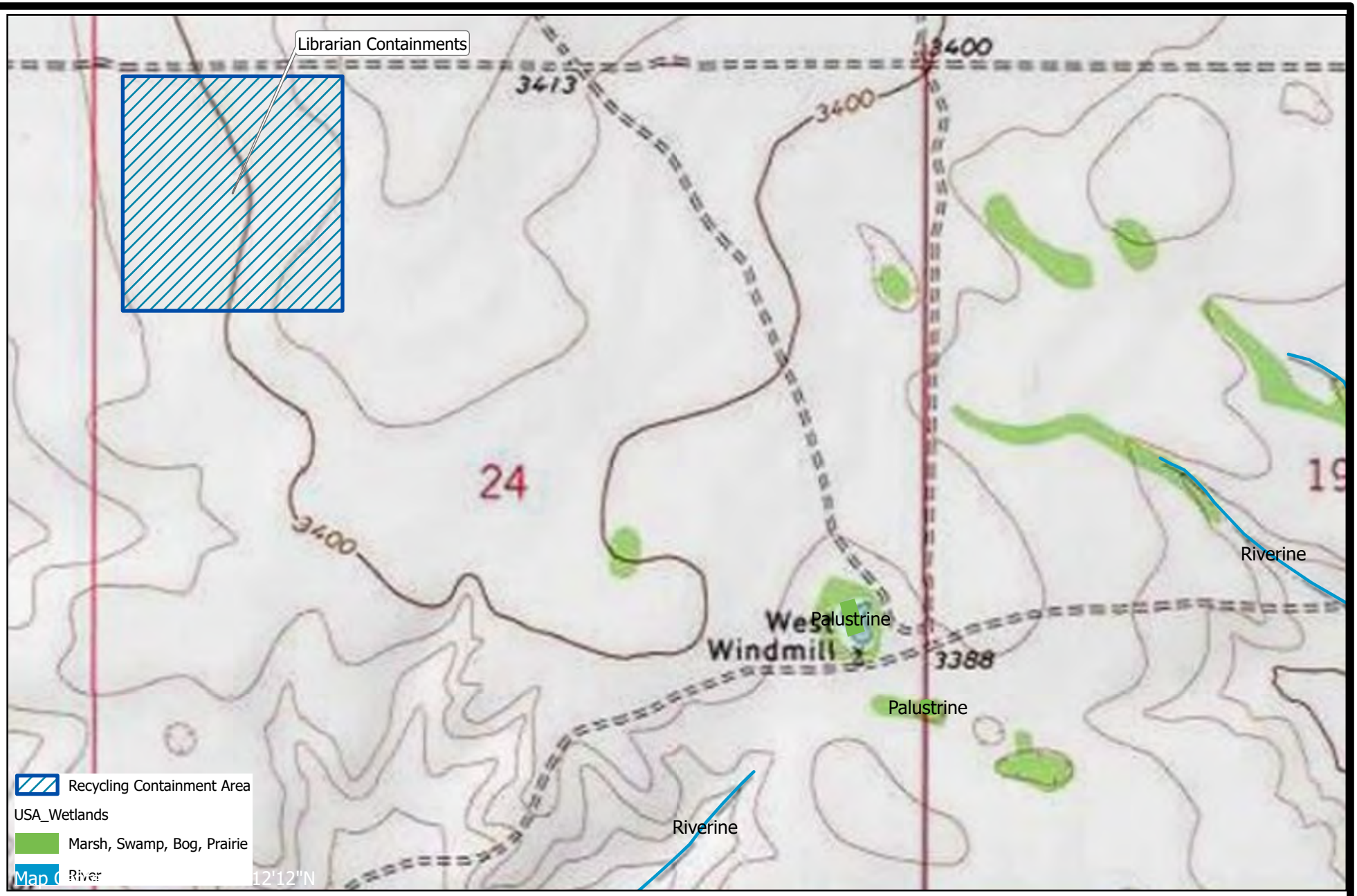

N
W E
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0 500 1,000 US Feet

Scale: 1:12,000

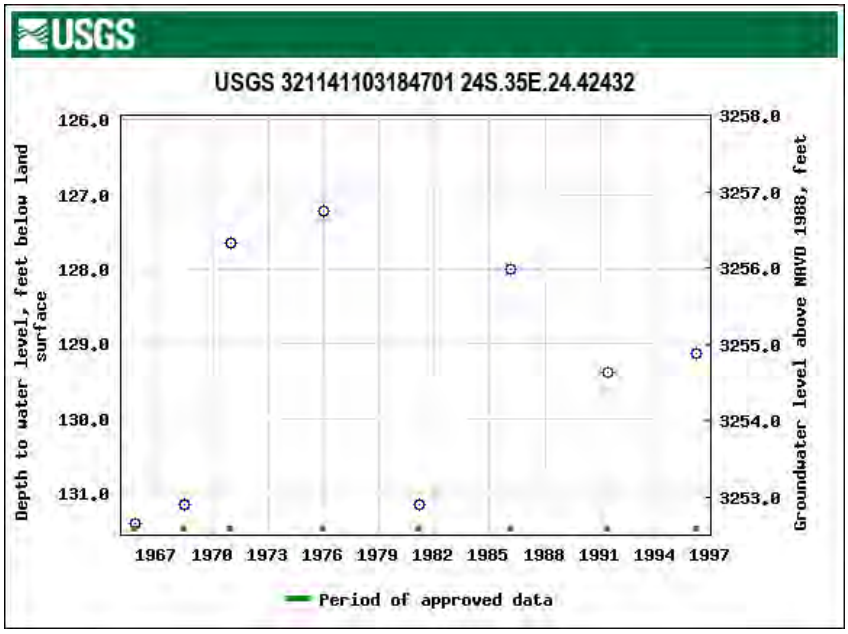
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Mapped Wetlands	Plate 9
	Hydrosource Logistics - Librarian RF & Containment	March 2025

APPENDIX WELL LOGS & USGS DATA

USGS 321141103184701 24S.35E.24.42432 AKA USGS-14449

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°11'41",
Longitude 103°18'47" NAD27
Land-surface elevation 3,384 feet above NAVD88
This well is completed in the Pecos River Basin alluvial aquifer (N100PCSRVR) national aquifer.
This well is completed in the Chinle Formation (231CHNL) local aquifer.

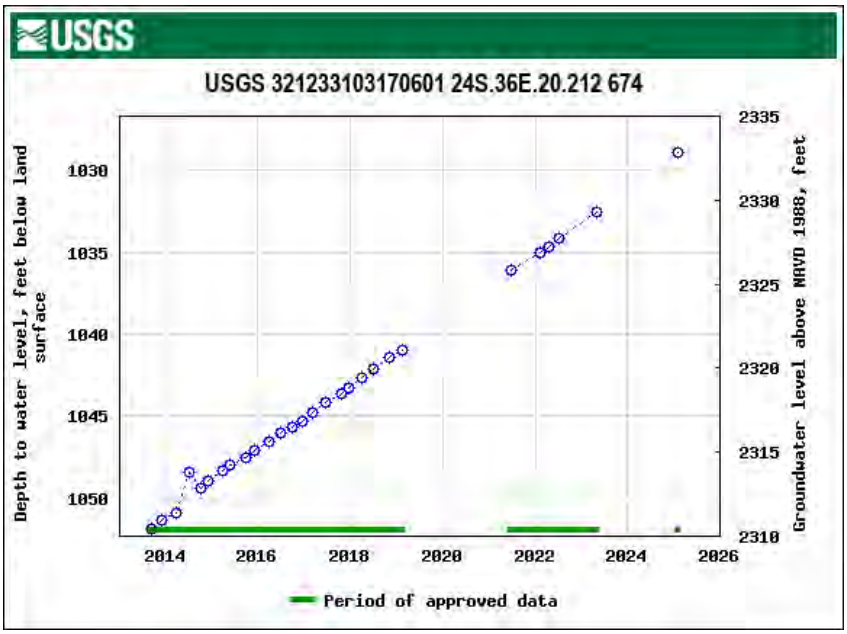
According to the location by Sec Twp Rng, this well is the West Windmill located about ¼ mile due north of the plotted location.



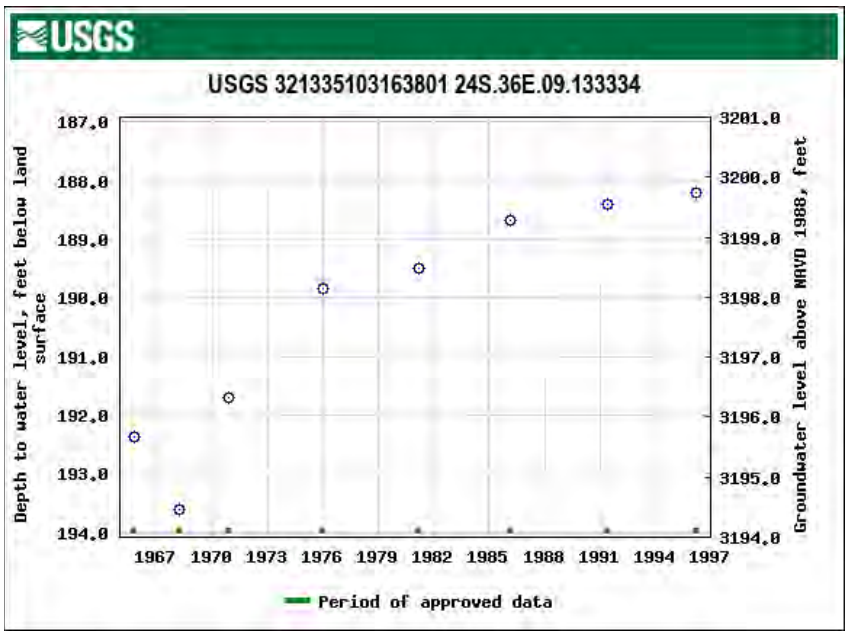
USGS 321233103170601 24S.36E.20.212 674 AKA USGS-14235

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°12'33.3",
Longitude 103°17'05.9" NAD83
Land-surface elevation 3,362 feet above NAVD88
The depth of the well is 5,713 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.

The depth of the well suggests this is a Capitan Reef Aquifer monitoring well and is probably located 3500 feet southeast of the plotted location.



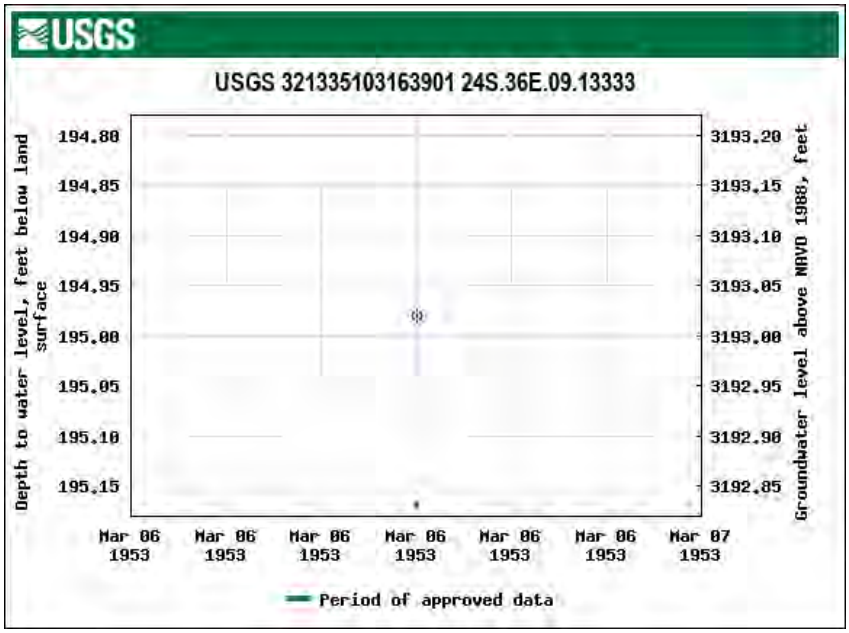
USGS 321335103163801 24S.36E.09.133334 AKA USGS-14315 Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°13'35",
Longitude 103°16'38" NAD27
Land-surface elevation 3,388 feet above NAVD88
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.



This well is the same well as presented below.

USGS 321335103163901 24S.36E.09.13333 AKA USGS-14303

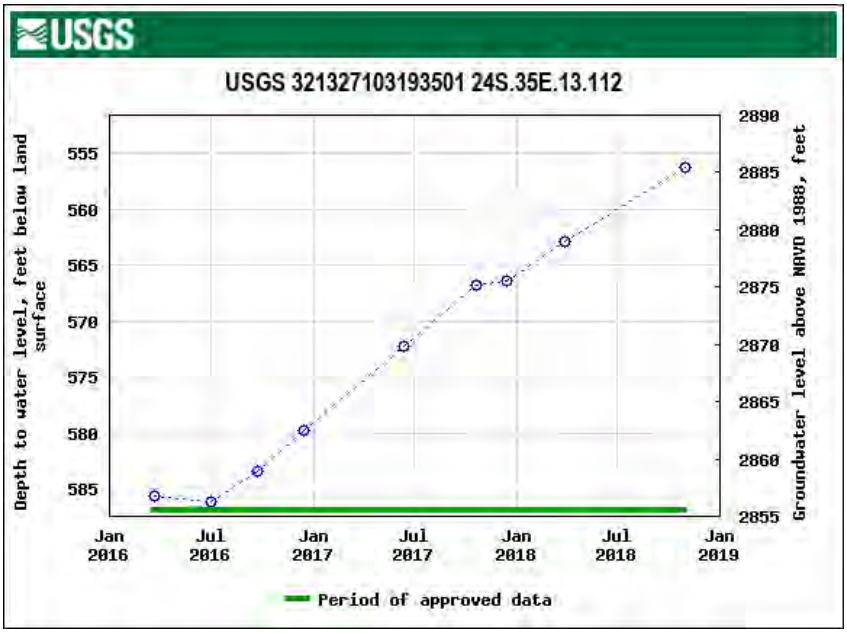
Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°13'35",
Longitude 103°16'39" NAD27
Land-surface elevation 3,388 feet above NAVD88
The depth of the well is 230 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.



USGS 321327103193501 24S.35E.13.112 AKA USGS-14308

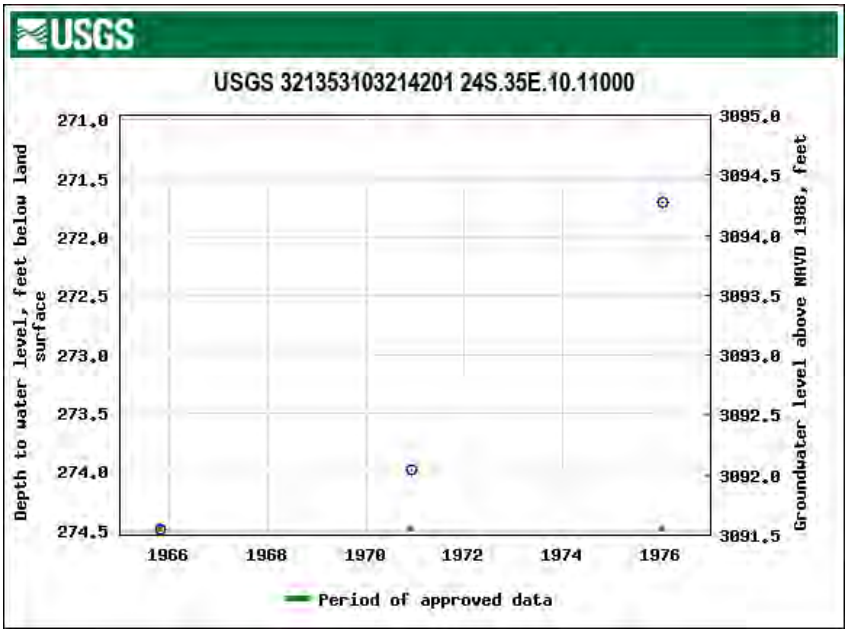
Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°13'26.6",
Longitude 103°19'35.3" NAD83
Land-surface elevation 3,442 feet above NAVD88
This well is completed in the Other aquifers (N9999OTHER) national aquifer.

The depth to water suggests this well may be completed in the Rustler Formation or an oil reservoir.



USGS 321353103214201 24S.35E.10.11000 AKA USGS-14320

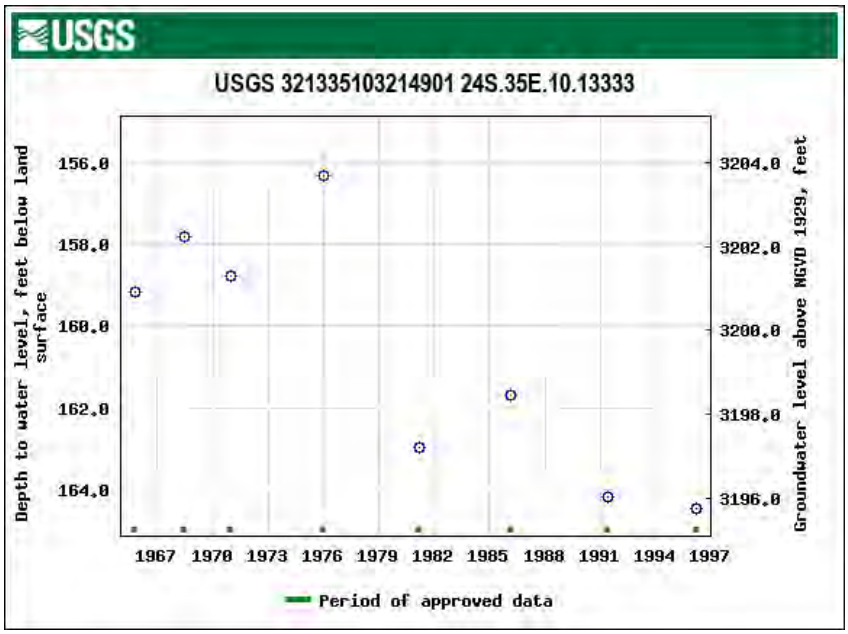
Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°13'53",
Longitude 103°21'42" NAD27
Land-surface elevation 3,366 feet above NAVD88
The depth of the well is 1,250 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.



This appears to be the same well as MISC-305 (Well 3382)which is located about 2500 feet north. The MISC database indicates the well is an oil test well and it is unlikely that this well draws water from the Santa Rosa Sandstone.

USGS 321335103214901 24S.35E.10.13333 AKA USGS-14302

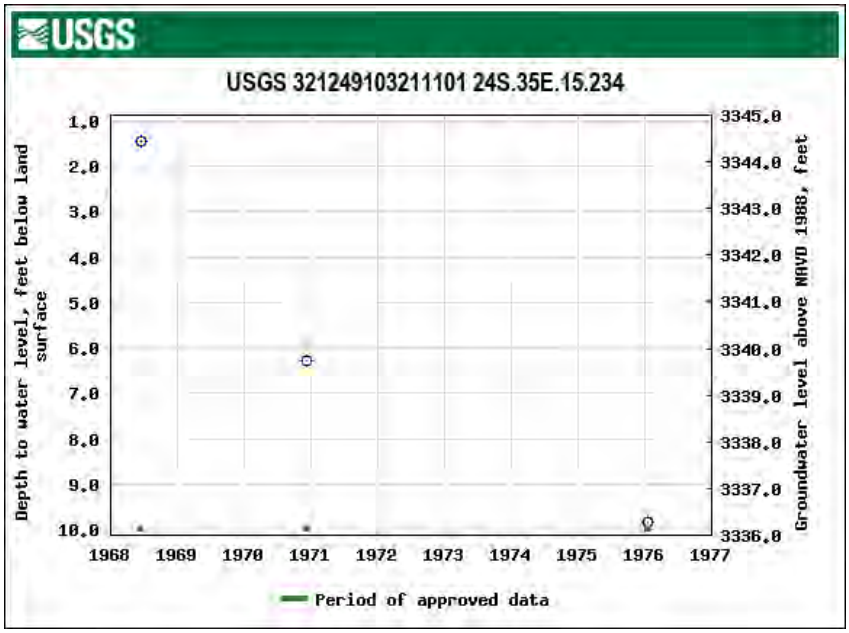
Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°13'56",
Longitude 103°21'49" NAD27
Land-surface elevation 3,360.10 feet above NGVD29
The depth of the well is 190 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.



This is the same well as MISC-306 and is the West Dublin Windmilll.

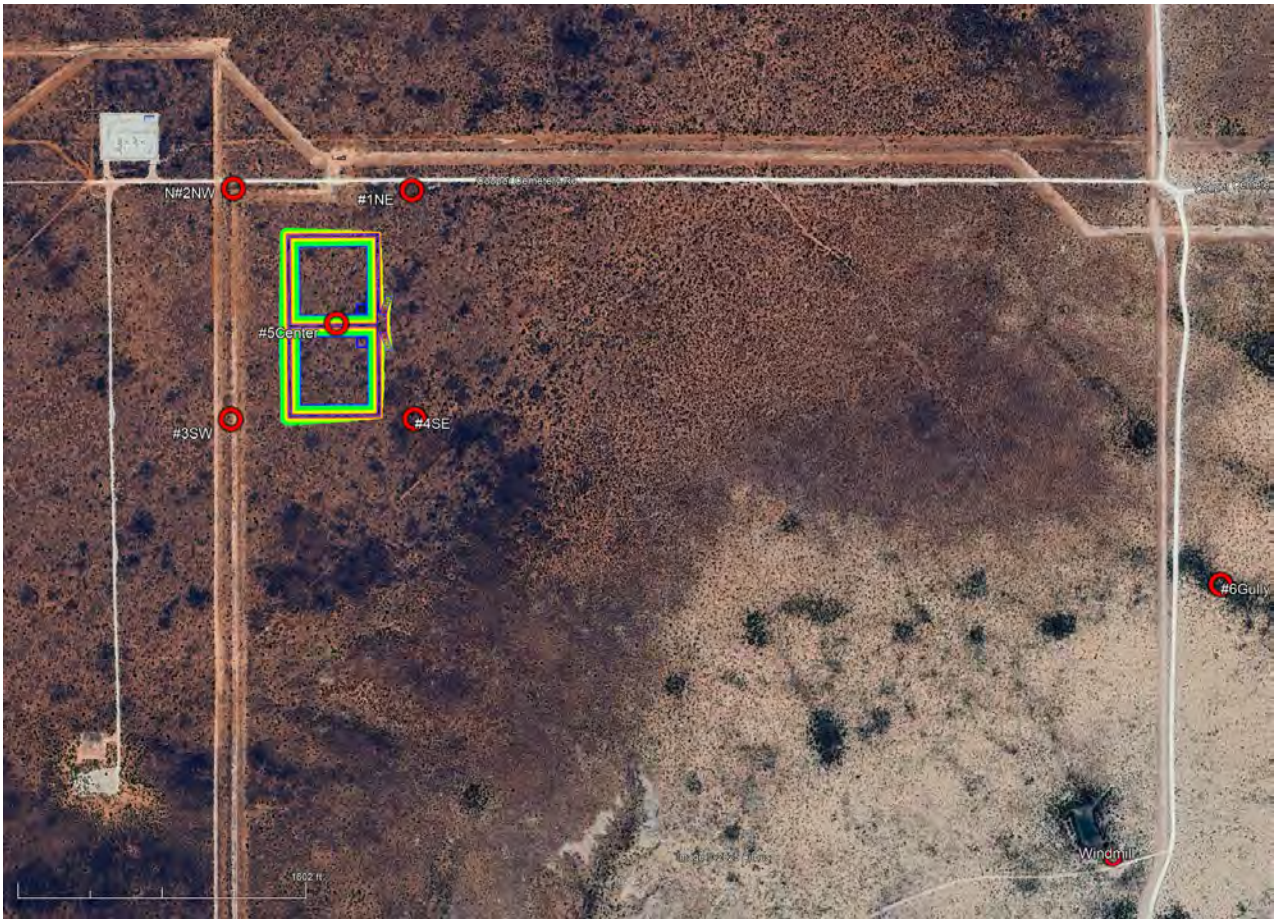
USGS 321249103211101 24S.35E.15.234 AKA USGS-14203

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°12'49",
Longitude 103°21'11" NAD27
Land-surface elevation 3,346 feet above NAVD88
This well is completed in the Other aquifers (N9999OTHER) national aquifer.



This is the same well as MISC-307 located 2500 feet north at the "Drill Hole" location. The MISC database indicates this is an abandoned well. We believe this is an oil test well that in 1971 may have tapped the oil reservoir impacted by secondary recovery that the OSE data indicates was on-going on the eastern margin of Plate 2.

APPENDIX SITE PHOTOGRAPHS



Site Map of the Seven Photograph Locations

#1NE - View west from NE corner of project area Lease road on right. Low stabilized dunes and sheet sand are the common landform of the area.

#2NW View south from the northwest corner of project area. Pipeline ROW is on left of image.

#3SW This view north from the southwest corner of the project area shows the lease road at the horizon

#4 SE Corner of the project area

#5 Center View northwest

#5Center View looking south-southwest

#6 Gully location showing caliche horizon capping this area of the mesa. The caliche cap is easily discerned in Google Earth images. The gully is not a watercourse.

West Windmill in the southeast corner of the map shown above. This image is a view north showing the berm that forms the south boundary of the stock tank

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Tuesday, April 22, 2025 11:27 AM
To: Galan Kelley; 'BobbiJo Crain'
Subject: 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090]
Attachments: C-147 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090].pdf

1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090]

Good morning Mr. Kelly.
NMOCD has reviewed the recycling containment permit application and related documents, submitted by [332820] Hydrosource Logistics Waste Management, LLC on 04/15/2025, Application ID 452480 for 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] in D-24-24S-35E, Lea County, New Mexico. The form C-147 and related documents for 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] are approved with the following conditions of approval:

- The purpose of this permit is for oil and gas activities regulated under the NMAC 19.15.34.3 STATUTORY AUTHORITY: 19.15.34 NMAC is adopted pursuant to the Oil and Gas Act, Paragraph (15) of Section 70-2-12(B) NMSA 1978, which authorizes the division to regulate the disposition of water produced or used in connection with the drilling for or producing of oil and gas or both and Paragraph (21) of Section 70-2-12(B) NMSA 1978 which authorizes the regulation of the disposition of nondomestic wastes from the exploration, development, production or storage of crude oil or natural gas. Per 19.15.34.10. D: Recycling containments may not be used for the disposal of produced water or other oilfield wastes.
- 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] is approved for five years of operation from the date of permit application of 04/15/2025. 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] permit expires on 04/15/2030. If [332820] Hydrosource Logistics Waste Management, LLC, wishes to extend operations past five years, an annual permit extension request must be submitted using form C-147 through OCD Online by 03/15/2030.
- [332820] Hydrosource Logistics Waste Management, LLC shall construct, operate, maintain, close, and reclaim 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] in compliance with 19.15.34 NMAC.
- 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] consists of two (2) earthen containment of 1,062,000.00 BBL of total capacity.
- 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 $582,271.80 for 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] meets the requirements of NMAC 19.15.34.15.A.(1).
- [332820] Hydrosource Logistics Waste Management, LLC cannot receive produced water in 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] until after the original copy of the financial assurance has been accepted by NMOCD.
- The financial assurance should be mailed to: **EMNRD - Oil Conservation Division, Administration & Compliance Bureau. Attn: Bond Administrator.1220 S. St. Francis Drive | Santa Fe, NM 87505.**
- [332820] Hydrosource Logistics Waste Management, LLC shall notify OCD when construction of 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] commences.

- [332820] Hydrosource Logistics Waste Management, LLC shall notify OCD when recycling operations commence and cease at 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090].
- A minimum of 3-feet freeboard must be maintained at 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090], 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.
- [332820] Hydrosource Logistics Waste Management, 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.
- [332820] Hydrosource Logistics Waste Management, LLC shall inspect the recycling containment and associated leak detection system weekly while it contains fluids. The operator shall maintain a current log of such inspections and make the logs available for review by the division upon request according to 19.15.34.13.A.
- [332820] Hydrosource Logistics Waste Management, 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-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090].

Please reference number 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] in all future communications.
Regards,

Victoria Venegas ● Environmental Specialist Advanced
EMNRD - Oil Conservation Division
506 W. Texas Ave. Artesia, NM 88210
575.909.0269 | Victoria.Venegas@emnrd.nm.gov

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

General Information
Phone: (505) 629-6116

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

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

CONDITIONS

Operator: Hydrosource Logistics Waste Management, LLC 600 N. Marienfeld Midland, TX 79701	OGRID: 332820
	Action Number: 452480
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	• 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] is approved for five years of operation from the date of permit application of 04/15/2025. 1RF-539 - LIBRARIAN IN-GROUND CONTAINMENTS NORTH AND SOUTH [fVV2511152090] permit expires on 04/15/2030. If [332820] Hydrosource Logistics Waste Management, LLC, wishes to extend operations past five years, an annual permit extension request must be submitted using form C-147 through OCD Online by 03/15/2030.	4/22/2025