

November 2024

Rule 34 Registration: Volume 1

The Hub In-Ground Containment

Section 36, T17S, R28E, Eddy County

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



Looking south from the northwest corner of the The Hub Containment location. The nature of the vegetation and the thin cover of blow sand can be seen.

Prepared for:
Spur Energy Partners, LLC
Houston, Texas

Prepared by:
R.T. Hicks Consultants, Ltd.
Albuquerque, New Mexico

Cascade Services, LLC
Midland, Texas

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

November 27, 2024

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: Spur Energy Partners LLC, The Hub Containment
In-ground Containment Registration
Section 36, T17S, R28E, Eddy County

Dear Ms. Barr and Ms. Venegas:

On behalf of Spur Energy Partners LLC, R.T. Hicks Consultants prepared a C-147 *registration* for the above-referenced project.

Volume 1 of the package contains:

- This letter
- Closure cost estimates for the in-ground containment
- Siting criteria demonstration for the containment

Volume 2 includes:

- C-147 Form to register the in-ground containment
- Stamped Design Drawings
- Recently Approved Plans for Design/Construction, O&M, Closure

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

1. OCD has previously approved an equivalency demonstration written by experts for 40-mil HDPE secondary liner. 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

DRAFT

Page 2

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.

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

Sincerely,
R.T. Hicks Consultants

A handwritten signature in black ink, appearing to read "Randall T. Hicks", written in a cursive style.

Randall T. Hicks PG
Principal

Copy: Spur Energy Partners, LLC
Land Owner's Representative

R. T. HICKS CONSULTANTS, LTD.

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The Hub In-Ground Containment Financial Assurance Cost Estimate

Attached is the cost estimate for reclamation of the The Hub In-Ground Containment. Total bonding is **\$970,379.00**.

The Hub In-Ground Containment Closure

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

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

<i>All work elements required by Rule 34</i>	\$ 962,879.00
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RT Hicks Consultants

Preparation of sampling results and closure report	\$ 7,500.00
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Total for in ground Containment Closure Activities	\$ 970,379.00
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The reclamation must meet terms set forth in the surface lease agreement with the landowner who received a copy of the registration.

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

Cascade Services, LLC

3403B E County Road 44
Midland, TX 79705
www.cascadeservicesllc.com



Estimate

ADDRESS	SHIP TO	ESTIMATE	1816
SEP Permian LLC (Spur Energy)	SEP Permian LLC (Spur Energy)	DATE	11/21/2024
9655 Katy Freeway, Suite 500	9655 Katy Freeway, Suite 500		
Houston, Texas 77024 USA	Houston, Texas 77024 USA		
CUSTOMER PROJECT NAME	PROJECT LOCATION COORDINATES		
The Hub Closure	32.792020078, -104.125805789		

DESCRIPTION	QTY	UNIT	RATE	AMOUNT
This is pricing a package to reclaim three ponds totaling 1,655,180 BBLs 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.	1		411,750.00	411,750.00
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 Eddy County NM Includes purchase of seed mix and placement	1		3,000.00	3,000.00
Fence removal and disposal Fence estimated at 6026 ft	6,026		4.00	24,104.00

This includes removal of all posts,
braces, wire, fabric,
gates, and hardware.

Remove and dispose of all four layers. Textile, 40 mil, net, and 60 mil for all three ponds	3,464,000	0.15	519,600.00
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Preferred payment method: ACH/Wire Email AR@cascadeservicesllc.com for ACH/Wire details.	SUBTOTAL	962,879.00
	TAX	0.00
Remit Checks To: Cascade Services LLC PO Box 200954 Dallas, TX 75320-0954	TOTAL	\$962,879.00

**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

Accepted By

Accepted Date

SITE ASSESSMENT & CHARACTERIZATION

TEXT AND FIGURES

PLATES

SITING CRITERIA (19.15.34.11 NMAC)
SPUR ENERGY PARTNERS – THE HUB CONTAINMENT

Distance to Groundwater

Plate 1, Plate 2 and the discussion below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the locations is greater than 100 feet beneath the area of interest that will include the location of the The Hub Containment.

Plate 1 is a topographic map that shows:

1. The area identified by that the by the blue diagonally lined polygon contains the The Hub Reuse Facility.
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 (i.e., permit applications). In this case, the permit data generally show “no date” and “DTW=0”. On Plate 1, the OSE data has been screened with permit data being eliminated. We provide no depth to water data for the OSE wells as these data do not represent static water levels and are often misleading. There is one water well north of the proposed containment from the OSE database.
3. Two water wells in the USGS database are shown in colored squares on Plate 1.
4. Water wells, which are not documented in the public databases but were identified by field inspection or other published reports as colored squares (Misc. well database). MISC-37 is the only such well on Plate 1 and is not the same well as USGS-9825

Plate 2 is a topographic and geologic map that shows:

1. The blue, diagonally lined polygon within which the The Hub Reuse Facility is contained. Elevation of the polygon is er of the site.
2. Water wells measured by the USGS, the year of the measurement and the calculated elevation of the groundwater surface.
3. Water wells, which are not documented in the public databases but were identified by field inspection or other published reports as colored squares (Misc. well database).
4. The geologic unit exposed at the The Hub site is older Quaternary alluvium (Qoa).

Hydrogeology

The location is 12 miles east of the Pecos River floodplain. This area between the Pecos Valley and the southern High Plains is called the Mescalero Plains. The alluvial material deposited in the Mescalero Plains is derived from erosion and redeposition of Ogallala materials by the Pecos River and its tributary drainages. The underlying surface is Permian units that are separated from the alluvium by an erosional unconformity.

On the western half of Plate 2, no wells draw water from the reworked Ogallala materials (aka High Plains Aquifer in some USGS reports). USGS listed wells around the site access water from the Triassic Chinle formation or the Permian Rustler or San Andres formations. The groundwater obtained from these formations is most likely confined. East of the The Hub project site, USGS-9825 is completed in the San Andres Formation but is no longer visible at the site. MISC-37 is a 157-foot well that is screened in the Rustler Forty-niner member (see Appendix *Well Logs and USGS Data*). The Quaternary alluvial deposits are saturated within Bear Grass Draw in the wells shown in the northeast corner of Plate 1.

SITING CRITERIA (19.15.34.11 NMAC)
SPUR ENERGY PARTNERS – THE HUB CONTAINMENT

Groundwater Data

We relied upon the most recent data measured by the USGS for groundwater elevations in Plate 2. Water level data from the OSE database rely upon observed water levels by drillers during the completion of the water well. Data from the closest USGS wells is presented below.

USGS and MISC Wells

USGS-9781 is closest to the The Hub location, 0.90 miles west-southwest. The well supplies cattle with water. USGS shows three groundwater measurements in 1986, 1990, and 1994. Groundwater elevation varied by less than a foot (see Appendix *Well Logs and USGS Data*). Depth to water was about 257 feet with a groundwater elevation of 3401 feet (The surface elevation is 3659 feet, 21 feet lower than the The Hub site). The well is completed in the Rustler formation.

About 1.8 miles to the east is USGS-9825. Former stock tanks are present at the location. There was a windmill at the northern end of the playa at an earlier time. A measurement in 1948 identified groundwater at an elevation of 3342 feet with a depth to water of 210 feet. The groundwater is from the San Andres formation. At this same location is MISC-37, which was mentioned above as drawing water from the upper Rustler Formation. Hicks Consultants measured this 157-foot deep PVC pipe in 2012 prior to construction of the pumping well.

Northwest of the The Hub Containment location is USGS-8729. Two measurements (1989 and 1994) show respective depths to water of 72 feet and 75 feet. This well (and several others) is located within a structural valley containing several playas at its northern end. This is a San Andres Limestone well.

More than 2.0 miles northeast of USGS-9825 are several wells located in the Bear Grass Draw drainage (Plate 2). Groundwater elevations at these wells are between 3462 and 3470 feet with corresponding depths to water of about 75 feet. These wells draw water from the alluvium and underlying Permian bedrock regolith.

About 4.15 miles to the southeast of the The Hub location is USGS-9897. Four measurements of water table elevation exist between 1982 and 1994. Groundwater elevation varied from a low of 3327 feet (1986) to a high of 3383 feet (1994). Corresponding depths to water were 153 feet and 95 feet. The well is stated to be completed in the Chinle formation.

OSE Well Log

Very few OSE drillers are available in the area. RA-13395 is about 1.35 miles to the north-northeast. The driller's log records various poorly graded sands to a total depth of 102 feet. Groundwater was not encountered.

The appendix provides a driller's log and discussion of well MISC-37. When drilled, OSE Rules did not require submission of well logs in this basin. This log is very useful with respect to the uppermost water bearing unit that may underlie the The Hub containment.

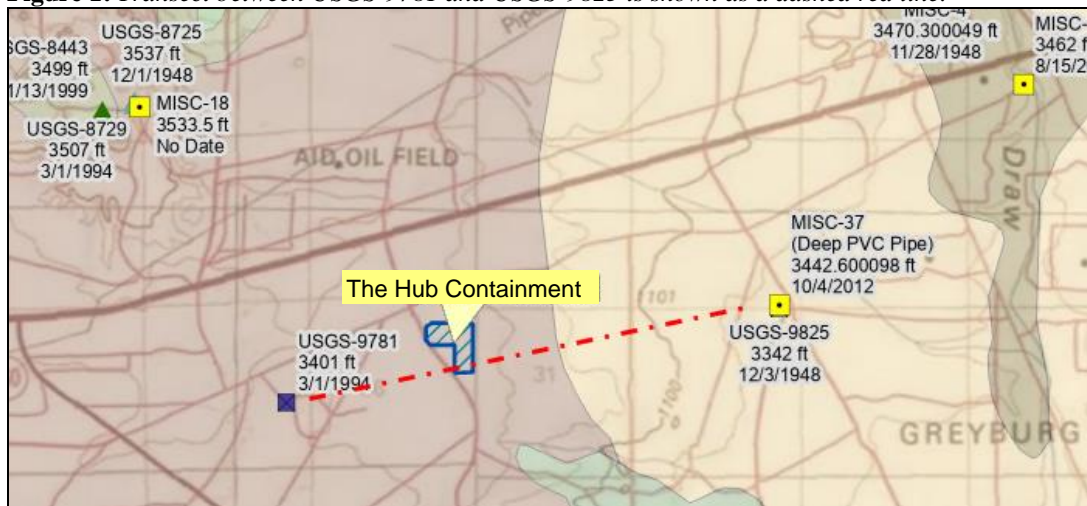
Groundwater Elevation and Direction of Movement

Figure 1 (below) shows a transect between USGS-9781 and USGS-9825/MISC-37 that passes beneath the southern portion of the The Hub Containment location. The transect is 2.98 miles

SITING CRITERIA (19.15.34.11 NMAC)
SPUR ENERGY PARTNERS – THE HUB CONTAINMENT

long and passes beneath the The Hub site at mile 1.03 from its western end, USGS-9781 (see Figure 1 below).

Figure 1: Transect between USGS-9781 and USGS-9825 is shown as a dashed red line.



A realistic interpolation of the depth to groundwater beneath the The Hub project area uses MISC-37 data as the eastern end point of the transect with USGS-9781 data for the western end point. Both of these wells are completed in the Rustler formation. The measurement of the PVC pipe in 2012 results in a groundwater surface elevation of 3442 feet. The interpolation of depth to water using these two wells is presented below. Elevation of groundwater is 41 feet lower at USGS-9781.

The calculation becomes: $(3401 + (1.03/2.98) * 41 =) 3415.2$. The calculated depth to water is $(3680 - 3415.2 =) 264.8$ feet. Given these two wells are completed in the same aquifer, and evaluation of the data suggests Bear Grass Draw provides recharge to the underlying Rustler Formation aquifer, we believe this estimate is solid.

Conclusions

Our conclusions honor all data that we know are accurate to the best of our ledge. We conclude:

- The ground surface elevation of the The Hub location is 3680 feet.
- Groundwater flow in the area of the The Hub location is to the west in the Rustler Formation, away from Bear Grass Draw, which appears to be a local source of recharge.
- Depth to groundwater at the The Hub location is greater than 50 feet beneath the planned bottom of the containment.

Distance to Municipal Boundaries and Fresh Water Fields

Plate 3 demonstrates that the The Hub Reuse Facility 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 municipalities are Loco Hills, about 8 miles to the east, and Artesia, approximately 16 miles to the west.
- The closest Ground Water system is within those communities.

SITING CRITERIA (19.15.34.11 NMAC)
SPUR ENERGY PARTNERS – THE HUB CONTAINMENT

Distance to Subsurface Mines

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

- The closest caliche pits are located more than a mile to the west.
- There are no subsurface mines in the area shown in Plate 4.

Distance to High or Critical Karst Areas

Plate 5 shows the The Hub Containment is not within a mapped zone of high or critical Karst with respect to BLM mapped areas.

- The proposed facility is located within a “low” potential karst area.
- The nearest “high” or “critical” potential karst area is more than 4.0 miles to the northeast of the proposed containment.

Distance to 100-Year Floodplain

Plate 6 demonstrates that the The Hub Reuse Facility are 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 nearest mapped flood hazard area is about 2 miles to the south.

Distance to Surface Water

Plate 7 shows the closest surface water bodies.

- The nearest Lake/Pond is about 4 miles to the south-southeast. The nearest playa is more than 4.0 miles northwest of the site.
- The closest mapped water courses are more than 0.4 miles to the south.

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.

- There are no structures within 1000 feet of the site.
- Oil field infrastructure is present in the area.

Distance to Non-Public Water Supply

Plates 1, 7 and 8 demonstrate that the The Hub Reuse Facility is not within 500 horizontal feet of a spring or fresh water well used for domestic or stock watering purposes, in existence at the time of initial application.

- Plate 1 shows the locations of all area water wells, active or plugged.
- The nearest well in the OSE database is more than one mile to the west.
- The nearest stock watering well is about 0.45 miles to the west-northwest..
- No springs were identified within the mapping area (see Plate 7)

SITING CRITERIA (19.15.34.11 NMAC)
SPUR ENERGY PARTNERS – THE HUB CONTAINMENT

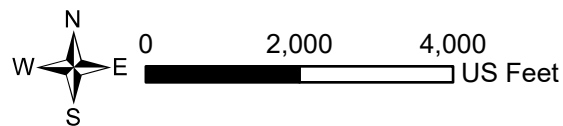
Distance to Wetlands

Plate 9 demonstrates the site is not within 500 feet of a Mapped NM Wetlands.

- The nearest designated wetlands are a freshwater pond 0.6 miles to the southeast and a freshwater emergent wetland about 1.5 miles to the east-southeast.

PLATES

P:\Cascade-Spur-The Hub\Spur The Hub Containments.aprx



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

Nearby Wells and Borings with Depth to Water

Plate 1






Spur Energy Partners - The Hub Containment

October 2024

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




USGS Gauging Station (GW Elev, Date)

Aquifer Code, Well Status

-  Alluvium/Bolsom
-  Chinle
-  Rustler, Other conditions existed that would affect the measured water level (explain in remarks).
-  San Andres Limestone
-  San Andres Limestone, Site was being pumped.

NM_Geology

Map Unit,Description

-  Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian
-  Qa, Quaternary Alluvium,Qa, Quaternary Alluvium
-  Qe, Quaternary-Eolian Deposits,Qe, Quaternary-Eolian Deposits
-  Qe/Qp, Quaternary-Eolian Piedmont Deposits
-  Qoa, Quaternary-Older Alluvial Deposits,Qoa, Quaternary-Older Alluvial Deposits
-  Qp, Quaternary-Piedmont Alluvial Deposits,Qp, Quaternary-Piedmont Alluvial Deposits

R.T. Hicks Consultants, Ltd

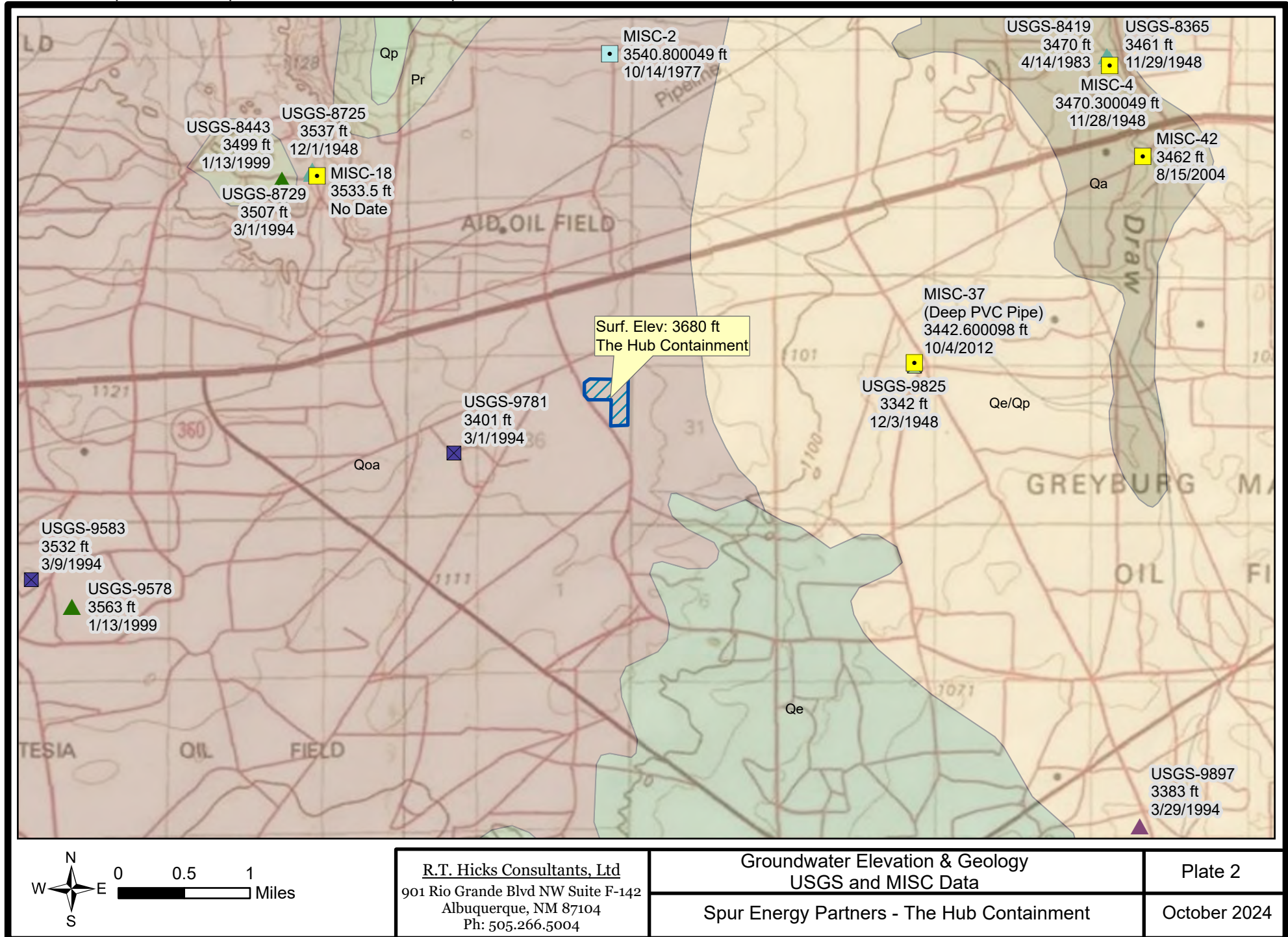
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Albuquerque, NM 87104
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Plates 1 & 2 Legend

Spur Energy Partners - The Hub Containment

October 2024

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901 Rio Grande Blvd NW Suite F-142

Albuquerque, NM 87104

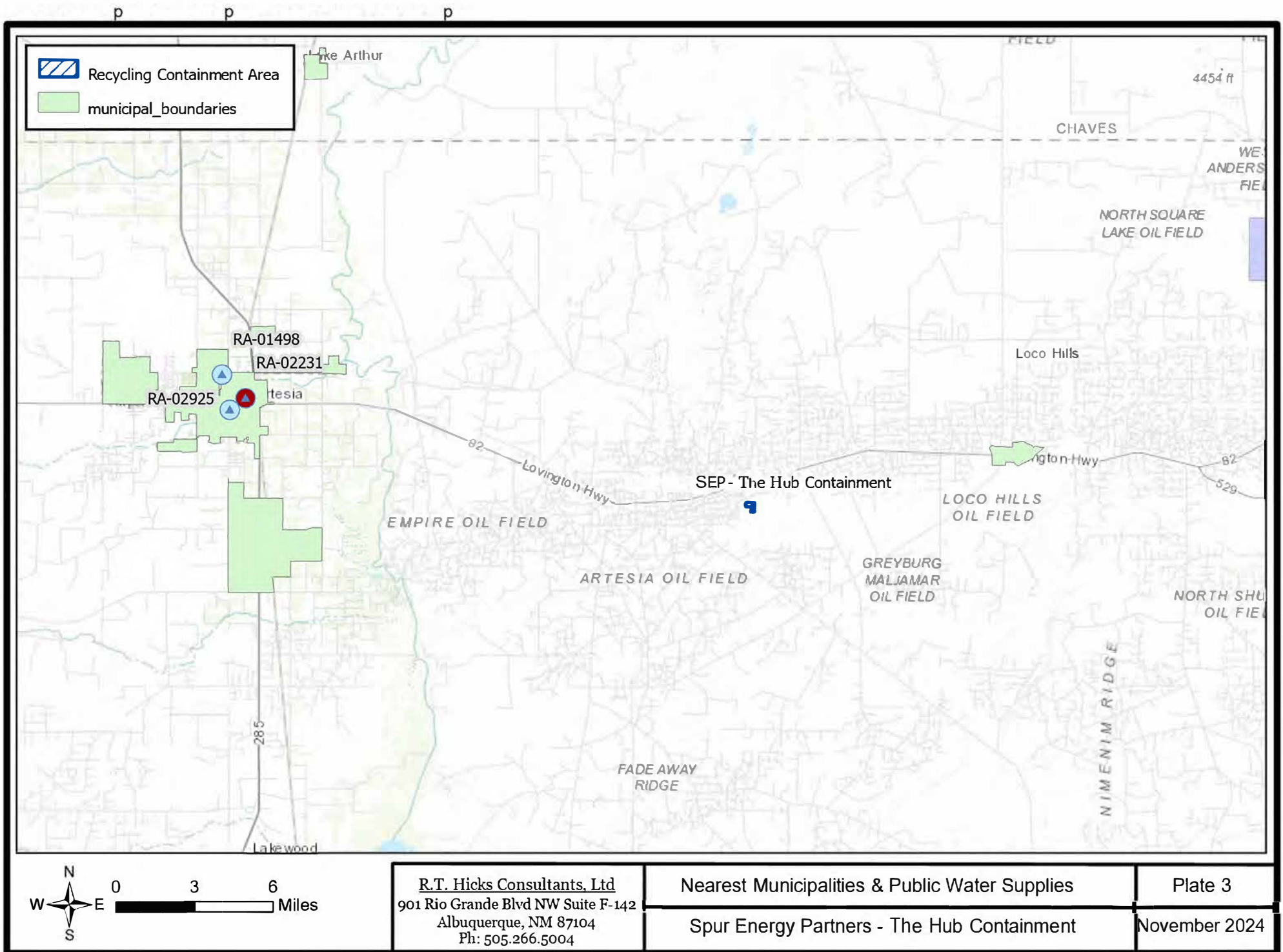
Ph: 505.266.5004

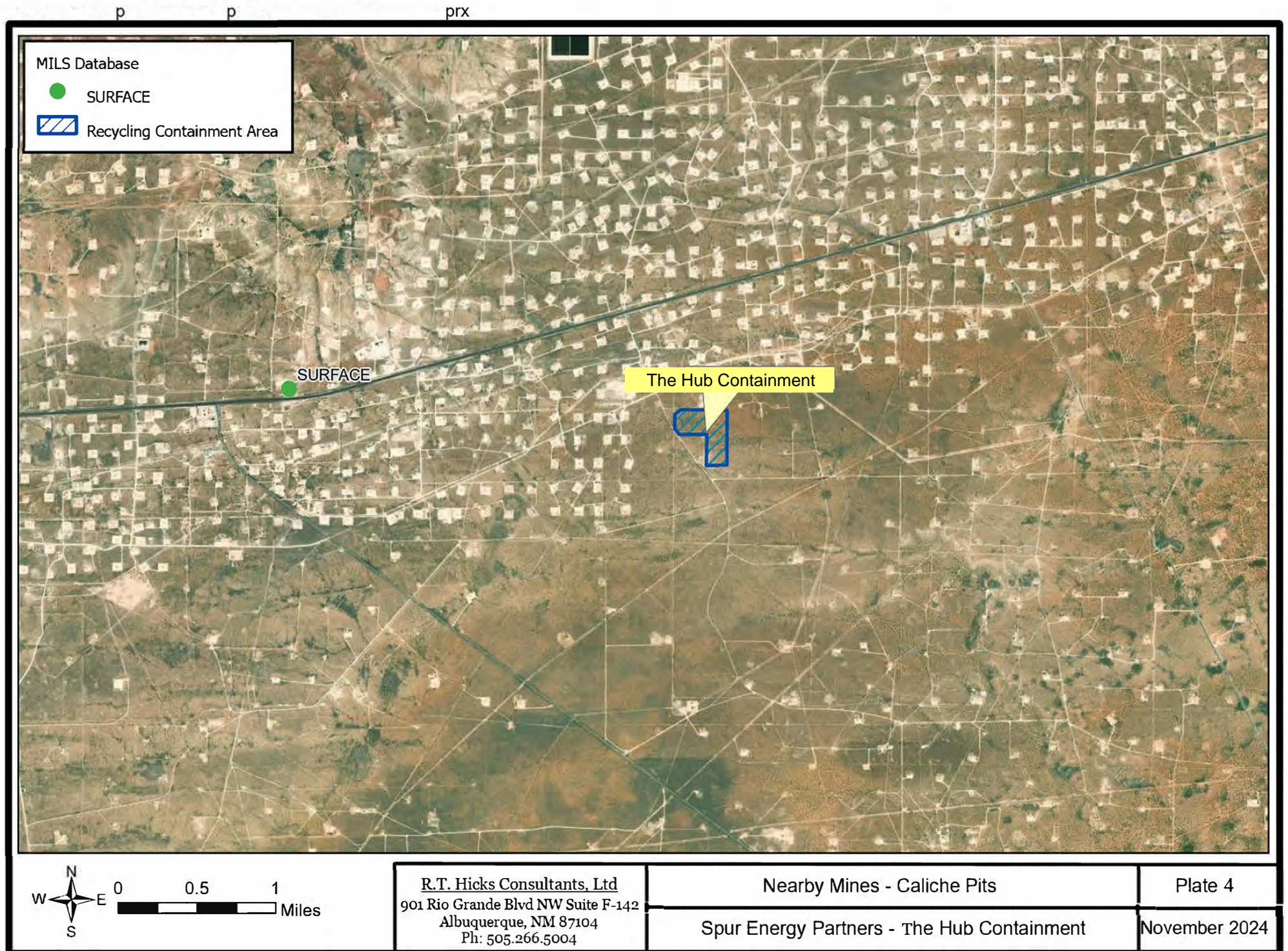
Groundwater Elevation & Geology
USGS and MISC Data

Spur Energy Partners - The Hub Containment

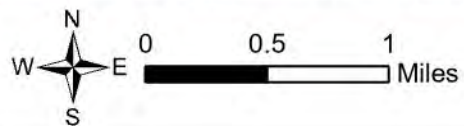
Plate 2

October 2024





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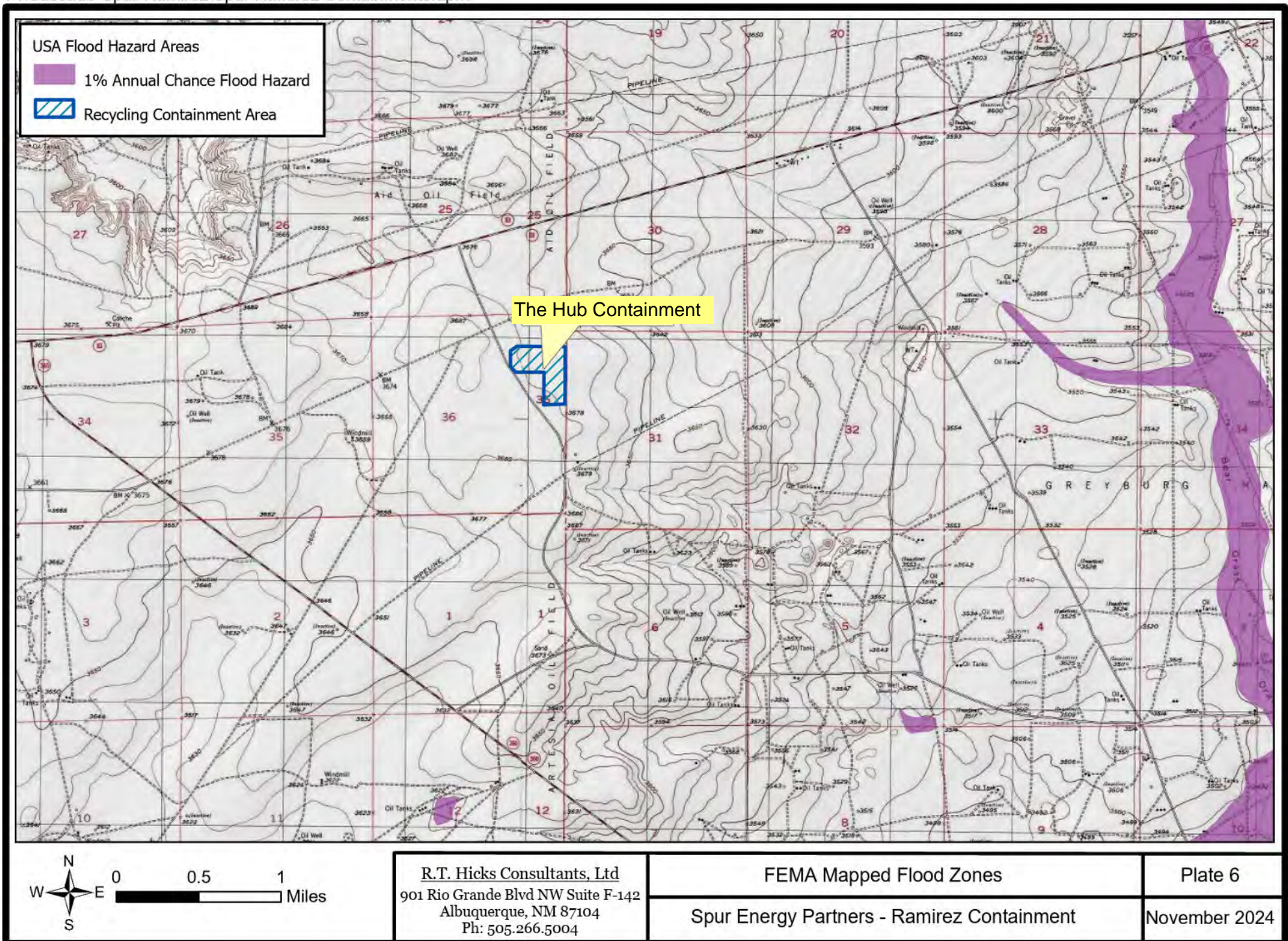


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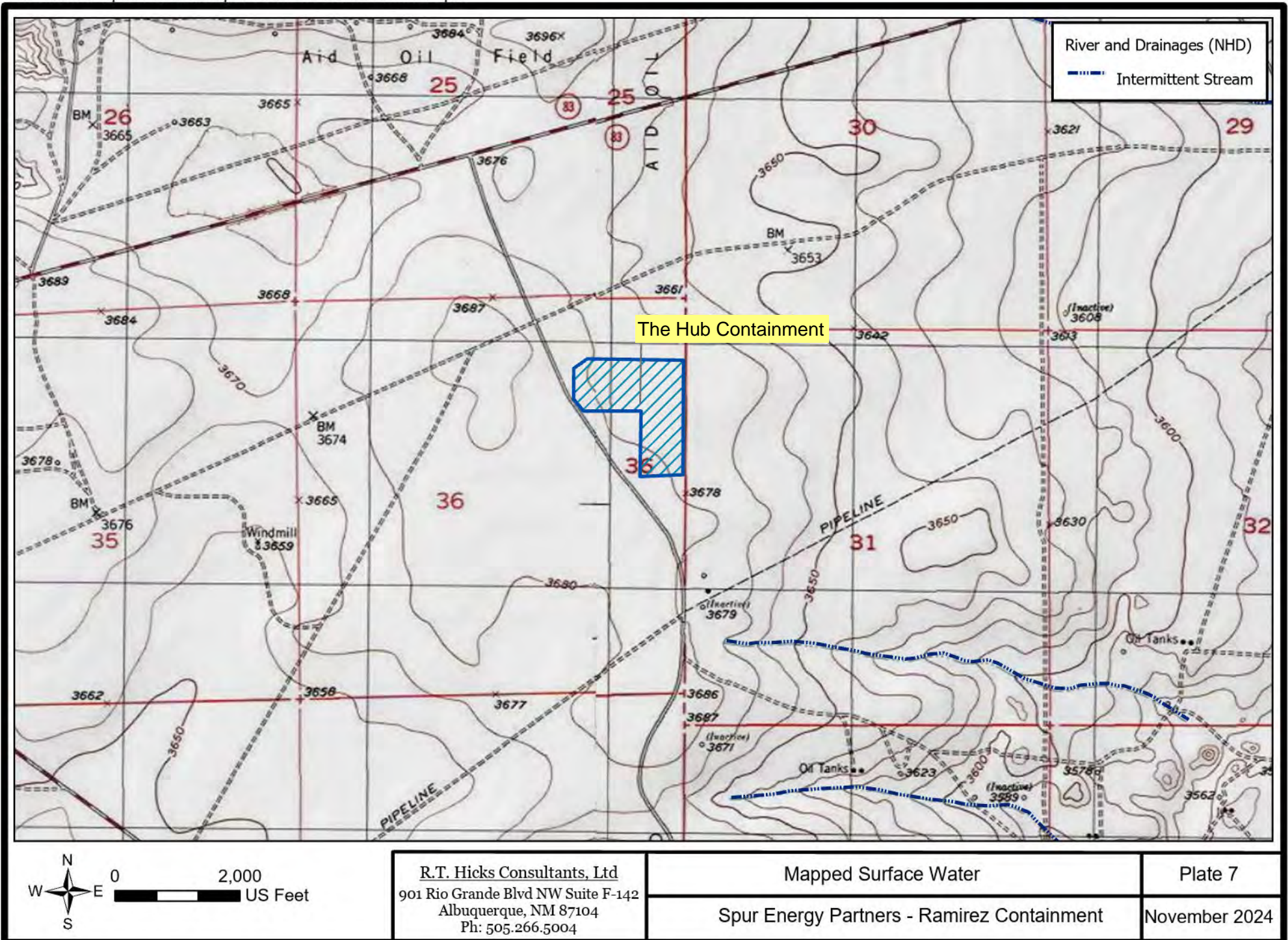
BLM Mapped Karst Potential
 Spur Energy Partners - Ramirez Containment

Plate 5
 November 2024

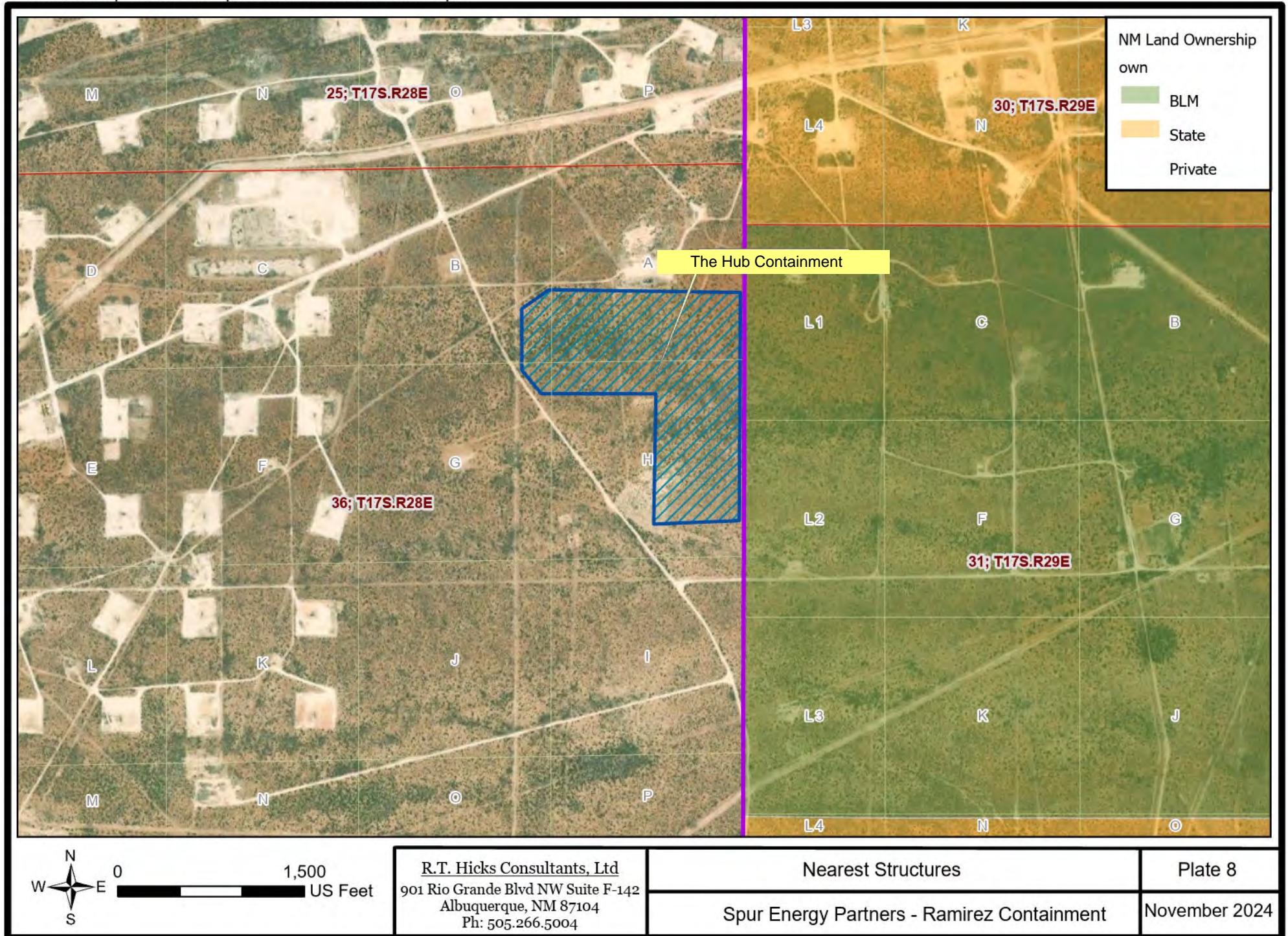
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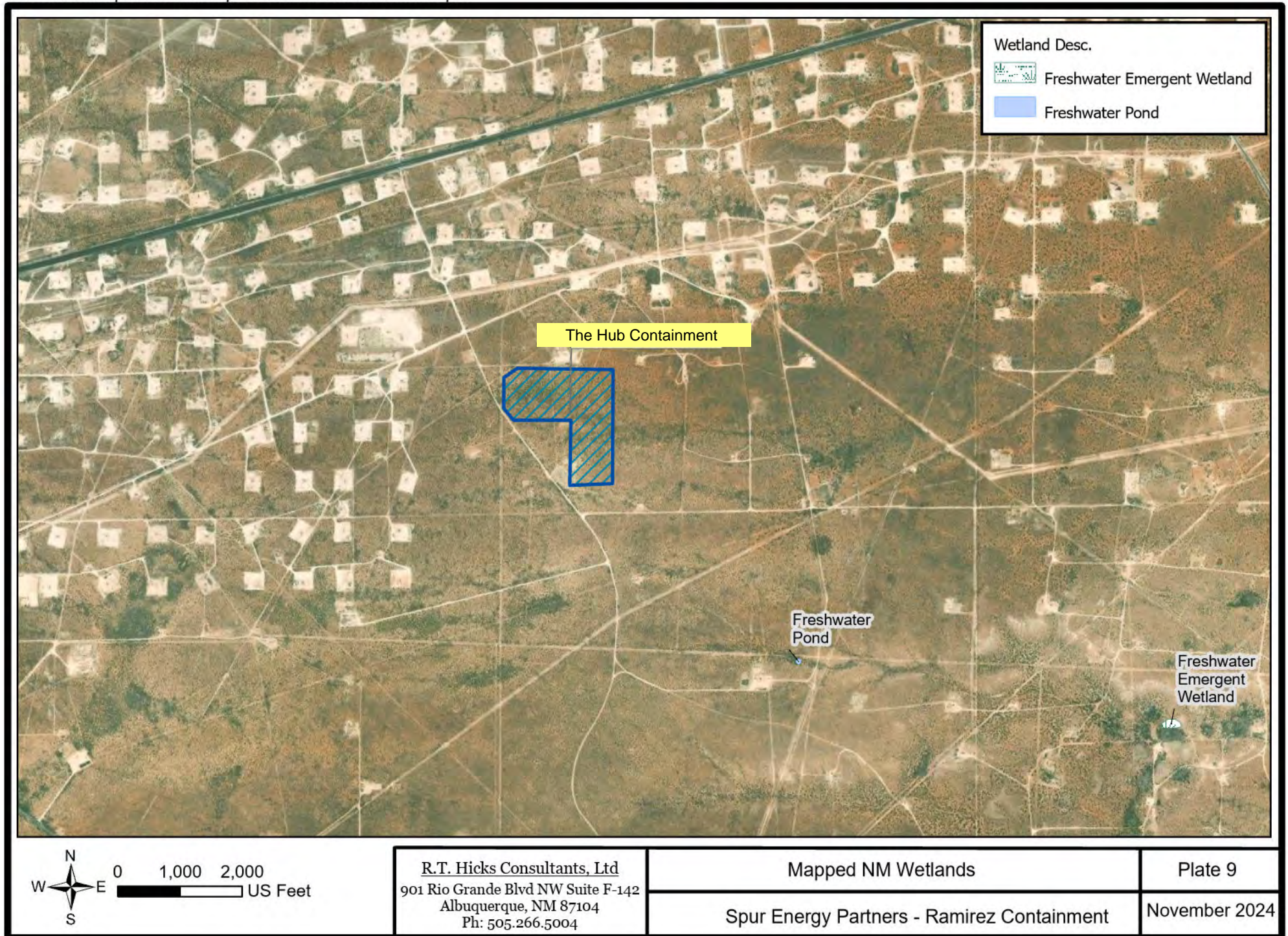
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WELL LOGS AND USGS DATA



WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD 1 (TW-1)		WELL TAG ID NO. N/A		OSE FILE NO(S) RA-13395			
	WELL OWNER NAME(S) Energy				PHONE (OPTIONAL)			
	WELL OWNER MAILING ADDRESS 919 Milam St Ste 2475				CITY Houston	STATE TX	ZIP 77002	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 48	SECONDS 49.73 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
		LONGITUDE 104	7	0.87 W	* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE Sec. 19 T17S R29E, NMPM								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1249		NAME OF LICENSED DRILLER Jackie D. Atkins			NAME OF WELL DRILLING COMPANY Atkins Engineering Associates, Inc.		
	DRILLING STARTED 11/8/2023	DRILLING ENDED 11/8/2023	DEPTH OF COMPLETED WELL (FT) Temporary Well Material		BORE HOLE DEPTH (FT) ±102	DEPTH WATER FIRST ENCOUNTERED (FT) N/A		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) N/A	DATE STATIC MEASURED 11/16/2023		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow Stem Auger					CHECK HERE IF PITLESS ADAPTER IS INSTALLED <input type="checkbox"/>		
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	0	102	±6.25	Soil Boring	--	--	--	--
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
				N/A				

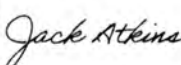
FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO. RA-13395	POD NO. 1	TRN NO. 752688
LOCATION 17S.29E.19.343	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	4	4	Sand, fine-grained, poorly graded, dark brown	Y ✓ N	
	4	50	46	Sand, fine-grained, poorly graded, tan	Y ✓ N	
	50	102	52	Sand, fine-grained, poorly graded, with sub-rounded gravel 0.25" reddish-brown	Y ✓ N	
					Y N	
					Y N	
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METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	

5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	MISCELLANEOUS INFORMATION: Temporary well material removed and soil boring backfilled using drill cuttings from total depth to ten feet below ground surface(bgs), then hydrated bentonite chips ten feet bgs to surface.	
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Shane Eldridge, Cameron Pruitt	

6. SIGNATURE	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:	
	 SIGNATURE OF DRILLER / PRINT SIGNEE NAME	Jackie D. Atkins DATE

FOR USE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO. RA-13395	POD NO. 1	TRN NO. 752688
LOCATION 175. 29 E. 19. 343	WELL TAG ID NO.	PAGE 2 OF 2

Mike A. Hamman, P.E.
State Engineer



Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

**STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 752688
File Nbr: RA 13395
Well File Nbr: RA 13395 POD1

Nov. 17, 2023

KATHY PURVIS
SPUR ENERGY PARTNERS LLC
919 MILAM ST STE 2475
HOUSTON, TX 77002

Greetings:

The above numbered permit was issued in your name on 11/03/2023.

The Well Record was received in this office on 11/17/2023, stating that it had been completed on 11/08/2023, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 11/02/2024.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Rodolfo Chavez".

Rodolfo Chavez
(575) 622-6521

drywell

BISHOP WELL Data
Submitted to NMOCD
Dec. 14, 2022

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

Memorandum

Data for Well Misc-37 (Bishop Well)

Background

In 2022, we could not locate the PVC well shown in Figure 1, but the abandoned windmill remains obvious. The Eddy County Assessor's office identifies the owner of the property as Bogle Farms. We contacted Mr. Stuart Bogle, who directed inquiries to Mr. Zac Ozborn, the current Turkey Track ranch manager. Mr. Ozborn stated that Bogle Farms sold this land to Mr. Clinton Keys a few years ago. Mr. Ozborn had no data available on the PVC well but provided us with the phone number for Mr. Keys, who also had no files for the well. Mr. Ozborn then provided the current phone number of Mr. Lewis Derrick, the ranch manager who Hicks Consultants worked with from about 2012-2017, when collecting hydrogeologic data for an operator drilling wells on surface leased by Bogle Farms. Mr. Derrick identified Eades Drilling as the contractor who installed the PVC well. Mr. Derrick also filled in some data on the PVC well.

Figure 1 - August 18, 2016 photograph of the abandoned windmill located 2750 feet northwest of the Fed 33 well (per Google Earth measurement). The windmill is USGS-8734 and the database suggests the well draws water from the San Andres. Misc-37 is the PVC pipe shown in the foreground.



Hicks Consultants measured groundwater depth in the PVC pipe on October 4, 2012 as 102.4 feet. In 2012, prior to conversion to a water well as shown in Figure 1, the well/pipe was an open pipe covered by a bucket. According to Lewis Derrick, the well did not produce significant water to warrant installation of a pump at that time. Figure 2 is a May 1, 2014 image with the PVC pipe/well circled in yellow. The shadows of the solar panels and the horizontal pipe that transfers water from the well to the adjacent holding tank are visible. Obviously, a solar pump existed in 2014 and 2016 when Randall Hicks collected a sample of water pumped from the well (the sample jar on the well casing).

October 2022

Page 2



Figure 2- May 1, 2014 Google Earth image of the abandoned windmill (USGS 8734) and solar-powered well Misc-37. Both wells are west of South Old Loco Road (32.798649, -104.090210)

Well Construction Information

The OSE database provides no information on this well that is obvious in Google Earth images. The PVC well was drilled on January 5, 2003, which is before the OSE required permits for this area of Eddy County. The Google Earth images for April 6, 2013, June 10, 2011, and March 27, 2010 show the bucket on top of the PVC pipe and the shadow it casts – if you know where to look.

Attached to this letter is information regarding the location and construction of Misc-37 (Bishop Well).

Pages 4 and 5 are text messages between Lewis Derrick and Randall Hicks regarding the location of the Bishop Well. Mr. Derrick was the ranch manager for Bogle Farms, the surface owner who drilled the Bishop Well (aka Misc-37).

October 2022

Page 3

Pages 6-8 are an email string between Randall Hicks and Eades Drilling, which includes the field notes of Alan Eades as page 9.

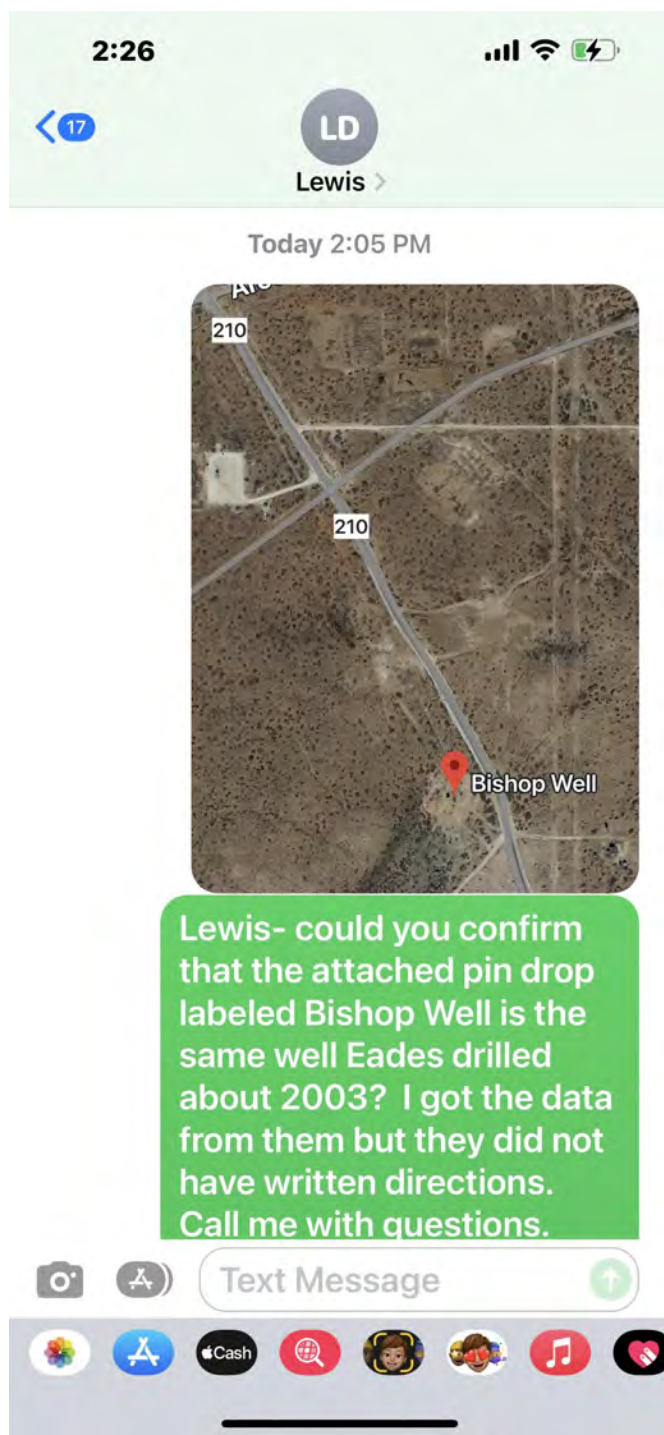
In summary

- The Bishop well is Misc-37)
- The total depth of the Bishop Well boring is 156 feet
- Construction is 5-inch PVC with
 - Blank casing from surface to 136 feet and
 - 20-feet of 0.035 slot size screen from 136-156 feet
 - Bottom end cap
- Based upon our experience with wells of this time and the area,
 - pea gravel formed the filter pack from TD to, perhaps, 60 feet
 - from the top of the filter pack to about 5-10 feet below grade, cuttings or topsoil filled the annulus between the pipe and boring
 - Cement/grout formed a sanitary seal from the top of the cuttings/soil to surface

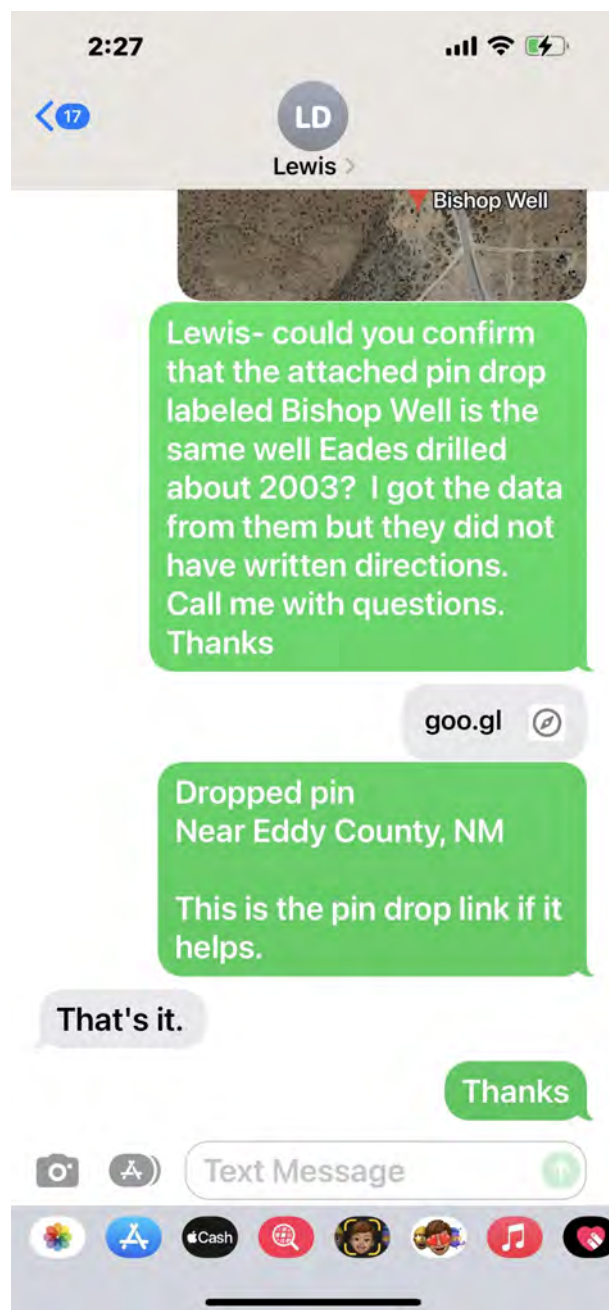
Based upon the log of Mr. Eades and our experience with driller's logs in southeast New Mexico, Hicks Consultants concludes

- 0-15 feet is topsoil and recent unconsolidated aeolian sand
- 15-25 feet is a soil horizon associated with the solution and subsidence of underlying caliche, forming a depression that held water, perhaps in the Pleistocene
- 25-40 feet is caliche and sand, which is typical of the Older Alluvium (Qoe) mapped throughout the area on the State Geologic Map
- 40-60 feet is sandy red clay that marks the erosional unconformity between the Older Alluvium and the top of the Rustler Formation
- 60-156 is interbedded gypsum/anhydrite (called limestone) and red clay or brown, which is typical of the Forty-Niner Member of the Rustler Formation
- Gravel is probably broken, hard anhydrite/gypsum, which is common in the Rustler

According to our 2012 measurement of 102 feet from ground surface, groundwater resided in lithologies consistent with the Rustler Formation.



Lewis- could you confirm that the attached pin drop labeled Bishop Well is the same well Eades drilled about 2003? I got the data from them but they did not have written directions. Call me with questions.



From: [Eades Drilling & Pump Service](#)
To: r@rthicksconsult.com
Subject: Re: Bishop Well
Date: Monday, October 24, 2022 11:17:58 AM

Good morning Randy,

I hope what I found looking through our old archives can help you out.

I found the page in Alan's field notes that documented the drilling of a well for Bogle Farms that was identified as Bishop Well.

I could not confirm the physical location of the well we drilled on January 5, 2003, as verbal directions were probably given.

The 20' perforated interval would have been installed at the bottom of the well, so from 136' to 156'.

The "Cap" notation means there was a 5" pvc cap installed on the bottom of the well.

I could not find any reference to when water was first encountered.

Let me know if you need anything else.

Andrea C. Eades
Eades Drilling & Pump Service
(575) 392-2457

On Wed, Oct 19, 2022 at 2:45 PM <r@rthicksconsult.com> wrote:

Andrea

Here is the information I would like to get from you and an email from you would be fine if there is no documentation other than an invoice.

Total depth of boring

Total depth of casing

Interval of perforations or screen

If there is a log of the cuttings/formations and when water was encountered during drilling (in a field book that is handy) that is the cherry on the icing if you want to scan it or take a photo and send it to me.

The USGS well data discussed for the **The Hub** Containment is presented below.

USGS 324520104035201 18S.29E.10.34310

Eddy County, New Mexico

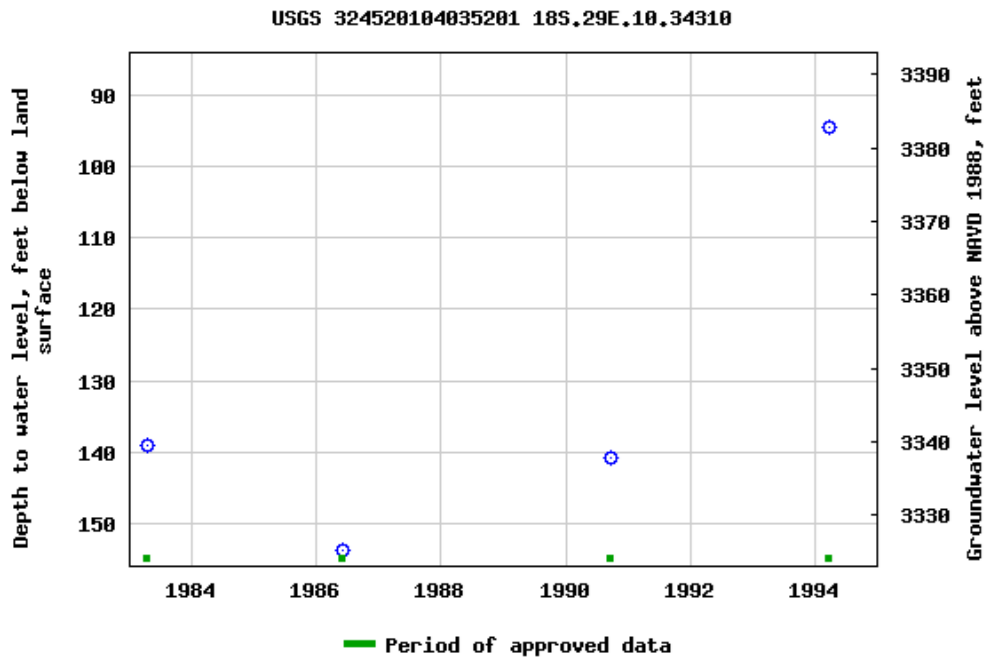
Hydrologic Unit Code 13060011

Latitude 32°45'20", Longitude 104°03'52" NAD27

Land-surface elevation 3,478 feet above NAVD88

This well is completed in the Other aquifers (N9999OTHER) national aquifer.

This well is completed in the Chinle Formation (231CHNL) local aquifer.



This is USGS-9897. A windmill is present at the location providing water to a stock tank. The well is about 4.15 miles southeast of the The Hub location.

USGS 324753104052101 17S.29E.29.44433

Eddy County, New Mexico

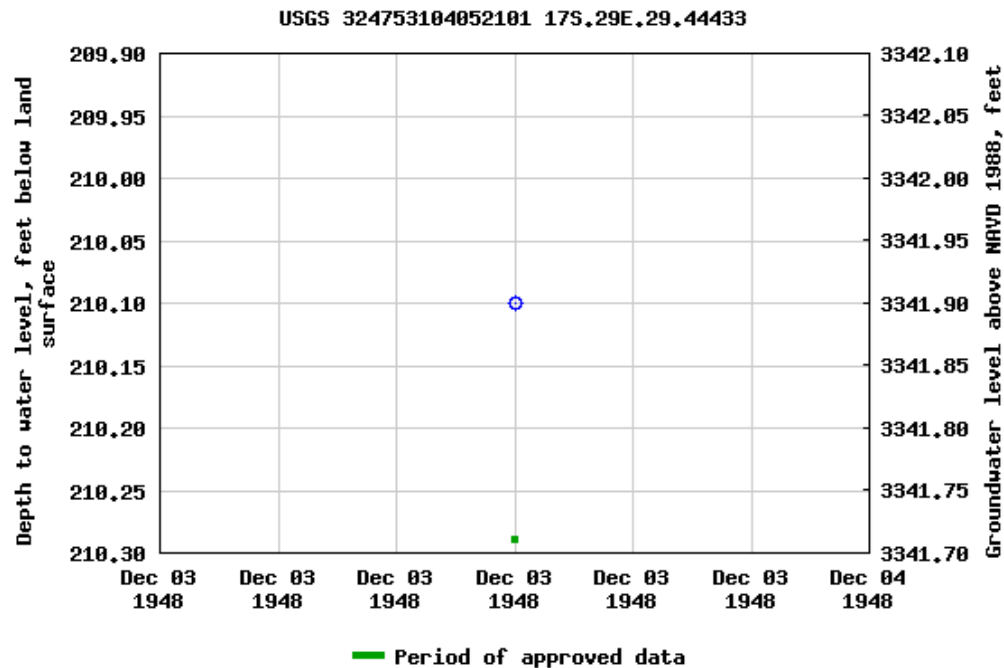
Hydrologic Unit Code 13060011

Latitude 32°47'53", Longitude 104°05'21" NAD27

Land-surface elevation 3,552 feet above NAVD88

This well is completed in the Other aquifers (N9999OTHER) national aquifer.

This well is completed in the San Andres Limestone (313SADR) local aquifer.



This is USGS-9825. It is 1.81 miles east of the The Hub Containment. Nothing is present at the given coordinates. About 0.15 miles to the southwest are former stock tanks with a possible well pad to the east of them.

USGS 324724104082301 17S.28E.35.42233

Eddy County, New Mexico

Hydrologic Unit Code 13060011

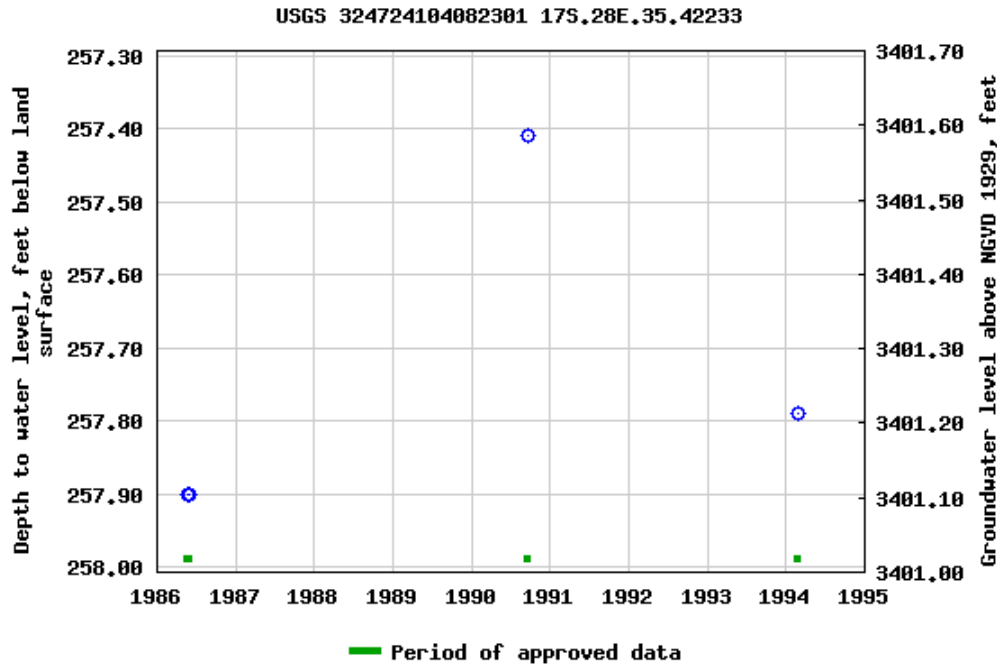
Latitude 32°47'24", Longitude 104°08'23" NAD27

Land-surface elevation 3,659 feet above NGVD29

The depth of the well is 280.00 feet below land surface.

This well is completed in the Other aquifers (N9999OTHER) national aquifer.

This well is completed in the Rustler Formation (312RSLR) local aquifer.



This well is USGS-9781. The coordinates are located about 0.69 miles southwest of the The Hub location. The actual well and stock tanks are another 0.21 miles to the west.

USGS 324857104091901 17S.28E.22.44244

Eddy County, New Mexico

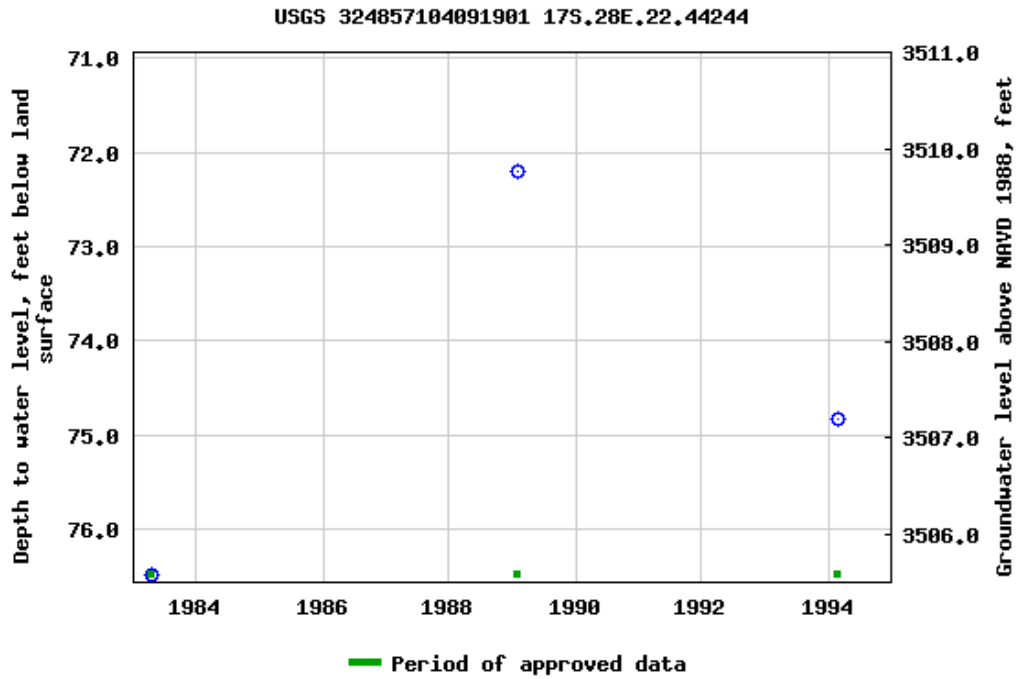
Hydrologic Unit Code 13060007

Latitude 32°48'57", Longitude 104°09'19" NAD27

Land-surface elevation 3,582 feet above NAVD88

This well is completed in the Other aquifers (N9999OTHER) national aquifer.

This well is completed in the San Andres Limestone (313SADR) local aquifer.



This well is USGS-8729. It is 2.11 miles northwest of the The Hub site.

SITE PHOTOGRAHS

R.T. HICKS CONSULTANTS, LTD.

Figures

The photographs were taken during R T Hicks Consultants site visit on October 31, 2024. The aerial photo below shows the photograph locations as red or green numbers. The green numbers are locations of photographs presented in this document. North is up in the aerial image.



R.T. HICKS CONSULTANTS, LTD.

Figure 1: View is to the east from location 4, the southwestern corner along the southern boundary. The containment area is to the left.



Figure 2: View is to the west towards the center of the site from location 10, the northeastern corner. Again, the containment area is to the left.



R.T. HICKS CONSULTANTS, LTD.

Figure 3: From location 13 on the western boundary of the location. The view is to the east towards the center of the location.



Figure 4: View is to the north into the interior of the location. The picture was taken at location 7, the interior corner of the "L" shape.



R.T. HICKS CONSULTANTS, LTD.

Figure 5: *View is to the north-northeast from location 9 in the interior of the containment area.*



Figure 6: *View is south-southwest towards the containment site from location 11.*



November 2024

Rule 34 Registration: Volume 2

The Hub In-Ground Containment

Section 36, T17S, R28E, Eddy County

- *C-147*
- *Stamped Design Drawings*
- *Avian Deterrent System*
- *Design/Construction, O&M, and Closure Plans*



Looking south from the northwest corner of the The Hub Containment location. The nature of the vegetation and the thin cover of blow sand can be seen.

Prepared for:
Spur Energy Partners LLC
Houston, Texas

Prepared by:
Cascade Services, LLC
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: Spur Energy Partners LLC (For multiple operators attach page with information) OGRID #: 328947
Address: 9655 Katy Freeway, Suite 500, Houston, Texas 77024
Facility or well name (include API# if associated with a well): The Hub Recycle Facility
OCD Permit Number: 2RF-211 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr D Section 36 Township 17S Range 28E County: Eddy
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.

☒ Recycling Facility:

Location of recycling facility (if applicable): Latitude 32.795556 Longitude -104.123056 NAD83
Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging *
**The re-use of produced water may NOT be used until fresh water zones are cased and cemented*
☐ Other, *requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.*
☒ Fluid Storage
 ☐ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____
 ☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____
 ☐ For multiple or additional recycling containments, attach design and location information of each containment
☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.

☒ Recycling Containment:

☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.795556 Longitude -104.123056 NAD83
☐ For multiple or additional recycling containments, attach design and location information of each containment
☒ Lined ☐ Liner type: Thickness 60 & 40 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Total Volume: 1,655,180 bbl Dimensions: L _____ x W _____ x D _____
☐ Recycling Containment Closure Completion Date: _____ South 686,175 See attached drawings
North 912,472
Settling 56,533

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 \$ See Vol 1 (work on these facilities cannot commence until bonding amounts are approved)
- ☒ Attach closure cost estimate and documentation on how the closure cost was calculated. See Vol 1

5.

Fencing:

- ☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☒ Alternate. Please specify 8ft fixed knot 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.

☐ Yes ☒ No
☐ NA

- Written confirmation or verification from the municipality; written approval obtained from the municipality

Within the area overlying a subsurface mine.

☐ Yes ☒ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division

Within an unstable area.

☐ Yes ☒ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map

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).

☐ Yes ☒ No

- Topographic map; visual inspection (certification) of the proposed site

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☒ No

- Visual inspection (certification) of the proposed site; aerial photo; satellite image

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.

☐ Yes ☒ No

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland.

☐ Yes ☒ No

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

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): Todd MuchaTitle: EVP - Water and InfrastructureSignature: Date: 12/05/2024e-mail address: todd@spurenergy.comTelephone: (832) 930-8515

11.

OCD Representative Signature: Victoria VenegasApproval Date: 12/09/2024Title: Environmental SpecialistOCD Permit Number: 2RF-211

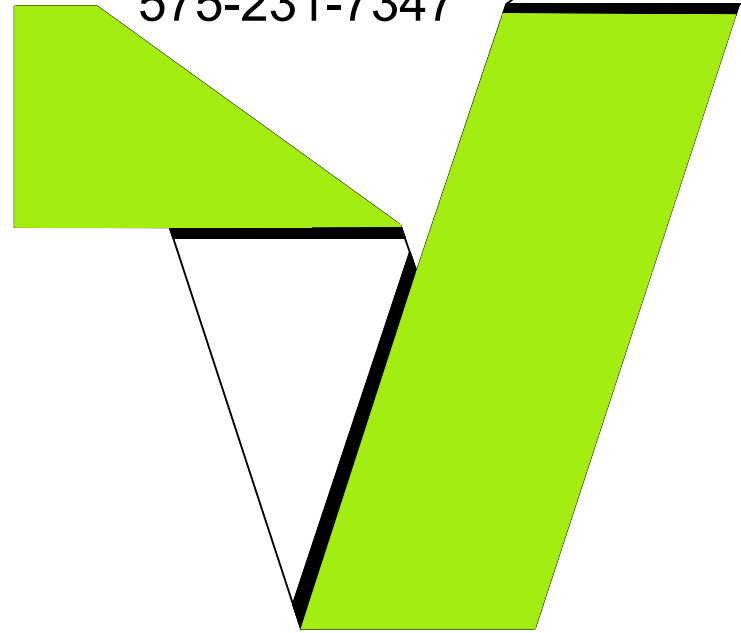
- ☒ OCD Conditions
- ☒ Additional OCD Conditions on Attachment

STAMPED DESIGN DRAWINGS



Engineering | Surveying
Materials Testing

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

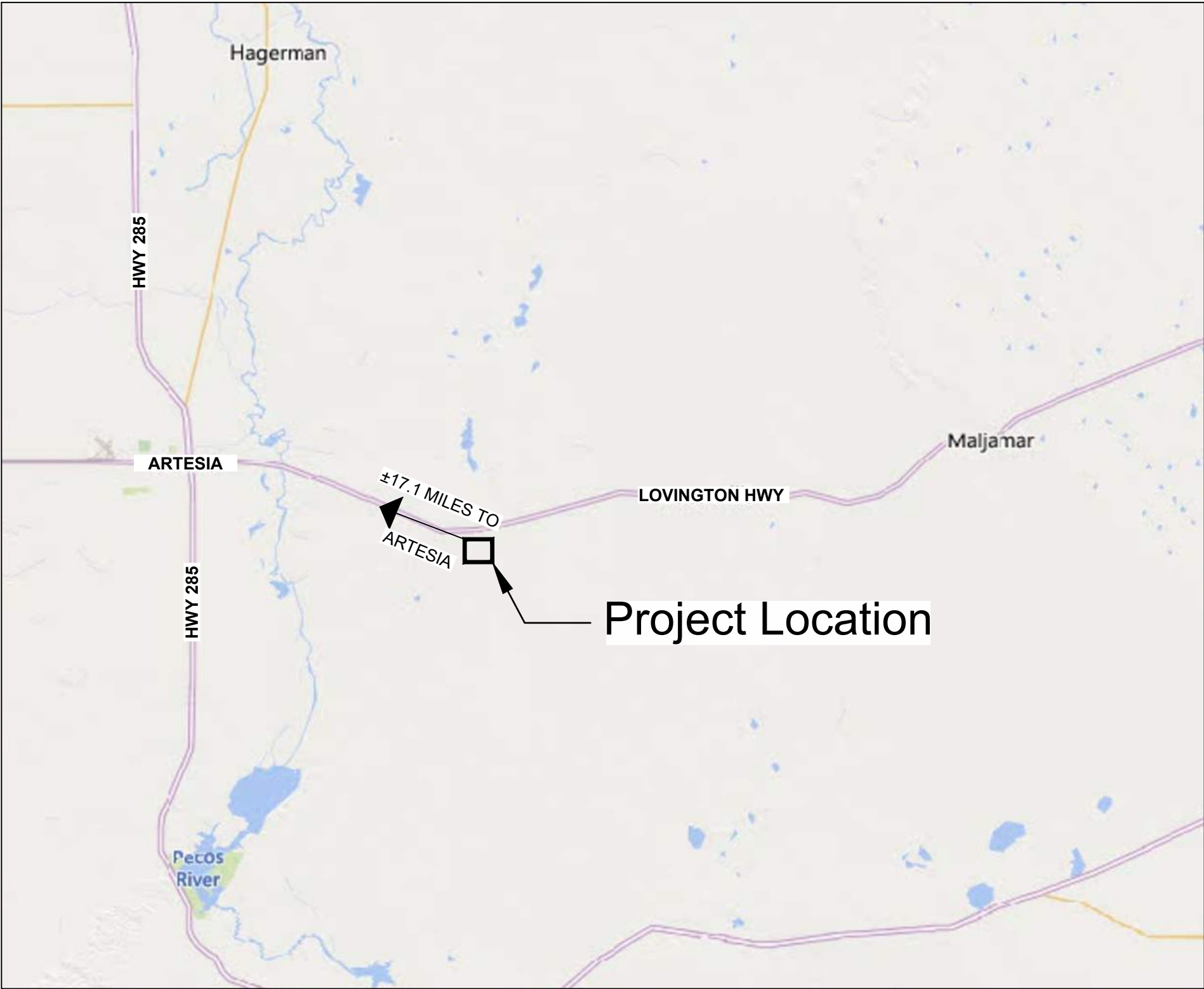


CIVIL PLANS

SPUR

THE HUB RECYCLE FACILITY

CITY OF ARTESIA
SECTION 36, TOWNSHIP 17 SOUTH, RANGE 28 EAST
N.M.P.M., EDDY COUNTY, NEW MEXICO



VICINITY MAP
N.T.S.

INDEX OF SHEETS		
SHEET	NAME	DESCRIPTION
1	C-100	COVER SHEET
2	SU-101	TOPOGRAPHIC MAP
3	C-101	GENERAL NOTES
4	CS-101	CIVIL SITE PLAN
5	CS-102	NORTH SETTLING CONTAINMENT NORTH TO SOUTH PLAN & PROFILE
6	CS-103	NORTH SETTLING CONTAINMENT EAST TO WEST PLAN & PROFILE
7	CS-104	NORTH CONTAINMENT NORTH TO SOUTH PLAN & PROFILE
8	CS-105	NORTH CONTAINMENT EAST TO WEST PLAN & PROFILE
9	CS-106	SOUTH CONTAINMENT NORTH TO SOUTH PLAN & PROFILE
10	CS-107	SOUTH CONTAINMENT EAST TO WEST PLAN & PROFILE
11	CS-501	LEAK DETECTION DETAILS
12	CS-502	LINER DETAILS
13	CS-503	FENCE DETAILS

LEA COUNTY NEW MEXICO





Know what's below.
Call before you dig.

(505)-254-7310

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





TOPOGRAPHIC SURVEY



Engineering | Surveying
Materials Testing

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

ENGINEERING SHEET:

TOPOGRAPHIC MAP

OF

PROJECT NAME:

THE HUB RECYCLE FACILITY

FOR

CLIENT:

SPUR

PROJECT NUMBER:

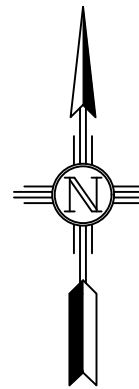
24239

PROJECT ENGINEER:

JEREMY BAKER, PE

DRAWN BY:

CARLOS JIMENEZ



GRAPHIC SCALE

0 100' 200'
SCALE: 1" = 100'
(IN FEET)

LEGEND

MAJOR CONTOUR LINE 5FT
INTERVAL

MINOR CONTOUR LINE 1FT
INTERVAL

FENCE

EXISTING ROAD

REVISIONS

No.	DATE	DESCRIPTION

I, JEREMY BAKER, NEW MEXICO PROFESSIONAL SURVEYOR NO. 25773, DO HEREBY CERTIFY THAT THIS TOPOGRAPHIC SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT, AND THAT THIS INSTRUMENT IS A BOUNDARY SURVEY PLAT OF AN EXISTING TRACT OR TRACTS.

Jeremy Baker
Jeremy Baker, N.M.P.S. 25773

11/25/2024
Date

TOPOGRAPHIC NOTE

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

SHEET:
2 of 13
SU-101

GENERAL NOTES

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

EARTHWORK NOTES

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

LINER NOTES

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

SUGGESTED CONSTRUCTION SEQUENCE

- CLEAR EXISTING VEGETATION.
- STRIP AND STOCKPILE TOPSOIL AT THE LOCATION DESIGNATED ON THESE PLANS.
- PERFORM EARTHWORK OPERATIONS:
 - CONSTRUCT STORMWATER DIVERSION CHANNEL.
 - PERFORM RIPPING/EXCAVATING OPERATIONS.
 - REPLACE EXCAVATED MATERIAL IN COMPACTED LAYERS ON THE LEVEE/PAD IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS.
 - FINISH SLOPES USING A SMOOTH ROLLER.
 - DIG ANCHOR TRENCH.
- INSTALL NEW GAME FENCE AND GATES.
- INSTALL GEOMEMBRANES:
 - INSTALL GEOTEXTILE AS NEEDED, SECONDARY LINER, GEONET, LEAK DETECTION SYSTEM AND PRIMARY LINER.
 - INSTALL RUB SHEETS AND WATER LEVEL GAGE/LADDER.
 - BACKFILL AND COMPACT ANCHOR TRENCH.



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ENGINEERING SHEET:

GENERAL NOTES

PROJECT NAME: OF

THE HUB RECYCLE FACILITY

CLIENT: FOR

SPUR

PROJECT NUMBER:

24239

PROJECT ENGINEER:

JEREMY BAKER, PE

DRAWN BY:

XAVIER CLARK

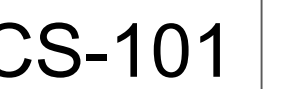
REVISIONS

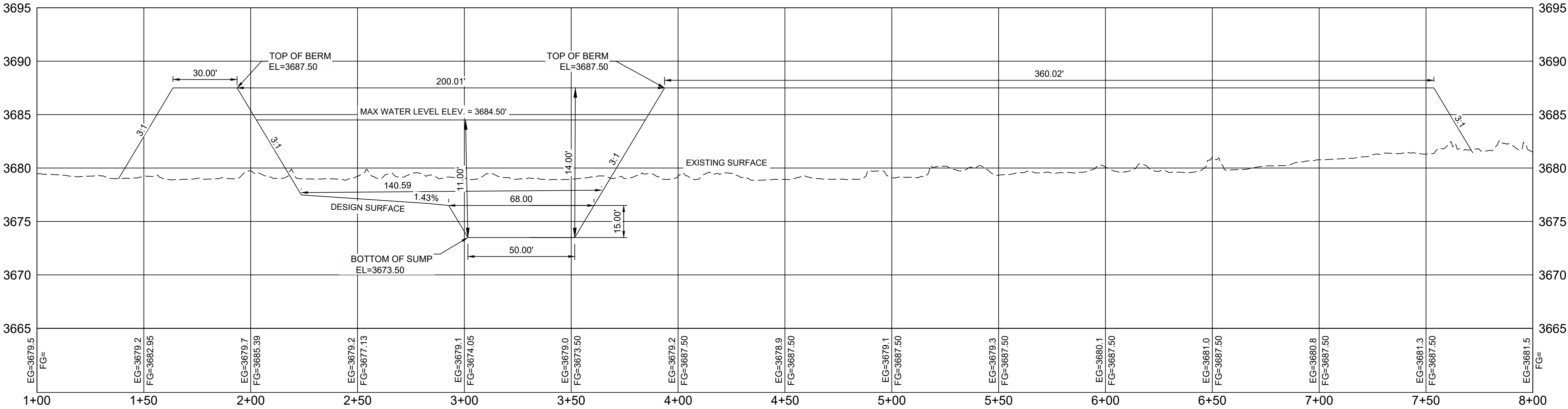
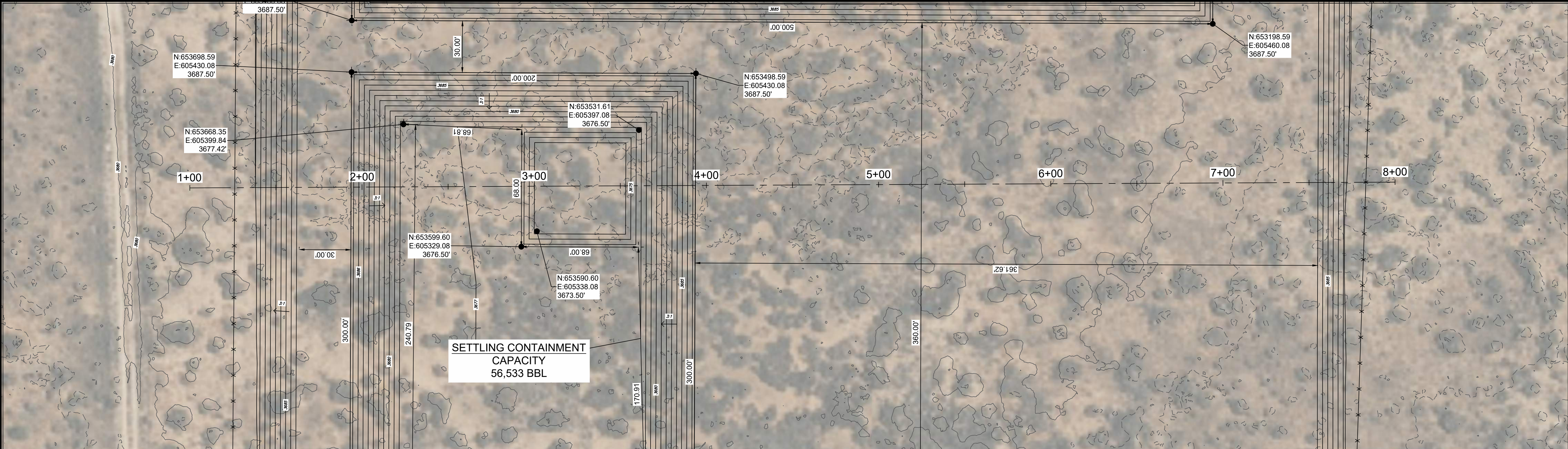
No.	DATE	DESCRIPTION



SHEET: 3 of 13

C-101





ELEVATION (FT)	CONTAINMENT DEPTH (FT)	REMAINING STORAGE (FT)	REMAINING STORAGE VOL (FT3)	REMAINING STORAGE VOL (GAL)	REMAINING STORAGE VOL (BBL)	PERCENT OF TOTAL VOL (%)	VOL IN CONTAINMENT (FT3)	VOL IN CONTAINMENT (GAL)	VOL IN CONTAINMENT (BBL)	VOL IN CONTAINMENT (AC-FT)	PERCENT OF TOTAL VOL (%)	
3,687.50	0	14	0	-	-	0%	484,258	3,622,736	86,244	11.12	100%	FREEBOARD
3,686.50	1	13	58,512	437,728	10,421	12%	425,746	3,185,008	75,823	9.77	88%	
3,685.50	2	12	114,096	853,553	20,320	24%	370,162	2,769,183	65,924	8.50	76%	
3,684.50	3	11	166,824	1,248,009	29,710	34%	317,434	2,374,727	56,533	7.29	66%	MAX VOLUME
3,683.50	4	10	216,768	1,621,641	38,605	45%	267,490	2,001,095	47,639	6.14	55%	STORAGE VOLUME
3,682.50	5	9	264,000	1,974,984	47,017	55%	220,258	1,647,751	39,227	5.06	45%	
3,681.50	6	8	308,592	2,308,576	54,958	64%	175,666	1,314,160	31,285	4.03	36%	
3,680.50	7	7	350,616	2,622,959	62,443	72%	133,642	999,777	23,801	3.07	28%	
3,679.50	8	6	390,144	2,918,668	69,482	81%	94,114	704,068	16,761	2.16	19%	
3,678.50	9	5	478,548	3,580,018	85,227	99%	5,710	42,718	1,017	0.13	1%	
3,677.50	10	4	460,109	3,442,073	81,943	95%	24,150	180,663	4,301	0.55	5%	FLOOR
3,676.50	11	3	473,726	3,543,947	84,368	98%	10,532	78,789	1,876	0.24	2%	
3,675.50	12	2	477,956	3,575,586	85,121	99%	6,303	47,150	1,122	0.14	1%	SUMP
3,674.50	13	1	481,441	3,601,658	85,742	99%	2,817	21,077	502	0.06	1%	
3,673.50	14	0	484,258	3,622,736	86,244	100%	0	0	0	0.00	0%	



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ENGINEERING SHEET:
NORTH SETTLING
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SOUTH PLAN & PROFILE
OF

PROJECT NAME:

THE HUB RECYCLE FACILITY

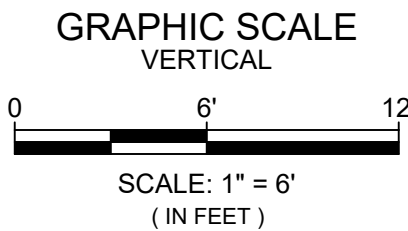
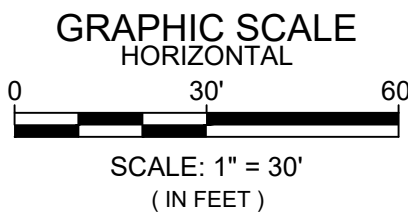
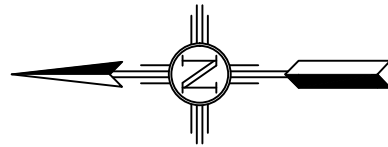
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PROJECT NUMBER:
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PROJECT ENGINEER:
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CS-102



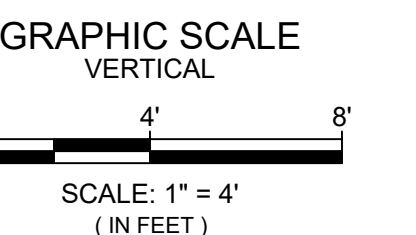
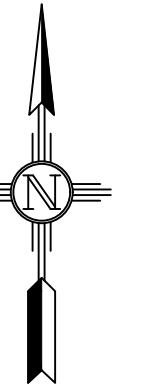
ENGINEERING SHEET:
NORTH SETTLING
CONTAINMENT EAST TO WEST
PLAN & PROFILE
OF

FOR

SPUR

ECT ENGINEER:
JEREMY BAKER, PE

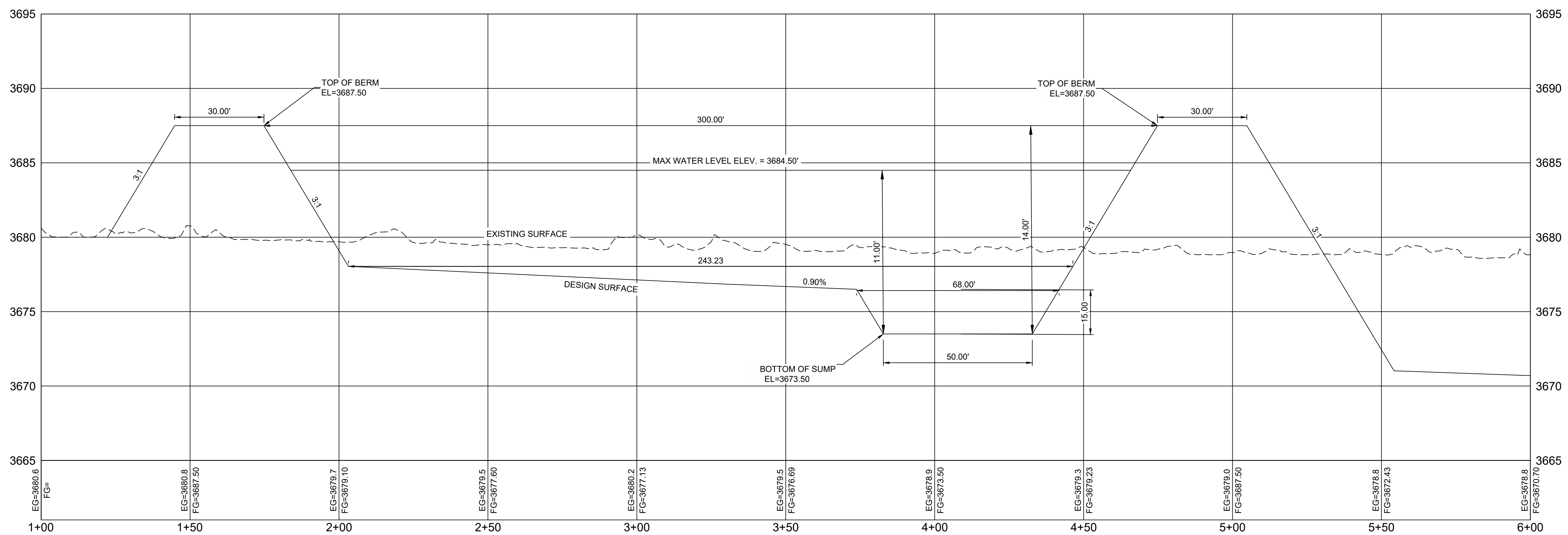
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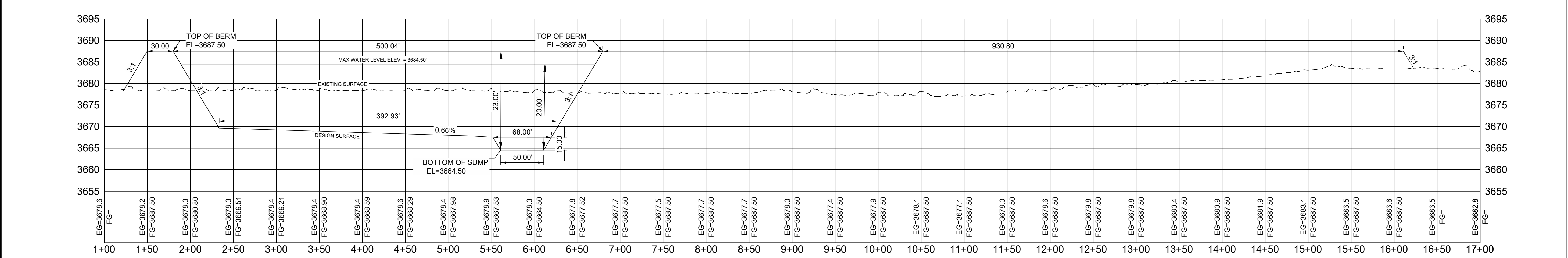
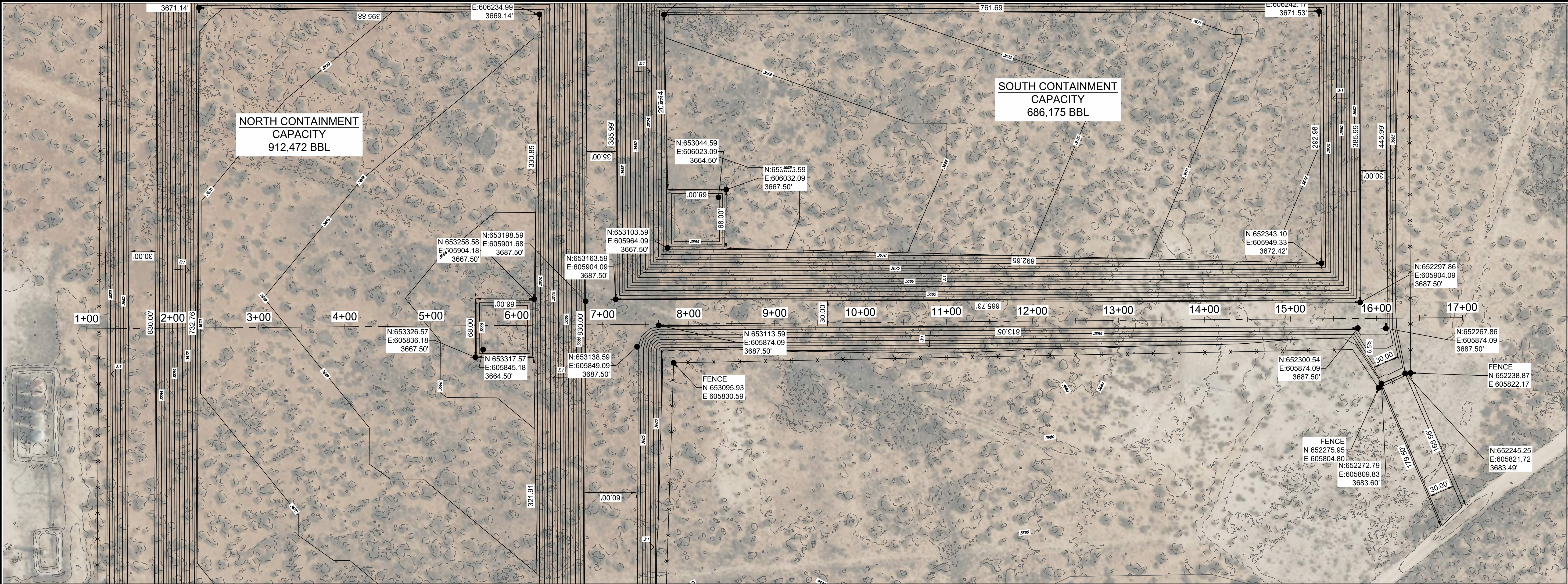


11/25/2024

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ELEVATION (FT)	CONTAINMENT DEPTH (FT)	REMAINING STORAGE (FT)	REMAINING STORAGE VOL (FT3)	REMAINING STORAGE VOL (GAL)	REMAINING STORAGE VOL (BBL)	PERCENT OF TOTAL VOL (%)	VOL IN CONTAINMENT (FT3)	VOL IN CONTAINMENT (GAL)	VOL IN CONTAINMENT (BBL)	VOL IN CONTAINMENT (AC-FT)	PERCENT OF TOTAL VOL (%)	
3687.50	0	23	0	-	-	0%	6,332,956	47,376,847	1,127,864	145.38	100%	FREEBOARD
3686.50	1	22	411,026	3,074,882	73,201	6%	5,921,931	44,301,964	1,054,663	135.95	94%	
3685.50	2	21	814,143	6,090,603	144,994	13%	5,518,814	41,286,244	982,870	126.69	87%	
3684.50	3	20	1,209,424	9,047,703	215,392	19%	5,123,532	38,329,144	912,472	117.62	81%	
3683.50	4	19	1,596,942	11,946,721	284,406	25%	4,736,015	35,430,126	843,458	108.72	75%	STORAGE VOLUME
3682.50	5	18	1,976,767	14,788,193	352,051	31%	4,358,189	32,588,653	775,813	100.00	69%	
3681.50	6	17	2,348,972	17,572,663	418,339	37%	3,983,984	29,804,184	709,525	91.46	63%	
3680.50	7	16	2,713,630	20,300,663	483,282	43%	3,619,327	27,076,184	644,582	83.09	57%	
3679.50	8	15	3,070,811	22,972,737	546,894	48%	3,262,145	24,404,110	580,970	74.89	52%	FLOOR
3678.50	9	14	3,420,588	25,589,420	609,188	54%	2,912,368	21,787,427	518,676	66.86	46%	
3677.50	10	13	3,763,033	28,151,253	670,175	59%	2,569,923	19,225,593	457,689	59.00	41%	
3676.50	11	12	4,098,219	30,658,775	729,870	65%	2,234,738	16,718,072	397,994	51.30	35%	
3675.50	12	11	4,426,216	33,112,521	788,284	70%	1,906,741	14,264,326	339,580	43.77	30%	SLUMP
3674.50	13	10	4,747,097	35,513,033	845,431	75%	1,585,859	11,863,813	282,433	36.41	25%	
3673.50	14	9	5,060,934	37,860,847	901,324	80%	1,272,022	9,515,999	226,540	29.20	20%	
3672.50	15	8	5,367,799	40,156,506	955,975	85%	965,157	7,220,340	171,889	22.16	15%	
3671.50	16	7	5,667,764	42,400,543	1,009,397	89%	665,192	4,976,303	118,467	15.27	11%	SLUMP
3670.50	17	6	5,954,856	44,548,281	1,060,527	94%	378,100	2,828,565	67,337	8.68	6%	
3669.50	18	5	6,181,753	46,245,695	1,100,936	98%	151,203	1,131,151	26,928	3.47	2%	
3668.50	19	4	6,294,995	47,092,857	1,121,103	99%	37,961	283,990	6,761	0.87	1%	
3667.50	20	3	6,322,451	47,298,258	1,125,993	100%	10,505	78,589	1,871	0.24	0%	SLUMP
3666.50	21	2	6,326,676	47,329,865	1,126,746	100%	6,280	46,982	1,118	0.14	0%	
3665.50	22	1	6,330,157	47,355,905	1,127,365	100%	2,799	20,942	499	0.06	0%	
3664.50	23	0	6,332,956	47,376,847	1,127,864	100%	0	0	0	0.00	0%	



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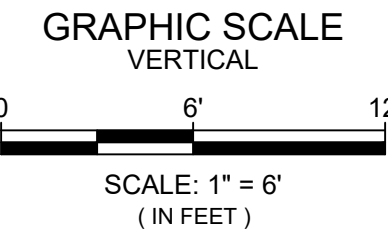
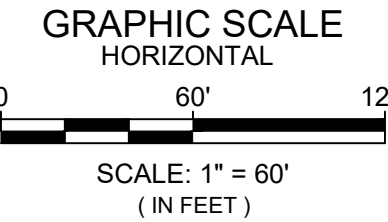
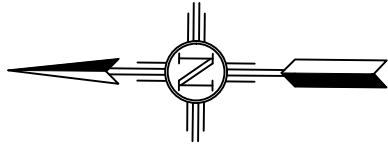
ENGINEERING SHEET:
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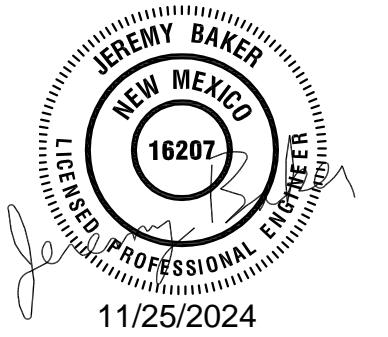
PROJECT NUMBER:
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PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
XAVIER CLARK

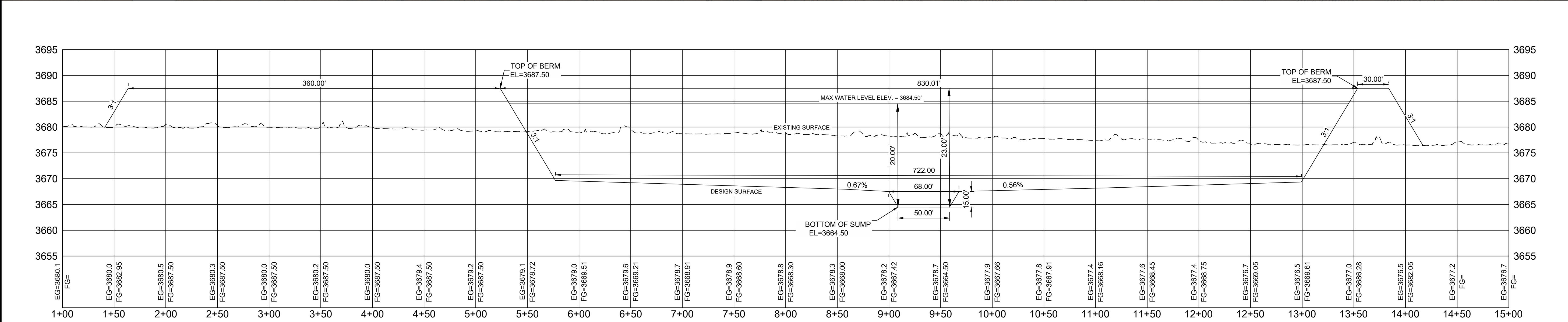
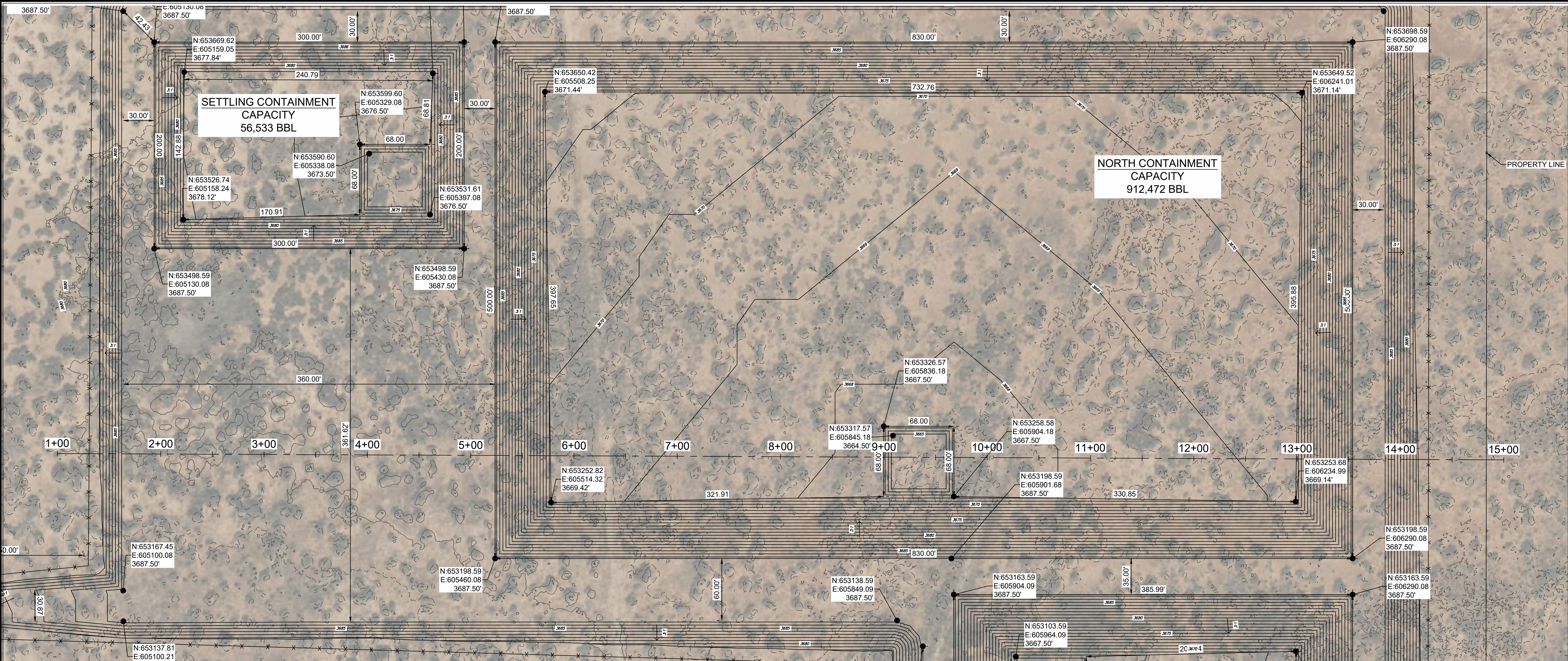


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ENGINEERING SHEET:
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PROJECT NAME:

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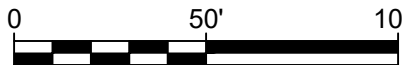
PROJECT NUMBER:

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PROJECT ENGINEER:
JEREMY BAKER, PE
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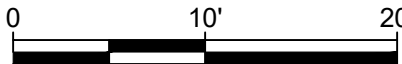


GRAPHIC SCALE
HORIZONTAL



SCALE: 1" = 50'
(IN FEET)

GRAPHIC SCALE
VERTICAL



SCALE: 1" = 10'
(IN FEET)

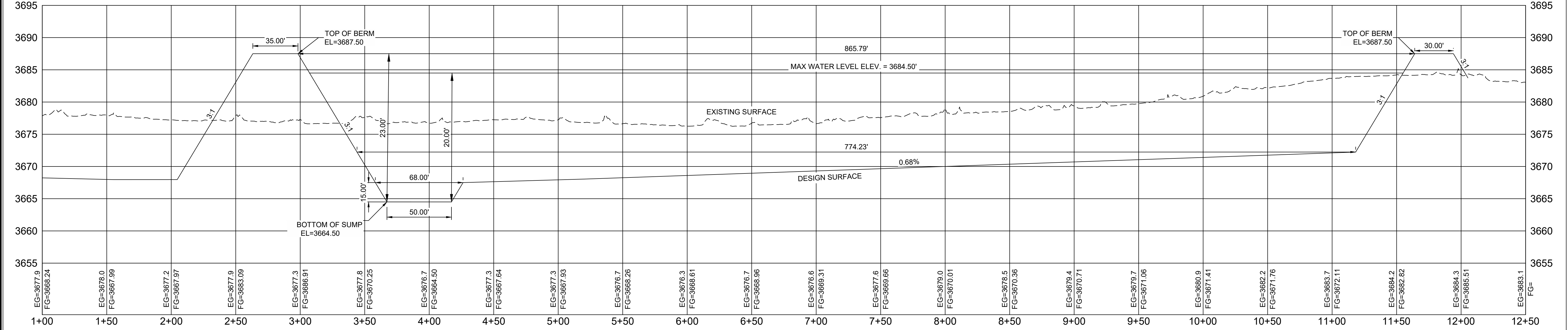
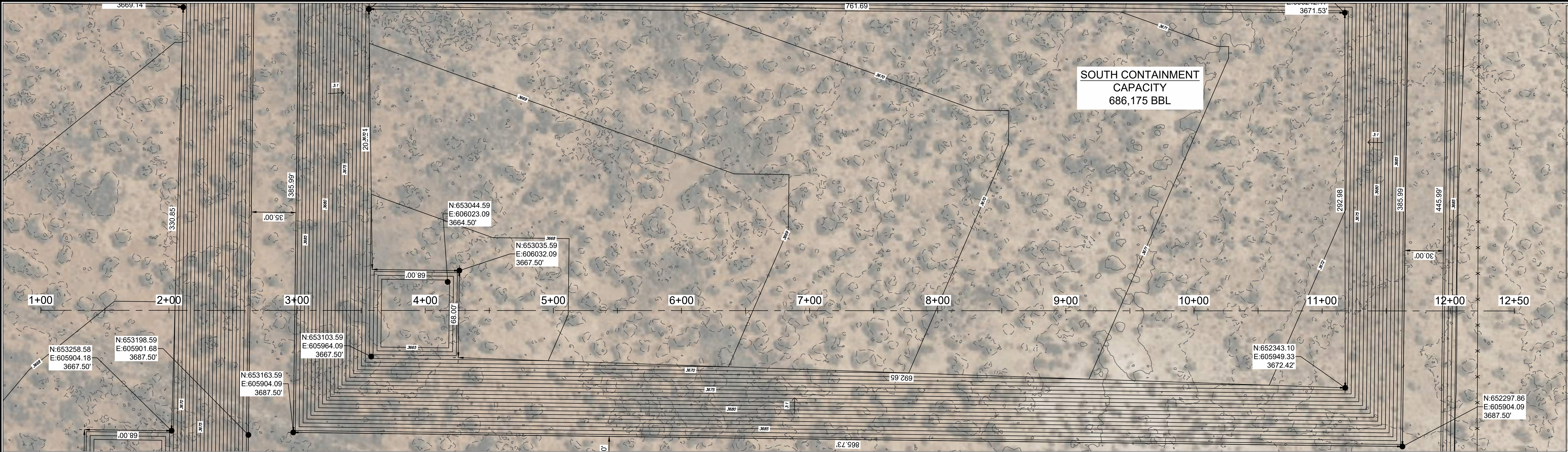
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No.	DATE	DESCRIPTION



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CS-105



ELEVATION (FT)	CONTAINMENT DEPTH (FT)	REMAINING STORAGE (FT)	REMAINING STORAGE VOL (FT3)	REMAINING STORAGE VOL (GAL)	REMAINING STORAGE VOL (BBL)	PERCENT OF TOTAL VOL (%)	VOL IN CONTAINMENT (FT3)	VOL IN CONTAINMENT (GAL)	VOL IN CONTAINMENT (BBL)	VOL IN CONTAINMENT (AC-FT)	PERCENT OF TOTAL VOL (%)	
3,687.50	0	23	0	-	-	0%	4,821,881	36,072,493	858,750	110.70	100%	FREEBOARD
3,686.50	1	22	330,418	2,471,856	58,846	7%	4,491,463	33,600,636	799,904	103.11	93%	
3,685.50	2	21	653,398	4,888,067	116,366	14%	4,168,484	31,184,426	742,384	95.70	86%	
3,684.50	3	20	969,011	7,249,172	172,575	20%	3,852,870	28,823,321	686,175	88.45	80%	MAX VOLUME
3,683.50	4	19	1,277,330	9,555,708	227,485	26%	3,544,551	26,516,785	631,265	81.37	74%	
3,682.50	5	18	1,578,427	11,808,213	281,109	33%	3,243,454	24,264,280	577,641	74.46	67%	
3,681.50	6	17	1,872,374	14,007,227	333,459	39%	2,949,508	22,065,266	525,291	67.71	61%	STORAGE VOLUME
3,680.50	7	16	2,159,242	16,153,288	384,549	45%	2,662,639	19,919,205	474,201	61.13	55%	
3,679.50	8	15	2,439,104	18,246,936	434,391	51%	2,382,777	17,825,557	424,359	54.70	49%	
3,678.50	9	14	2,712,031	20,288,707	482,998	56%	2,109,850	15,783,785	375,752	48.44	44%	FLOOR
3,677.50	10	13	2,978,097	22,279,144	530,382	62%	1,843,784	13,793,349	328,368	42.33	38%	
3,676.50	11	12	3,237,372	24,218,781	576,558	67%	1,584,509	11,853,712	282,192	36.38	33%	
3,675.50	12	11	3,489,929	26,108,157	621,537	72%	1,331,952	9,964,336	237,213	30.58	28%	SUMP
3,674.50	13	10	3,735,839	27,947,814	665,332	77%	1,086,042	8,124,679	193,418	24.93	23%	
3,673.50	14	9	3,975,175	29,738,287	707,956	82%	846,706	6,334,205	150,794	19.44	18%	
3,672.50	15	8	4,208,009	31,480,118	749,423	87%	613,872	4,592,374	109,327	14.09	13%	FLOOR
3,671.50	16	7	4,428,516	33,129,728	788,694	92%	393,365	2,942,765	70,056	9.03	8%	
3,670.50	17	6	4,607,816	34,471,071	820,626	96%	214,065	1,601,422	38,124	4.91	4%	
3,669.50	18	5	4,731,772	35,398,385	842,702	98%	90,109	674,107	16,048	2.07	2%	SUMP
3,668.50	19	4	4,794,045	35,864,250	853,793	99%	27,836	208,243	4,957	0.64	1%	
3,667.50	20	3	4,811,360	35,993,786	856,876	100%	10,521	78,706	1,874	0.24	0%	
3,666.50	21	2	4,815,588	36,025,412	857,629	100%	6,293	47,081	1,121	0.14	0%	SUMP
3,665.50	22	1	4,819,071	36,051,472	858,250	100%	2,810	21,021	500	0.06	0%	
3,664.50	23	0	4,821,881	36,072,493	858,750	100%	0	0	0	0.00	0%	



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ENGINEERING SHEET:
SOUTH CONTAINMENT
NORTH TO SOUTH
PLAN & PROFILE
OF

PROJECT NAME:

THE HUB RECYCLE FACILITY

CLIENT:

FOR

SPUR

PROJECT NUMBER:

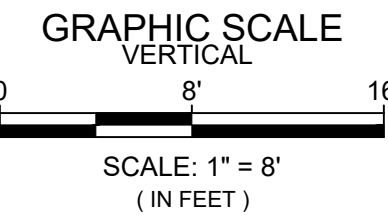
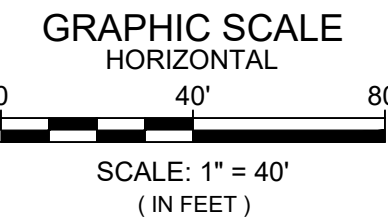
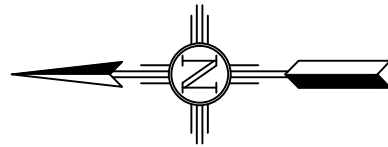
24239

PROJECT ENGINEER:

JEREMY BAKER, PE

DRAWN BY:

XAVIER CLARK



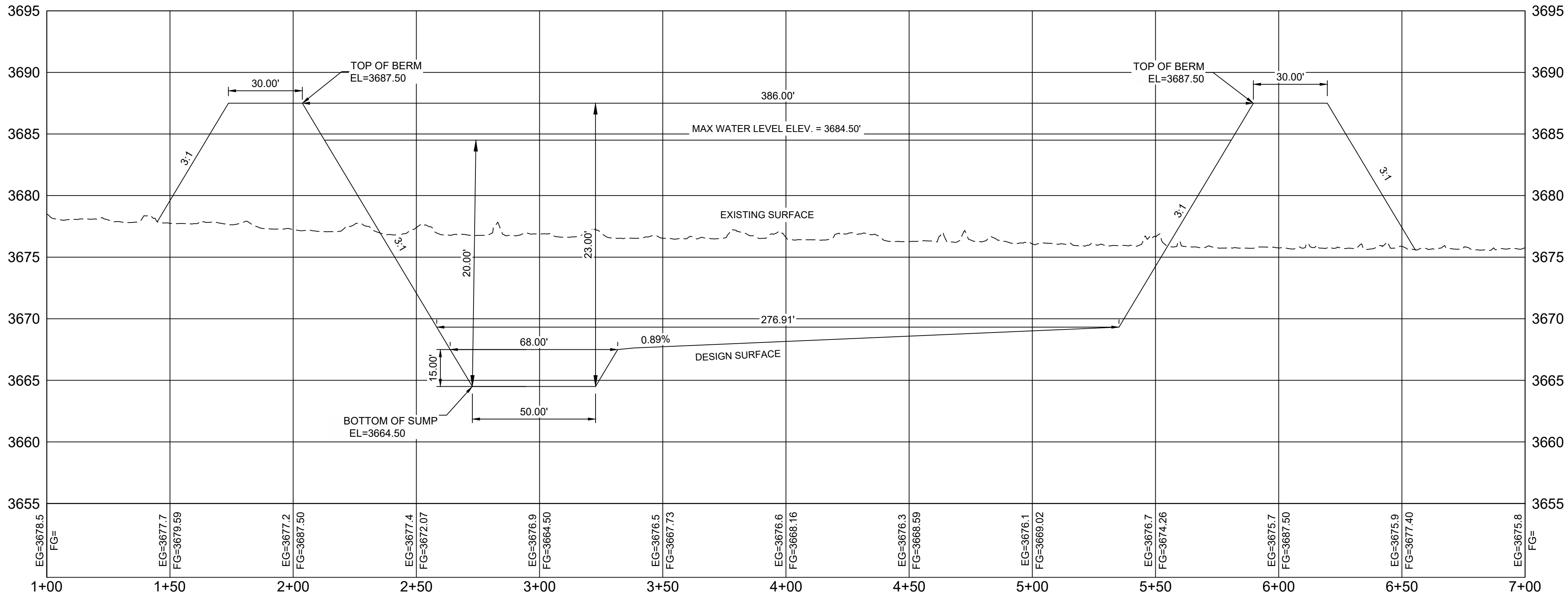
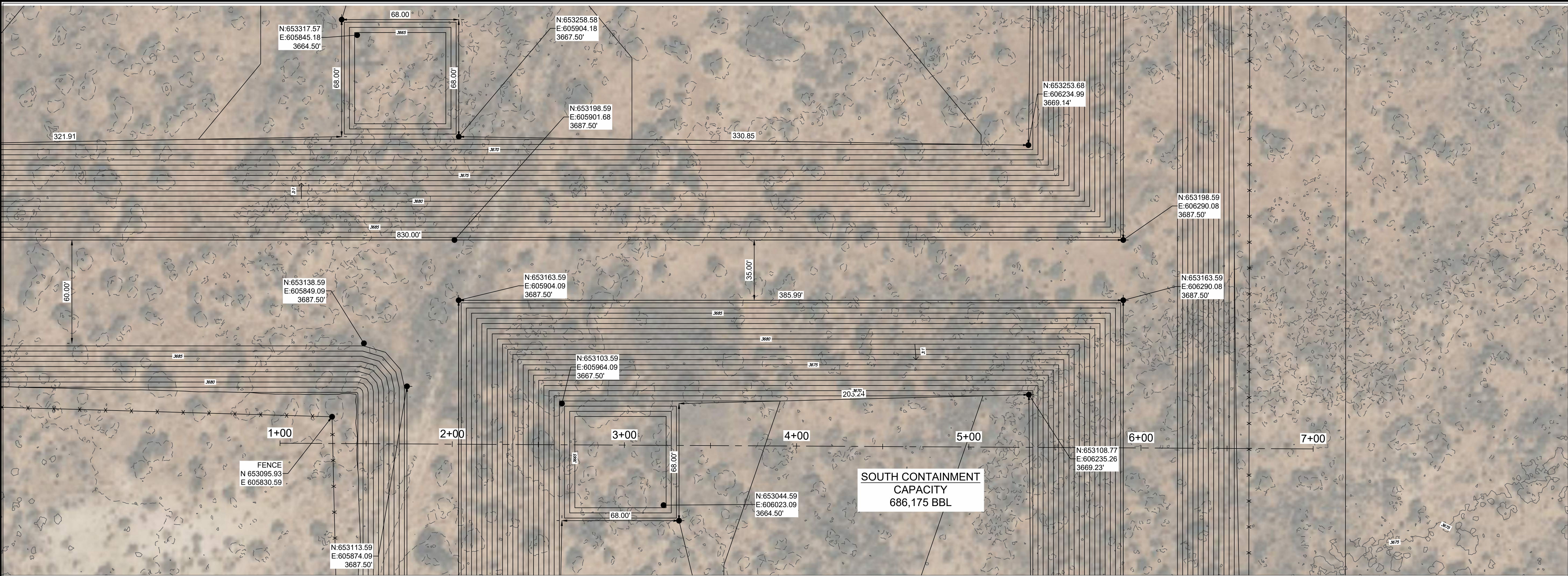
REVISIONS

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SHEET:
9 of 13

CS-106



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ENGINEERING SHEET:
**SOUTH CONTAINMENT
EAST TO WEST PLAN
& PROFILE
OF**

PROJECT NAME:

THE HUB RECYCLE FACILITY

CLIENT:

FOR

SPUR

PROJECT NUMBER:
24239

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
XAVIER CLARK



GRAPHIC SCALE
HORIZONTAL
0 30' 60'
SCALE: 1" = 30'
(IN FEET)

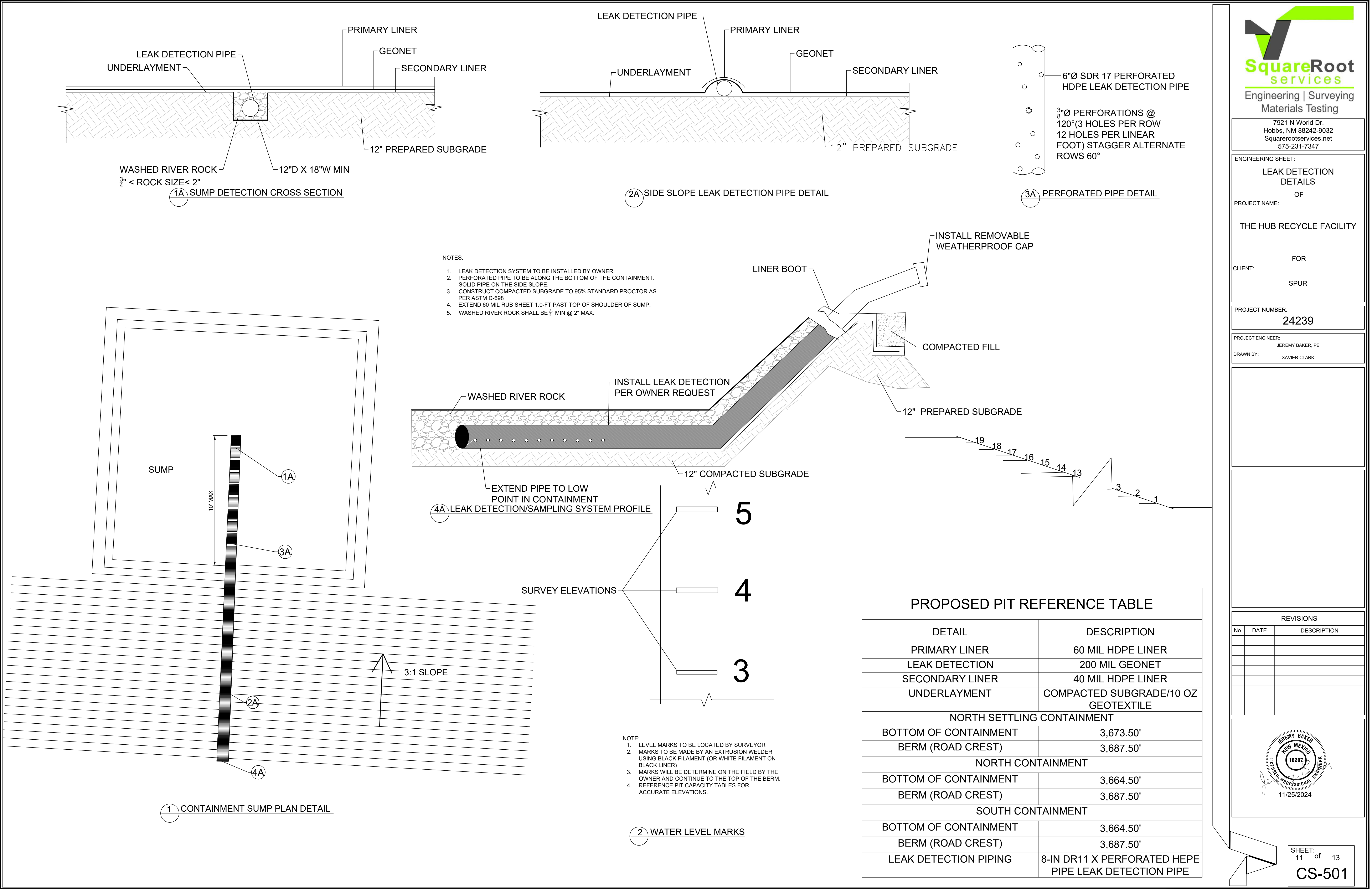
GRAPHIC SCALE
VERTICAL
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SCALE: 1" = 6'
(IN FEET)

REVISIONS

No.	DATE	DESCRIPTION



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10 of 13
CS-107



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ENGINEERING SHEET:
**LEAK DETECTION
DETAILS**
OF

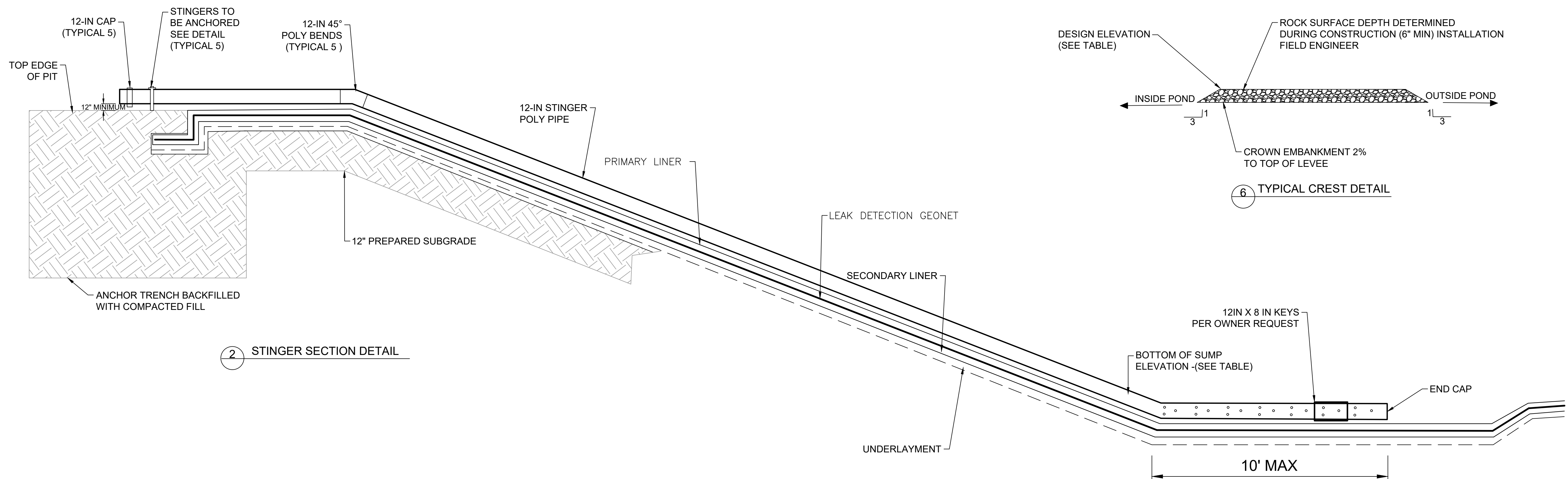
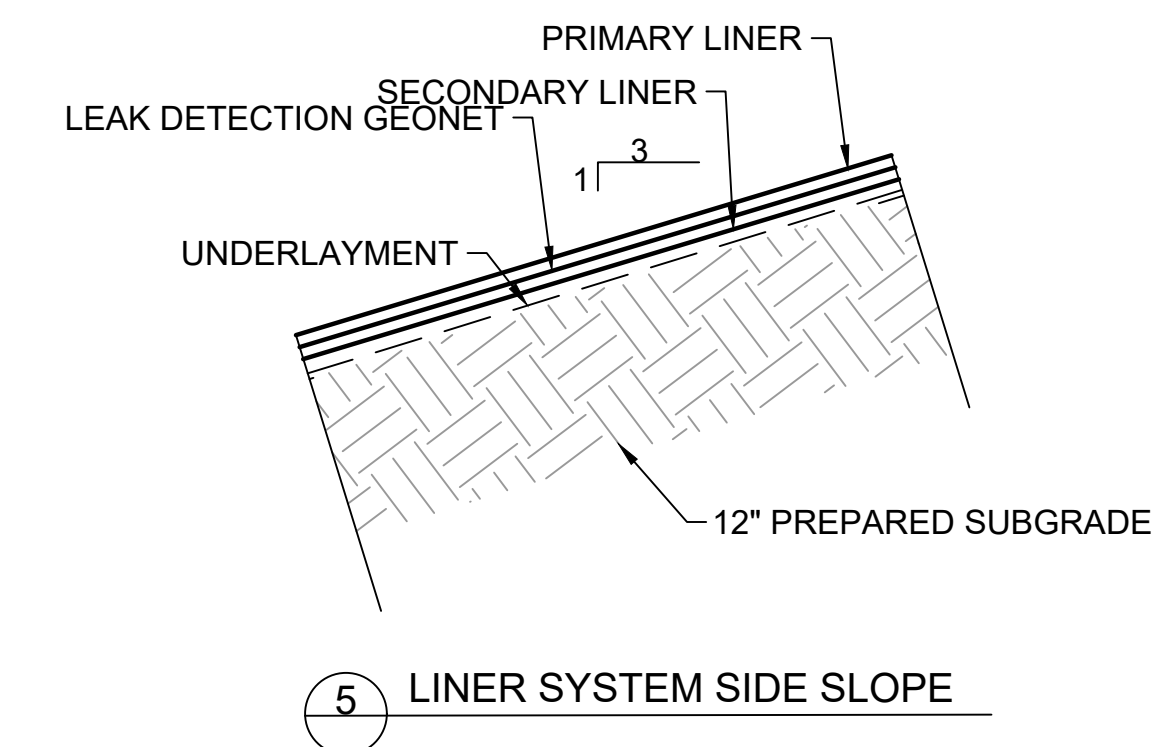
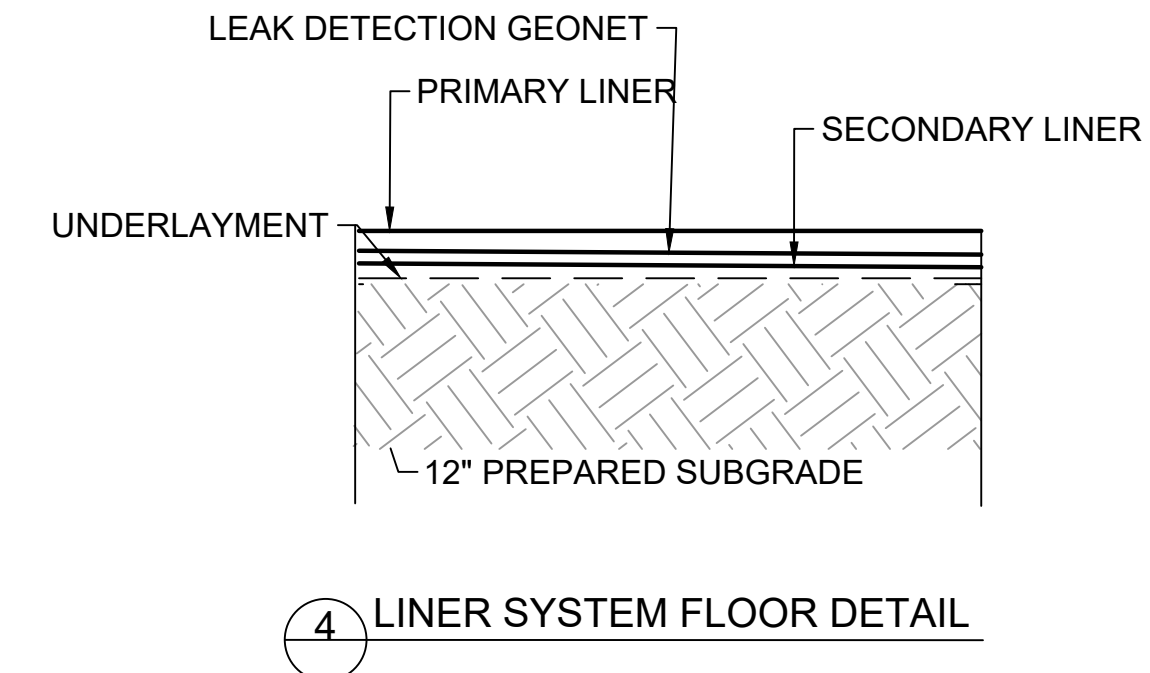
PROJECT NAME:
THE HUB RECYCLE FACILITY

CLIENT:
FOR
SPUR

PROJECT NUMBER:
24239

PROJECT ENGINEER:
JEREMY BAKER, PE
DRAWN BY:
XAVIER CLARK

SHEET:
11 of 13
CS-501



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LINER DETAILS

PROJECT NAME: OF
THE HUB RECYCLE FACILITY

CLIENT: FOR
SPUR

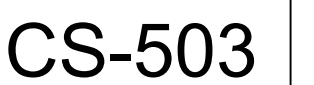
PROJECT NUMBER:
24239

PROJECT ENGINEER:
JEREMY BAKER, PE

DRAWN BY:
XAVIER CLARK

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SHEET:
12 of 13
CS-502



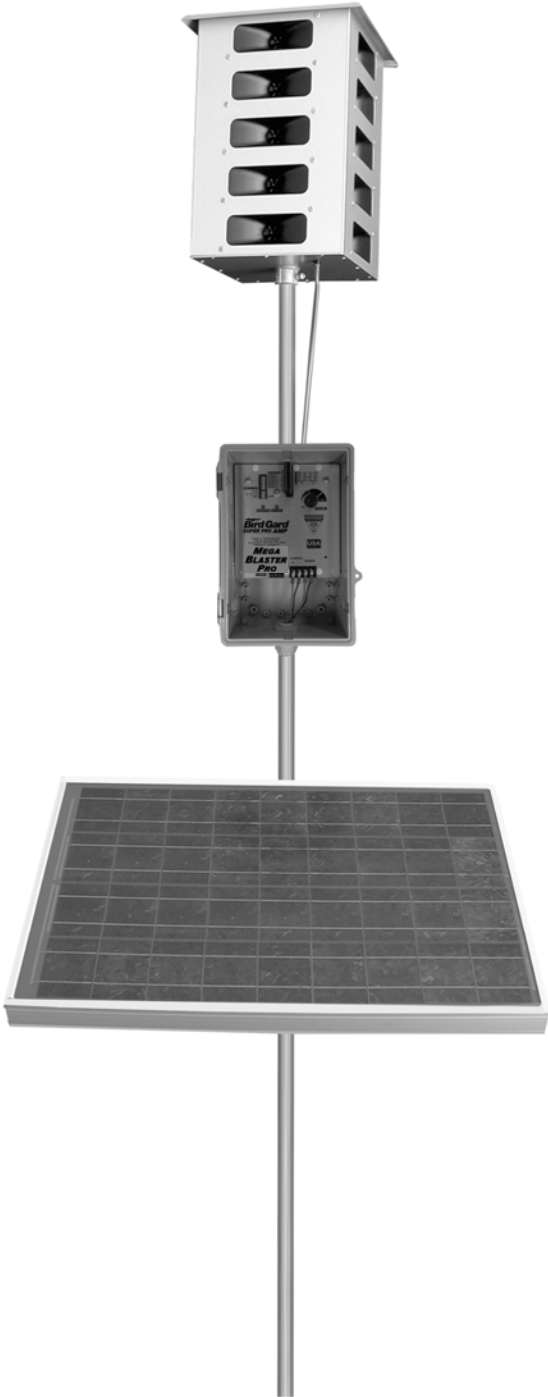
AVIAN DETERRENT SYSTEM

MEGA BLASTER PRO



User's Manual

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Overview

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

Your Bird-X Mega Blaster Pro system consists of:

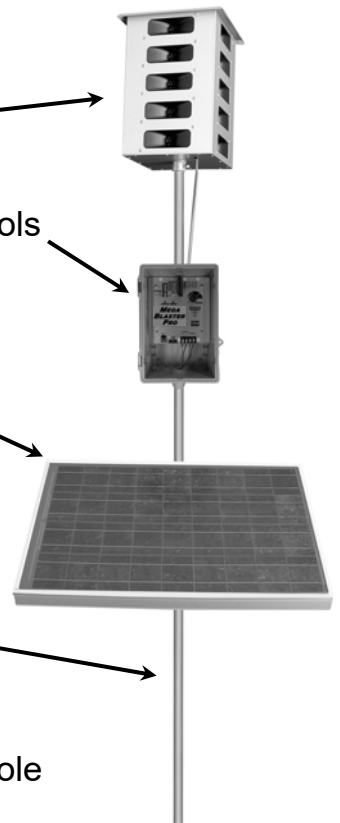
20-Speaker Tower broadcasts the bird sounds

Control Unit produces the bird sounds and contains all operational controls

Solar Panel recharges the 12-volt deep cycle battery

Items needed but not included:

- (1) **Mounting Pole or Mast** tall enough to raise the 20-Speaker Tower at least 5 feet above the top of the areas, trees or other obstructions
- (1) **12-volt Deep Cycle Battery** (RV/Marine) Group 27 or larger wet cell
- (1) **T-Post** or similar (Optional) may be needed to support the mounting pole
- (1) **Bailing Wire or zip-tie** (Optional) to secure the Mounting Pole to the T-Post



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



Bird Control Management Guidelines

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

For best results:

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

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

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*

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- (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,

RK 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

DESIGN/CONSTRUCTION PLAN

Design and Construction Plan In Ground Containments

This plan addresses construction of the earthen containments.

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

Dike Protection and Structural Integrity

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

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.

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

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 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

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

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

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.

Design and Construction Plan In Ground Containments

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 Pro¹ as a primary hazing program for avian species. The device will be equipped with sounds suitable for the Permian Basin environment. In addition to this sonic device, staff will routinely inspect the containment for the presence of avian species and, if detected, will use a blank cartridge or shell in a handgun, starter pistol or shotgun as additional hazing. Decoys of birds of prey may be placed on the game fence and other roosts around the open water to provide additional hazing.

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

Earthwork

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

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 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.

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...

Design and Construction Plan In Ground Containments

- 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).

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.

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 LLDPE (in accordance with a previously approved variance) Liner compatibility meets or exceeds a subsequent relevant publication to EPA SW-846 method 9090A.

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.

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

(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.

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.

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 1×10^{-9} cm/sec. Liner compatibility shall meet or exceed the EPA SW-846 method 9090A or subsequent relevant publications.

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 1×10^{-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.

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...

Design and Construction Plan In Ground Containments

- 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

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.

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.

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).

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.

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.

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.

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.

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.

19.15.34.10 D

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

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.

Operation and Maintenance Plan In Ground Containments

- 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.

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 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.

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.

Operation and Maintenance Plan In Ground Containments

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.

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.

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.

Operation and Maintenance Plan In Ground Containments

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.

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.

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.

Operation and Maintenance Plan In Ground Containments

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.

Operation and Maintenance Plan In Ground Containments

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.

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,

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 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.

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.

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.

Closure Plan In Ground Containments

- 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.

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.

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.

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.

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.

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Monday, December 9, 2024 11:30 AM
To: Sarah Chapman; 'BobbiJo Crain'
Subject: 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363]
Attachments: C-147 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363].pdf

2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363]

Good morning Ms. Chapman.

NMOCD has reviewed the recycling containment permit application and related documents, submitted by [328947] Spur Energy Partners LLC on 12/06/2024, Application ID 409413, for 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] in D-36-17S-28E, Eddy County, New Mexico. The form C-147 and related documents 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.
- [328947] Spur Energy Partners LLC shall construct, operate, maintain, close, and reclaim 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] in compliance with 19.15.34 NMAC.
- 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] is approved for five years of operation from the date of permit application. 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] permit expires on 12/6/2029. If [328947] Spur Energy Partners LLC wishes to extend operations past five years, an annual permit extension request must be submitted using form C-147 through OCD Permitting by 11/06/2029.
- 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] consists of three (3) earthen containments: South 686,175.00 bbl, North 912,472.00 bbl and Settling 56,533.00 bbl. The total capacity is 1,655,180.00 bbl.
- The total closure cost estimated for 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] in the amount of \$970,379.00, meets the requirements of NMAC 19.15.34.15.A.
- The financial assurance should be mailed to: EMNRD - Oil Conservation Division, Administration and Compliance Bureau. 1220 S. St. Francis Dr., Santa Fe, NM 87505.
- [328947] Spur Energy Partners LLC cannot receive produced water in the 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] until after the original copy of the financial assurance has been accepted by NMOCD.
- [328947] Spur Energy Partners LLC shall notify OCD when construction of 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] commences.
- [328947] Spur Energy Partners LLC shall notify OCD when recycling operations commence and cease at 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363].
- A minimum of 3-feet freeboard must be maintained at 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363], at all times during operations.
- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operation of the facility is considered ceased and notification of cessation of operations should be sent electronically to OCD Permitting. An extension to extend the cessation of operation, not to exceed six months, may be submitted using a C-147 form through OCD Permitting.

- [328947] Spur Energy Partners 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 Permitting even if there is zero activity.
- [328947] Spur Energy Partners LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363].

Please reference number 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] 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

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State of New Mexico

Energy, Minerals and Natural Resources

Oil Conservation Division

1220 S. St Francis Dr.

Santa Fe, NM 87505

CONDITIONS

Action 409413

CONDITIONS

Operator: Spur Energy Partners LLC 9655 Katy Freeway Houston, TX 77024	OGRID: 328947
	Action Number: 409413
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	<ul style="list-style-type: none">[328947] Spur Energy Partners LLC shall construct, operate, maintain, close, and reclaim 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] in compliance with 19.15.34 NMAC.2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] is approved for five years of operation from the date of permit application. 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363] permit expires on 12/6/2029. If [328947] Spur Energy Partners LLC wishes to extend operations past five years, an annual permit extension request must be submitted using form C-147 through OCD Permitting by 11/06/2029.[328947] Spur Energy Partners LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 2RF-211 - THE HUB RECYCLE FACILITY [fVV2434035363].	12/9/2024