

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: [X] Recycling Facility [X] Recycling Containment*
Type of action: [X] Permit [X] 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: AVANT OPERATING, LLC (For multiple operators attach page with information) OGRID #: 330396
Address: 1515 WYNKOOP, SUITE 700, DENVER, CO 80202
Facility or well name (include API# if associated with a well): ALPHA WOLF RECYCLING PONDS & FACILITY
OCD Permit Number: 1RF-513 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr SW4 Section 36 Township 18 S Range 32 E County: LEA
Surface Owner: [] Federal [X] State [] Private [] Tribal Trust or Indian Allotment

2. [X] Recycling Facility:
Location of recycling facility (if applicable): Latitude 32.69920 Longitude -103.72361 NAD83
Proposed Use: [] Drilling* [X] Completion* [X] 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.
[X] Fluid Storage
[X] Above ground tanks [X] 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. [X] Recycling Containment: North pond: 32.69979 & -103.72567
[] Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.69864 Longitude -103.72568 NAD83 South pond
[X] For multiple or additional recycling containments, attach design and location information of each containment
[X] Lined [] Liner type: Thickness 60 & 40 mil [] LLDPE [X] HDPE [] PVC [] Other
[] String-Reinforced
Liner Seams: [X] Welded [] Factory [X] Other FIELD WELDED Volume: 602,770 bbl Dimensions: L 849' x W 385' x D 16'
[] Recycling Containment Closure Completion Date: EACH EACH 13' D EXCLUDING OF 2 FREEBOARD

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 \$ 720,000.00 (work on these facilities cannot commence until bonding amounts are approved)

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

5.

Fencing:

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

Alternate. Please specify 8' HIGH 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; written approval obtained from the municipality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within a 100-year floodplain. FEMA map	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; aerial photo; satellite image	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

9.

Recycling Facility and/or Containment Checklist:

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

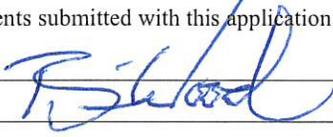
- Design Plan - based upon the appropriate requirements.
- Operating and Maintenance Plan - based upon the appropriate requirements.
- Closure Plan - based upon the appropriate requirements.
- Site Specific Groundwater Data -
- Siting Criteria Compliance Demonstrations -
- Certify that notice of the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

10.

Operator Application Certification:

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

Name (Print): BRIAN WOOD



Title: CONSULTANT

Signature: _____

Date: 12-1-23

e-mail address: brian@permitswest.com

Telephone: 505 466-8120

11.

OCD Representative Signature: Victoria Venegas

Approval Date: 12/13/2023

Title: Environmental Specialist

OCD Permit Number: 1RF-513

- OCD Conditions
- Additional OCD Conditions on Attachment



November 30, 2023

Victoria Venegas
NM Oil Conservation Division
1120 S. St. Francis Drive
Santa Fe NM 87505

Dear Ms. Venegas:

On behalf of Avant Operating, LLC; I am requesting two variances for their proposed Alpha Wolf Recycle Ponds & Pad in SW4 36-18s-32e, Lea County. The C-147 and supporting documents are attached.

19.15.34.12 D. (2)

Variance is requested from the 4-foot high 4-strand barbed wire requirement. The proposed fence will be more effective at preventing entry by deer, javelinas, and trespassers than the 4-foot high 4-strand barbed wire requirement. Facility will be totally encircled by an 8' high fixed knot woven wire fence. Twelve-foot long steel T-posts (1.3 lb/ft) with plates will be set 36" deep every 20-feet. Every sixth line post (i. e., every 100') will be 2.5" O. D. Schedule 40 pipe instead of a T-post. Pipes will be set 40" deep in a 12" diameter hole and cemented in place. Pipes will be spaced 8.5' apart at fence corners and braces. Braces will be 2.5" O. D. Schedule 40 pipe. See Exhibit O, page 9.

19.15.34.12 E.

Variance is requested from the overhead screening netting requirement. Given the pond sizes, it would be difficult to keep screens or nets suspended above the water. In lieu of screens or nets, Avant proposes to install two ultrasonic Bird-X Broadband Pro 4 Speaker Bird Repeller Systems (Exhibit M) or their equivalent at each pond. Avant would include the visual scare option as a further bird deterrent.

Please call me if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads 'Brian Wood'.

Brian Wood

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Who: Applicant is Avant Operating, LLC. Their address is 1515 Wynkoop, Suite 700, Denver CO 80202. Surface owner is the NM State Land Office. Their address is P. O. Box 1148, Santa Fe, NM 87504.

What: Avant is applying for permits to build 2 recycle ponds and 1 recycle facility. At 36" of freeboard, total capacity will be 1,205,537 barrels.

Where: 36.85 acres in the Southwest quarter of Section 36, T. 18 S., R. 32 E., Lea County, New Mexico. Project is 11 miles SSE of Maljamar, NM.

Why: As of November 22, 2023, Avant has 26 drilled wells, 51 approved but not yet drilled wells, and dozens more wells pending approval.

Siting Requirements

- A. (1) Groundwater is not within 50' of the bottom of the ponds. Groundwater was not encountered in the 80' deep borehole drilled June 14 - 15, 2023. See Exhibit A, Geotechnical Engineering Report.
- A. (2) The project is not within 300' of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake. See Exhibit B, topographic map and significant water map. Closest such feature is more than a mile distant.
- A. (3) The project is not within 1,000' of a permanent residence, school, hospital, institution, or church. See Exhibit C, air photo. Closest such feature is more than a mile distant.
- A. (4) The project is not within 500' of a spring or fresh water well. See Exhibit D, water well proximity map and State Engineer data base searches. No spring or water well is within 1,000'.
- A. (5) The project is not within a municipality or municipal fresh water well field. See Exhibit E, municipal map. Closest such feature is more than a mile distant.
- A. (6) The project is not within 500' of a wetland. See Exhibit F, wetlands map. Closest such feature is more than a mile distant.

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- A. (7) The project is not atop a subsurface mine. See Exhibit G, mining map. Closest such feature is more than a mile distant.
- A. (8) The project is in a low probability area for cave-karst potential. See Exhibit H, cave-karst potential map.
- A. (9) The project is not in a 100-year floodplain. See Exhibit I, floodplain map. Closest such feature is more than a mile distant.

- B. Five boreholes were drilled on site. Four were 20' deep. The fifth was 80' deep. No groundwater was found in any of the 5 boreholes. Holes were plugged with Type I/II Portland cement.

- C. (1) Excavated material will not be located within 100' of a continuously flowing or significant watercourse. See Exhibit B, topographic map.
- C. (2) Excavated material will not be located within 200' of a lakebed, sinkhole, or playa lake. See Exhibits B and H.
- C. (3) Excavated material will not be located within 100' of a wetland. See Exhibit F.
- C. (4) Excavated material will not be located within a 100-year floodplain. See Exhibit I.

Design & Construction Specifications

- A. (1) Confinement will be assured by double lining the pond. Primary liner will be smooth black ≥ 60 -mil HDPE atop a ≥ 200 -mil geonet cushion atop a smooth black ≥ 40 -mil HDPE secondary liner atop a ≥ 10 -ounce geotextile. Typical manufacturer's specification sheets are in Exhibit J. Releases and overtopping will be prevented by maintaining a minimum three-foot of freeboard. Berm tops will be ≥ 6 feet above natural ground level to prevent inflow from runoff from the surrounding terrain. Exterior berm slopes will be protected from erosion by Recyclex TRM-450 (brown) turf reinforcement mat or its equivalent (Exhibit K). Turf reinforcement mat will be anchored in ≥ 12 " x ≥ 12 " trenches. See Exhibit O, page 2, Liner Notes.

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- A. (2) Site preparation will include stripping all vegetation, topsoil, and deleterious and/or weak soils to expose a smooth competent subgrade. All rocks $>3/4"$ will be removed. A competent subgrade will be assured by rolling with a 20-ton pneumatic roller or its equivalent. Liner will be protected from stress-strain or protuberances by a ≥ 200 -mil geonet cushion atop a ≥ 40 -mil HDPE secondary liner atop a ≥ 10 -ounce geotextile. Gas vents will be installed $\approx 100'$ apart and 1' from the top of the inside slope. See Exhibit O, page 2, Earthwork and Site Preparation Notes.

Berm slopes will be 4:1. Density gage tests will be run every 2,500 cubic yards. Berm tops will be 25' (outer berm) to 30' (middle berm) wide to allow sufficient space for anchor trenches, inspection, and maintenance. Road atop berms will lay upon Mirafi 140 or equivalent (e. g., US 120NW) non-woven geotextile (Exhibit L). Minimum 6" NM Type 1, 2 base course will be spread atop the geotextile and compacted to $\geq 95\%$ of the maximum dry density to within -2% to +3% of optimum moisture content per standard proctor (ASTM D698). See Exhibit O, page 2, Earthwork and Site Preparation Notes. Also see Exhibit O, pages 5 and 6, cross-sections.

- A. (3) Primary liner will be ≥ 60 -mil HDPE atop a ≥ 200 -mil geonet cushion for leak detection atop a ≥ 40 -mil HDPE secondary liner atop a ≥ 10 -ounce geotextile for protection from protuberances. See Exhibit O, page 2, Liner Notes.

Liner anchor trenches will be $\geq 24"$ deep and $\geq 24"$ wide. Turf mat trenches will be $\geq 12" \times \geq 12"$. Trenches will be backfilled with compacted select fill or other competent materials. See Exhibit O, page 8, Trench Details.

- A. (4) Primary liner will be smooth 60-mil HDPE impervious to UV light, petroleum hydrocarbons, salt, and acidic and alkaline solutions. Secondary liner will be smooth 40-mil HDPE with a hydraulic conductivity no more than 1×10^{-9} cm/sec. Liner compatibility will meet or exceed USEPA SW-846 method 9090A or subsequent relevant publications. See Exhibit O, page 2, Liner Notes.
- A. (5) Liner seams will be oriented up and down, not across, berm slopes. Factory welded seams will be used where possible. Field seams will be thermally welded. Field seams will overlap liners by at least 6". There will

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be no horizontal seams within 5' of a slope's toe. Qualified personnel will perform field welding and non-destructive testing. Written records of the testing will be made and kept. Testing will cover the full length of each seam. Tests will use air pressure (≥ 35 psi for ≥ 5 minutes) or vacuum. See Exhibit O, page 2, Liner Notes.

- A. (6) Each pond will slope 0.3% toward a 3' deep x 48' wide x 134' long sump. Sump will have 60-mil HDPE textured rubber sheet atop the 60-mil primary liner to protect the primary liner from abrasion. See Exhibit O, pages 4 and 7, Sump and Leak Detection System Views.
- A. (7) Leak detection system will consist of ≥ 200 -mil geonet cushion. Pond bottoms will slope 0.3% east toward and below a sump. Under each sump will be a 50' long by 6" O. D. DR11 HDPE perforated (1/4" O. D. holes with 45° spacing) pipe. Pipe will be wrapped in 10-ounce geotextile and lay in a 12" deep x 12" wide trench with 1:1 slope. Trench will be filled with 3/8" pea gravel. Gravel will sit atop the 40-mil secondary liner which will be atop 10-ounce geotextile. Leak detection pipe will have a submersible pump. Each leak detection pipe riser will extend to ≥ 12 " above the top of the east berm. Pipe will have a 60-mil HDPE rubber sheet collar welded to the pipe and main liner. Riser end will have a locked, but removable, cap. See Exhibit O, pages 2 (Liner Notes) and 7 (Sump and Leak Detection System Views).
- A. (8) The combined pond perimeter will be bermed on all sides to prevent run-on of surface water. All berms will be higher than natural ground level. (West side berm of north pond will be 7.3' higher than natural ground elevation.) See Exhibit O, page 5, cross-sections. Berms will be protected from erosion by Recyclex TRM-450 (brown) turf reinforcement mat or its equivalent. See Exhibit O, page 6, Outer Berm Section.
- B. At least the top 6" of topsoil (See Exhibit O, page 1, Quantities) will be stripped and reserved for reclamation. Topsoil will be pushed to the perimeter during pond construction. Once pond construction is complete, then it will be placed on the outside slopes, seeded, and protected by the turf reinforcement mat (see Exhibit O, page 6, Outer Berm Section). Topsoil will not be mixed with subsoil.

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- C. Avant will post at least one 12" x 24" all weather sign on each side of the pond perimeter fence. Lettering will be at least 2" high. Each sign will show operator's name (Avant Operating, LLC), site name (Alpha Wolf recycle pond), location (SW4 Sec. 36, T. 18 S., R. 32 E., Lea County, NM), and emergency telephone number (720 746-5053). See Exhibit O, page 2, General Notes.
- D. (1) Facility will be totally encircled by an 8' high fixed knot woven wire fence. Twelve-foot long steel T-posts (1.3 lb/ft) with plates will be set 36" deep every 20-feet. Every sixth line post (i. e., every 100') will be 2.5" O. D. Schedule 40 pipe instead of a T-post. Pipes will be set 40" deep in a 12" diameter hole and cemented in place. Pipes will be spaced 8.5' apart at fence corners and braces. Braces will be 2.5" O. D. Schedule 40 pipe. See Exhibit O, page 9.
- Four-foot wide pedestrian gates will be on the north, west, and south sides of the pond. Twenty-foot wide vehicle gates and cattle guards will be at the southeast and northeast corners of the facility. See Exhibit O, pages 3 (gate locations) and 9 (gate details). All gates will be kept closed and locked when responsible personnel are not on site. Each pond will have one escape ladder. See Exhibit O, pages 4 (ladder location) and 10 (Ladder Details).
- D. (2) Variance is requested from the 4-foot high 4-strand barbed wire requirement. The proposed fence will be more effective at preventing entry by deer and javelinas and deterring trespassers than the four-foot high 4-strand barbed wire requirement.
- E. Variance is requested from the overhead screening netting requirement. Given the pond sizes, it would be difficult to keep screens or nets suspended above the water. In lieu of screens or nets, Avant proposes to install two ultrasonic Bird-X Broadband Pro 4 Speaker Bird Repeller System (Exhibit M) or its equivalent at each pond. Avant would include the visual scare option as a further bird deterrent.
- Avant will inspect at least monthly for dead migratory birds or other wildlife. A written record will be kept of the monthly inspections. If dead wildlife is found, then within 30 days of the discovery, Avant will report to

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the NM Oil Conservation Hobbs district office (575 626-0830) and the NM Department of Game & Fish SE Area Office (575 624-6135) to facilitate assessment and implementation of measures to prevent incidents from reoccurring.

Operational Requirement for Recycling Containments

- A. Avant will inspect the ponds and leak detection system weekly while the ponds contain fluids. Avant will keep a written record of the inspections. The record will be made available to the NMOCD upon NMOCD's request.
- B. (1) Avant will remove any visible layer of oil from the ponds surface.
- B. (2) Avant will maintain at least 3-feet of freeboard in each pond. Water level markers will be installed in each pond.
- B. (3) Inflow to or outflow of fluids from the ponds will be accomplished through a header, diverter, or other equipment that prevents damage to the liner by erosion, fluid jets, or impact from installation and removal of hoses or pipes. Sump will have 60 mil HDPE textured rubber sheet atop the 60-mil primary liner to protect the primary liner from abrasion.
- B. (4) If the primary liner is compromised above the fluid surface, then Avant will repair the damage or initiate replacement of the primary liner within 48 hours of discovery or seek an extension of time from the NMOCD Hobbs District office.
- B. (5) If the primary liner is compromised below the fluid surface, then Avant will remove all fluid above the damage or leak within 48-hours of discovery, notify the NMOCD Hobbs District office, and repair the damage or replace the primary liner.
- B. (6) The containment will be operated to prevent the collection of surface water run-on. Berm tops will be above the adjacent natural ground level.
- B. (7) Avant will install, or maintain on-site, an oil absorbent boom, or other device to contain an unanticipated release.

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Produced water will be delivered to the facility via truck and pipeline. This incoming produced water will initially be stored in a lined above ground storage tank. This water will then be run through a series of above ground clarifying tanks to remove any solids. If open top tanks are used, then they be screened or netted to keep out birds. The solids will be separated for trucking to and disposal at an NMOCD approved disposal site. Clarified water will then be piped into the ponds.

Closure and Site Reclamation Requirements

- A. Once Avant has ceased operations, Avant will remove all fluids within 60-days and close the containment within 6-months from the date Avant ceases operations from the containment for use. NMOCD Hobbs District may grant an extension for the removal of all fluids not to exceed 2-months. NMOCD Hobbs District may grant an extension to close the containment not to exceed 6-months. If Avant wants to use the containment for a purpose other than recycling, then Avant must have that use approved or permitted by the NMOCD in accordance with the appropriate rules.
- B. Avant will close the recycling containment by first removing all fluids, contents, and synthetic liners and transferring these materials to a NMOCD approved facility.
- C. Avant will test the soils beneath the containment for contamination with a 5-point composite sample which includes stained or wet soils, if any. That sample will be analyzed for the constituents listed in the following table.
 - (1) If any contaminant is higher than the parameters listed in the following table, then NMOCD may require additional delineation upon review of the results and Avant must receive approval from NMOCD before proceeding with closure.
 - (2) If all contaminant concentrations are less than or equal to the parameters in the following table, then Avant will proceed to backfill with non-waste containing uncontaminated earthen material.

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CLOSURE CRITERIA FOR RECYCLING CONTAINMENTS			
Depth from bottom of containment to groundwater <10,000 mg/l TDS	Constituent	Method	Limit
51 - 100 feet	chloride	EPA 300.0	10,000 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO + DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
>100 feet	chloride	EPA 300.0	20,000 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO + DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

- D. Within 60 days of closure completion, Avant will submit a closure report on form C-147, including required attachments, to document all closure actions including sampling results and the details on any backfilling, capping, or covering, where applicable. The closure report will certify that all information in the report and attachments is correct and that Avant has complied with all applicable closure requirements and conditions specified in the NMOCD rules or directives.
- E. Once Avant has closed the recycling containment, Avant will reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area. Topsoil and subsoil will 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 will then be reseeded in the first favorable growing season following closure of a recycling containment. Avant will substantially restore the impacted surface area to the condition that existed before construction of the recycling containment.

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- F. Reclamation of all disturbed areas no longer in use will 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 \pm 50% of pre-disturbance levels and a total % plant cover of at least 70% of pre-disturbance levels, excluding noxious weeds.
- G. The re-vegetation and reclamation obligations imposed by the NM State Land Office will supersede the NMOCD provisions and govern the obligations of any operator subject to these provisions, provided that the other requirements provide equal or better protection of fresh water, human health, and the environment.
- H. Avant will notify the NMOCD when reclamation and re-vegetation are complete.

Financial Assurance

- A. Estimated closure cost (\$720,000) is in Exhibit N.

Engineering Plans

See Exhibit O.



**Geotechnical Engineering Report
Alpha Wolf Recycle Pond
Avant Natural Resources
Lea County, New Mexico**

Prepared for:

**LJA Energy
Beaumont, Texas**

Prepared by:

**Tolunay-Wong Engineers, Inc.
Fort Worth, Texas**

TWE Project No. 23.61.014 / Report No. 4001

Date:

July 20, 2023



July 20, 2023

LJA Energy

2615 Calder Avenue, Suite 500
Beaumont, Texas 77702

Attn: Mr. Heath Reynolds, P.E.
Hreynolds@lja.com

Ref: Geotechnical Engineering Report
Alpha Wolf Recycle Pond
Avant Natural Resources
Lea County, New Mexico
TWE Project No. 23.61.014 / Report No. 4001

Dear Mr. Reynolds,

Tolunay-Wong Engineers, Inc. (TWE) is pleased to submit this report of our geotechnical engineering study performed for the referenced project. We performed our services in general accordance with TWE Proposal No. P23-FW020 dated February 23, 2023 and authorized via LJA Work Authorization B1265-1001 signed on March 22, 2023. This report contains a project overview, our scope of services provided, a description of the field and laboratory services performed and our geotechnical recommendations for the referenced project.

Project Overview

We understand this project includes the design and construction of a new water recycle pond located approximately 11-mi south of Maljamar in Lea County, New Mexico. Reportedly, the pond will have dimensions on the order of 900-ft by 920-ft with an excavated depth of 10-ft below grade with perimeter berms extending about 5-ft above existing grade. Additional details regarding the pond liner system or ancillary equipment were not provided at the time of this report.

Scope of Services

The purposes of our geotechnical services were to evaluate the subsurface conditions within the project site and to provide geotechnical engineering recommendations to assist the Client in the design and construction of the proposed pond and ancillary components.

Field Program

Test Borings

TWE conducted an exploration of subsurface soil and groundwater conditions at the project site by performing one (1) test boring to a depth of 80-ft and four (4) test borings to a depth of 20-ft each below existing site grade between June 13th and June 15th, 2023.

TWE

Project No. 23.61.014
Report No. 4001
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The test boring location plan is presented on TWE Drawing No. 23.61.014-1 in Appendix A. Our field personnel coordinated the field activities and logged the boreholes.

Drilling Methods

The exploratory soil borings were performed in general accordance with the *Standard Practice for Soil Investigation and Sampling by Auger Borings* (ASTM D1452). The soil borings were performed using a track mounted drilling rig and advanced using air-rotary drilling methods. Samples were obtained at 2-ft intervals to a depth of 12-ft below existing grade, at 13-ft to 15-ft and then on 5-ft centers to the boring completion depths. Upon drilling and sampling completion the borings were backfilled with soil-cuttings or cement grout as applicable.

Soil Sampling

Cohesionless soils were collected with the Standard Penetration Test (SPT) sampler driven 18-in by blows from a 140-lb hammer falling 30-in in accordance with the *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils* (ASTM D1586). The number of blows required to advance the sampler three (3) consecutive 6-in depths are recorded for each corresponding sample on the boring logs. The N-value, in blows per foot, is obtained from SPTs by adding the last two (2) blow count numbers. The consistency of cohesive soils and the relative density of cohesionless and semi-cohesionless soils can be inferred from the N-value. The samples obtained from the split-barrel sampler are visually classified, placed in moisture-sealed plastic bags and transported to our soil-mechanics laboratory. SPT sampling intervals and blow counts are presented on the project boring logs in Appendix B.

Boring Logs

Our interpretations of general subsurface soil and groundwater conditions at the soil boring locations are included on the boring logs. Our interpretations of the soil types throughout the boring depths and the locations of strata changes were based on visual classifications during field sampling and laboratory testing in accordance with the *Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)* (ASTM D2487) and the *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)* (ASTM D2488). The boring logs include the type and interval depth for each sample along with their corresponding field strength or resistance values. The project boring logs and a key to terms and symbols used on the boring logs are presented in Appendix B.

Groundwater Level Observations

Groundwater level observations are generally performed in the open boreholes during dry-auger drilling. Measurements are taken initially during dry-auger drilling when groundwater was first encountered and at 5-min intervals over a 15-min time period. Discussions on groundwater measurements are provided in the Site Conditions section of this report.



Laboratory Services



Laboratory tests were performed in general accordance with *ASTM International* standards. The types and brief descriptions of the laboratory tests performed are presented in Table 1 as follows.

Table 1: Laboratory Testing Program	
Test Description	Test Method
Water (Moisture) Content of Soil	ASTM D2216
Liquid Limit, Plastic Limit and Plasticity Index of Soils	ASTM D4318
Amount of Material in Soils Finer than No. 200 Sieve	ASTM D1140

Standard laboratory test results are presented on the soil boring logs included in Appendix B.

Site Conditions

Surface and Subsurface Conditions

Our interpretations of surface and subsurface conditions within the project site are based on information obtained from the project boring locations shown on TWE Drawing No. 23.61.014-1 provided in Appendix A of this report. The project site consists of undeveloped, generally flat terrain with sparse vegetation.

The generalized subsurface profile encountered at the soil borings consists of cohesionless sands (SP-SM) and silty sands (SM). Caliche mineral deposits consisting of calcareous nodules and fragments were noted from about 10-ft to 30-ft below existing grade. Soil consistency of the sand soils increased from very loose to very dense with depth. Details of the soil conditions encountered in the project soil borings can be found in Appendix B.

Groundwater Measurements

Groundwater was not encountered at the project borings during our field exploration program. It should be noted that fluctuations of the groundwater level on this project may be expected to occur seasonally as a result of rainfall, surface runoff, adjacent waterways, and immediate area construction activities. Installation of standpipe piezometers could be used to evaluate long-term groundwater conditions within the project area if needed.

Shallow Foundation Recommendations

Based on soil conditions encountered at the project site, shallow foundations such as conventional spread footings are generally considered suitable for supporting lightly-loaded to moderately-loaded structures provided some foundation movement can be tolerated due to settlement.

Shallow foundations must satisfy two (2) independent design criteria with respect to the existing and final site conditions. The first criterion is the foundation should be designed with an appropriate factor of safety against bearing capacity failure of the underlying soils. The second criterion is movement beneath the foundation system due to compression (consolidation) of the underlying soils must be within tolerable limits for the structure. Additional discussions regarding the use of shallow foundations for this project are provided in the Construction Considerations section.

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Shallow foundations are generally defined as foundations with the width greater than the embedment depth. Shallow foundations covered in this section include spread (square, rectangular, octagonal, circular and strip) footings. The recommendations for square footings presented in this report can be applied to circular and octagonal shape footings of the same diameter as that of a square footing width, and for rectangular footings having a length to width ratio of 2 or less. Typically, a footing can be treated as strip footing when it has a length to width ratio of 10 or more.

Foundation Depth and Allowable Net Bearing Pressure

We recommend conventional spread footings be placed at a depth of at least 2.5-ft below existing site grade within competent native cohesionless soils. For individual spread footings bearing on the competent native cohesionless soils, a net allowable bearing capacity of 1,700-psf can be used for design. The provided bearing capacity value is based on a maximum allowable settlement of 1-in and is applicable for spread footings with widths up to 10-ft.

Individual spread footings should have minimum widths of 24-in, respectively, even if the actual bearing pressure is less than the design value. We expect final design grade will be similar to existing site grade for areas where new shallow foundations will be installed.

The net bearing resistance is the pressure supported at the footing depth in excess of the soil overburden pressure at the same depth. Therefore, the weights of the foundation and backfill soils do not have to be added to the design loads since the weight of the soil replaced by the foundation is similar.

If loose, yielding, pumping or otherwise unsuitable soils are encountered during construction at the recommended foundation depths, the unsuitable materials should be over-excavated and replaced with properly-compacted structural fill materials or the foundation depth can be extended to the depth of competent soil.

Uplift Resistance

Resistance to vertical force (uplift) is provided with the weight of the concrete footing plus the weight of soil directly above the footing. Based on the recommended bearing depth, the foundations will bear above the static groundwater level. As such, we recommend total unit weights of 120-pcf and 150-pcf be used for cohesive backfill and concrete, respectively. We recommend a factor of safety of 1.2 be applied to the calculated ultimate uplift capacity.

Lateral Resistance

Resistance of spread footings to lateral loads can be provided by sliding resistance acting on the base of the foundation and by passive resistance of soil adjacent to the foundation. For design purposes, the sliding resistance and passive soil pressure can be assumed to be developed simultaneously.

A uniform allowable passive soil pressure of 750-psf for properly-compacted (minimum 95% of the standard Proctor compaction test) structural select cohesive fill against the foundation can be added to the footing lateral load capacity. We expect the allowable passive soil pressure will be developed at about 0.5-in of lateral foundation displacement. If lateral displacement tolerances are less than 0.5-in, about 50% of the allowable passive pressure can be used. The soil passive resistance in the upper 3-ft should be neglected unless concrete paving around the foundation is provided.

TWE



To compute the footings resistance to sliding, an ultimate value of coefficient of friction of 0.30 can be used for concrete footing bases in contact with the native sand soils. The ultimate base resistance can be computed as the total load acting on the footing base (net structural load, weight of the footing and the weight of the backfill soils above the footing base times the ultimate coefficient of friction. The computed ultimate base resistance should be reduced by a factor of safety of 2.0 to compute the allowable base resistance.

Resistance to Overturning Moments

The design of shallow footings subjected to vertical loads and overturning moments should incorporate a stability ratio as selected by the design engineer in accordance with the project design guidance documents or specifications. The stability ratio is defined as the ratio of the stabilizing moment to overturning moment. The maximum foundation contact pressure should not exceed the recommended net allowable soil bearing pressure provided above.

Settlement

Total settlement for lightly-loaded spread footings, with square widths on the order of 8-ft or less and designed using the “sustained” bearing pressure provided in this report, is estimated to be on the order of 1.0-inch. Differential settlement between newly installed spread footings could be on the order of about one-half (1/2) to two-thirds (2/3) of the total settlement across the foundation. For footings with widths greater than about 8-ft or with a clear spacing between footings less than the width of the largest foundations TWE should be contacted to evaluate settlement due to sustained loading on a case-by-case basis.

Below Grade Structures

We anticipate the project could include below grade structures including sumps. However, the locations and sizes of these structures were unknown at the time of this report. Therefore, we have developed soil design parameters for use with design of below-grade structures based on the subsurface conditions encountered in project site as presented in Appendix C.

In addition to lateral earth pressures imposed by the effective stress of soil, hydrostatic pressures acting on structures should also be considered for drained conditions. To facilitate analysis of below-grade structures, we have included design parameters which consider drained (long-term or effective stress) and undrained (short-term or total stress) conditions. All applicable design conditions should be considered for analysis of lateral earth pressures acting on below-grade structures. This section provides design recommendations for temporary and/or permanent below grade structures as well as recommendations for open-cut and/or braced excavations.

OSHA Considerations

According to Occupational Safety and Health Administration (OSHA) standard 29 CFR - Subpart 1926 – Subpart P, if excavations are deeper than 5-ft and the excavations are not performed in stable rock, the excavations must be sloped, shored or shielded. Protective systems for use in excavations greater than 20-ft in depth should be designed by a registered Professional Engineer in accordance with OSHA standard 29 CFR – Part 1926.652(b) and (c). Soil classification, per OSHA guidelines, is based on three (3) types of soils: Type A, Type B and Type C.

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A decorative label with a scalloped border containing the text 'EXHIBIT A' in red capital letters.

Open Cut Excavations

The open-cut excavation option is the most basic installation technique for below-grade structures. This approach provides the best access for construction and has the least effect on the design of the structure. The following considerations should be met in order to maintain safe and stable working conditions during open excavation operations.

Sloped excavations could be considered for below grade excavations. OSHA standards provide four (4) options for the design of sloped or benched excavations [29 CFR Part 1926.652(b)]. Option 2 of this standard is based on soil type strength. Based on the OSHA definitions, the soils encountered within the project site are interpreted as Type C. Temporary excavations in Type C soils should have side slopes no steeper than 1 ½H:1V or sloped angles no steeper than 34° from the horizontal.

Lateral Earth Pressures

For lateral pressures on a permanent structure, the controlling factors include the nature of the retained material, the drainage of the material, and the relative rigidity of the walls. Two (2) soil conditions exist for analyzing lateral pressures on walls, permanent (long-term, drained soil condition) and temporary (short-term, undrained soil condition). Recommended design soil parameters, including earth pressure coefficients (K_o , K_a , K_p), for retention system design for both conditions are provided in the table in Appendix C.

The design of the permanent earth retention structures should consider long-term lateral earth and hydrostatic pressures and the hydrostatic uplift pressures at the base of the structures if the bottom of the structure is below the static groundwater level. We anticipate the below grade structures for this project will remain above the static groundwater level based on findings from our field program. Surcharge loads behind the walls, if present, should be included by considering a lateral uniform load equal to the lateral earth pressure coefficient times the vertical uniform surcharge load.

Temporary (Short-Term) Lateral Earth Pressure Coefficients

Temporary shoring to facilitate construction of below grade structures, could consist of cantilevered walls or braced walls. A cantilever wall such as a sheet pile wall derives support from the passive resistance below the excavation subgrade to support the active pressures from the soil and hydrostatic pressures above the excavation bottom without an anchorage. This type of wall is suitable for heights up to about 15-ft and is more practical when constructed in stiff clays or granular soils. Internally braced flexible walls can be braced laterally as the excavation proceeds. This restrains lateral movement of the soil and causes loads on the braces which resist those expected from active earth pressures. Braces can be either long raking braces or relatively short horizontal cross braces between opposing walls or other bracing configurations. Recommended undrained soil parameters provided on the table in Appendix C should be used for design of temporary shoring systems.

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Permanent (Long-Term) Lateral Earth Pressure Coefficients

Permanent walls should be designed using long-term (drained) soil parameters. The recommended parameters for long-term (drained) conditions were based on soil friction angles and effective cohesion values. For rigid or non-yielding walls, at-rest earth pressure coefficients should be applicable. For yielding walls, active and passive earth pressure coefficients should be considered.

We anticipate once temporary excavation support to facilitate construction of the below grade structure is removed then backfill will be placed within only a narrow zone between the permanent wall and in-situ soils. In such situations, the design soil parameters for in-situ soils provided in Appendix C should be used for design.

Where excavations will be made as a sloped cut with temporary slopes on a 1(H):1(V) slope or flatter, lateral earth pressures exerted on permanent walls from backfill behind the wall can be calculated by multiplying the equivalent fluid density of the backfill type by the depth below ground surface. Equivalent fluid densities for various backfill materials and compaction efforts are outlined in Table 2 as follows. The equivalent fluid densities outlined for the higher compaction effort should be used for backfill with surcharge.

Table 2: At-Rest Earth Pressure Coefficients and Equivalent Fluid Densities Backfill Soil Parameters – Non-Yielding Walls			
Backfill Type	At-Rest Earth Pressure Coefficient (K₀)	Equivalent Fluid Density (psf/ft)	
		Above Water Table	Below Water Table*
Free Draining Granular Backfill	0.44	53	87
Cohesive Backfill	0.56	67	95

*These magnitudes include a water component, if applicable.
 The above values assume drained (long-term) condition and level backfill.
 The EFD values were estimated assuming a backfill unit weight of 120-psf.
 Surcharge loads such as vehicular and equipment loads should be separately included in the analysis.

Construction Considerations

The soils exposed at the base of deep excavations could be protected from disturbance by the installation of a lean concrete seal slab, flowable fill, or other suitable methods. All excavations made for the construction of below-grade structures should conform to OSHA guidelines. A surcharge pressure would be exerted by the excavator on the ground surface adjacent to the sump during construction activities. Typical surcharge loads from construction equipment are on the order of 200-psf to 500-psf. Surcharge loads other than those caused by typical construction equipment, if applicable, should also be considered for design.

Design and construction of temporary facilities including excavation retention systems are the responsibility of the Contractor. TWE provides excavation planning comments and suggestions for strictly informational purposes.



To avoid surcharging the temporary shoring, stockpiling of materials immediately adjacent to the excavation walls should be prohibited. We recommend stockpiled materials be placed away from the excavation a distance of at least 6-ft from the temporary shoring system. Experienced personnel who can assess the performance of the retention system being used should monitor all excavations and retaining structures on a continuous basis. A competent supervisor or inspector should be provided by the Contractor to oversee these operations during construction.

Construction Considerations

Site Preparation

We anticipate the proposed pond will have an excavated depth of 10-ft below grade with perimeter berms extending about 5-ft above existing grade. Site preparation for the project site should include stripping all surface vegetation, topsoil, deleterious and/or weak soils, to expose a competent subgrade.

In areas where berms, structures or pavements will be constructed, the exposed soil subgrade should consist of competent, natural stiff clay and be proof-rolled with at least a 20-ton pneumatic roller, loaded dump truck or equivalent to detect weak areas. Weak areas are generally defined as locations that pump and/or rut in excess of about 2-inches or as deemed unsatisfactory based on observations of the proof-roll process by the Geotechnical Engineer-of-Record or their qualified representative. Upon identification, weak areas should be removed down to competent material and replaced with properly compacted structural clay fill.

Based on our findings in the soil borings, the exposed subgrade will contain cohesionless sand soils which have the potential to become unstable and yield when excessively dry as was evident during our field program. Remediation of the exposed subgrade soils could include removal and replacement with select fill or chemical stabilization of these soils will likely be necessary during construction.

Subgrade Stabilization

To facilitate construction activities, it may be efficient to chemically stabilize the exposed subgrade to provide a “working table” capable of supporting subsequent backfill activities. Although use of a stabilization agent is not a guarantee or catch-all to ensure site preparation can be properly accomplished in any weather condition, this procedure would enhance the likelihood that site preparation could be performed efficiently in a timely manner.

The exposed cohesionless subgrade soils should be stabilized with proper spreading and mixing in accordance with the sequencing in accordance with Item 265 of the 2016 TxDOT Specifications for Lime-Fly Ash Treatment.

TWE recommends the optimum lime/fly ash content be defined as the amount of blended agent necessary to achieve a 3 to 5 day compressive strength of at least 20 psi for a homogeneous mixture representative of the exposed subgrade at the time of construction. The exposed subgrade soils can likely be stabilized using 3% lime and 7% fly ash by dry weight of soil. Confirmation tests for the optimum blended agent content should be performed at the time of construction as directed by the Geotechnical Engineer on several representative samples remolded and tested in the laboratory prior to stabilization activities. Once properly spread and mixed per Item 265, the stabilized subgrade

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should be compacted at 1% dry to 3% wet of optimum moisture to at least 95% of the Standard Proctor maximum dry density (*ASTM D 698*) prior to commencing with further backfill activities.

Pond Containment Berms

Typically, general clay fill of moderate to high plasticity and low permeability is considered for construction of containment systems. Clay soils with a liquid limit (LL) of 30 or greater and a minimum plasticity index (PI) of 15 should meet low permeability criteria for a containment berm. We understand re-use of the excavated soils from construction of the pond is desired. It should be noted the on-site soils are highly permeable are highly dispersive cohesionless sands (SM, SM-SP, and SP). These soils have the potential to trap water and create seepage paths.

Containment levee material should be free of roots, debris, organic matter or other deleterious materials. The clay berm material should be placed in thin lifts, not exceeding 8-in loose measure, moisture-conditioned between $\pm 3\%$ of optimum moisture content and compacted to at least 95% of the maximum dry density as determined by ASTM D698.

Prior to any filling or backfilling operations, samples or proposed berm materials should be obtained for laboratory classification, moisture-density relationship and permeability testing. These tests will provide a basis for evaluation of the materials in comparison to the design specifications and fill and backfill compaction by in-place density testing.

A representative of TWE's Geotechnical Engineer should perform sufficient in-place density tests during the filling and backfilling operations to verify that proper levels of compaction are being obtained.

Side slopes of 1(V):4(H) should be considered by the Engineer for the proposed containment berms if the existing cohesionless soils are to be used for construction. The side slopes could be steepened to 1(V):3(H) if the existing onsite materials are stabilized with a lime/fly ash blend as discussed herein.

Side slopes of clay soils steeper than 1(V):3(H) could have the potential for instability and shallow surface slides especially with highly dispersive soils such as those encountered within the site. If side slopes steeper than 1(V):3(H) are planned once the containment berm system arrangement is finalized, TWE should be allowed to review the final levee layout and typical cross-section and provide comments. The levee side slopes should be protected from erosion due to normal surface runoff and temporary inundation by varying water levels within the tank containment systems.

Structural Clay Fill

Structural clay fill needed as backfill and/or fill for this project other than for containment berm construction should consist of a clean sandy lean clay (CL) or lean clay with sand (CL) material with a liquid limit (LL) of 40 or less and a plasticity index (PI) from 10 to 20. Structural clay fill should be placed in thin lifts, moisture conditioned between -1% and +3% of optimum moisture content and compacted to at least 95% of the maximum dry density as determined by the Standard Test Method for Laboratory Compaction Characteristics of Soil using Standard Efforts (*ASTM D 698*).



Prior to any filling or backfilling operations, samples of the proposed material sources to be used should be obtained for laboratory classification and moisture-density relationship testing. These tests will provide a basis for evaluation of fill and backfill compaction by in-place density testing. A representative of the Geotechnical Engineer should perform sufficient in-place density tests during the filling and backfilling operations to verify proper levels of compaction are being obtained.

Shallow Foundation Construction

The performance of shallow foundation systems associated with the project will be highly dependent upon the quality of construction. Thus, we recommend shallow foundation construction be monitored by a representative of the Geotechnical Engineer to help evaluate foundation construction in comparison to the information and recommendations provided in this report. TWE would be pleased to develop a plan for shallow foundation monitoring to be incorporated in the overall quality control program.

Spread or strip footings could be either open-cut and formed or neatly-excavated. Excavations for shallow foundations should be made with a smooth-mouthed bucket or hand labor. If unusual or questionable soil conditions are encountered while performing foundation excavations, the Geotechnical Engineer should be contacted for appropriate recommendations.

Foundation excavation bottoms should be level, suitably benched and free of any loose, wet or weak soils that have been impacted by surface runoff, groundwater seepage or the construction process. The bearing soils should be checked for competency prior to placing formwork and reinforcing steel. Remedial actions, such as removal and replacement with structural clay fill or lean concrete, could be required as directed by the Geotechnical Engineer.

Since shallow foundations will be placed above the static groundwater level within the project site, we expect foundation excavations can be performed in the dry. Perched water infiltration into shallow foundation excavations, if encountered, should be pumped out and not allowed to deteriorate the foundation soils.

The soils exposed in excavations for shallow foundations should be protected from disturbance prior to and during foundation construction. Relatively thin seal slabs of lean concrete could be placed over the exposed soils if the excavation will remain open for more than one (1) working day. If any of the foundations are formed, narrow voids between the footing and the excavation walls could be backfilled with cement-stabilized sand or pumpable flowable fill if proper placement and compaction of backfill soils is not feasible.

Site Drainage

Maintaining the site to prevent ponding and/or standing water during and following construction is essential. Ponding of surface runoff could cause construction delays and/or inhibit site access. If the subgrade materials become wet and soft, consideration can be given to either drying efforts or removal/replacement of the wet material with structural fill. Allowing water to pond onsite could result in soil swelling and/or softening thereby resulting in high maintenance costs and potential failure. We recommend positive drainage be established to transmit water away from the site so that perched or ponded water does not collect adjacent to any new foundations.



Construction Monitoring



The performance of the foundations for this project will be highly dependent on the quality of construction. Thus, it is recommended that construction activities be monitored by an experienced laboratory proficient in quality control testing/inspection procedures. TWE would be pleased to assist in the development of a plan for construction monitoring to be incorporated in the overall quality control program.

Construction surveillance is recommended and has been assumed in preparing our recommendations. These field services are required to check for changes in conditions that may result in modifications to our recommendations. Performance of the foundation and pavement systems will be directly related to the Contractor’s adherence to the recommendations in this report and the project plans and specifications. Testing should be provided for all site preparation, foundation concrete pours, and containment berm construction activities. TWE would be pleased to provide these services to verify that construction has been performed in accordance with the intentions of this report upon request.

Limitations

This report has been prepared for the exclusive use of LJA Energy and their project team for specific application to the Alpha Wolf Recycle Pond Project in Lea County, New Mexico. This report has been prepared in accordance with generally accepted geotechnical engineering practices common to the local area. No other warranty, expressed or implied, is made.

The project borings performed within the site have been used for the basis of the geotechnical design and construction recommendations provided in this revised report. The soil borings indicate subsurface conditions only at the specific locations and at the times they were performed and only to the depths penetrated. The soil borings do not necessarily reflect strata variations that could exist at other locations within the site.

The validity of the recommendations provided is based in part on assumptions about the stratigraphy made by the Geotechnical Engineer. Such assumptions can be confirmed only during construction and installation of the project structures and components. Our recommendations presented in this report must be reevaluated if subsurface conditions during construction are different from those described in this report.

If any changes in the nature, design or location of the project are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed, and the conclusions modified or verified in writing by TWE. TWE is not responsible for any claims, damages or liability associated with interpretation or reuse of the subsurface data or engineering analyses without the expressed written authorization of TWE.



Closing



We appreciate the opportunity to work with you on this phase of the project and we look forward to the opportunity of providing additional services as the project progresses. If you have any questions regarding this report or if we can be of further assistance, please contact us.

Sincerely,

TOLUNAY-WONG ENGINEERS, INC.

Patrick Reilly, P.E.*
Regional Manager – DFW Metroplex

Patrick J. Kenney, P.E.**
Sr. Vice President

*Texas

**New Mexico Lic. No. 24751

Appendix A – Boring Location Plan

Appendix B – Soil Boring Logs and a Key to Symbols and Terms Used on the Logs

Appendix C – Soil Design Parameters for Below Grade Structures



APPENDIX A
BORING LOCATION PLAN



APPENDIX B

SOIL BORING LOGS AND A KEY TO SYMBOLS AND TERMS USED ON THE LOGS

LOG OF BORING TB-1



PROJECT: Alpha Wolf Recycle Pond
Lea County, New Mexico

CLIENT: LJA Energy, Inc.
Beaumont, Texas

ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 32° 42' 00.59" W 103° 43' 36.92"	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
		SURFACE ELEVATION: DRILLING METHOD: Dry Augered: 0' to 20' Wash Bored: -- to --												
0		Very loose, brown POORLY GRADED SAND with SILT (SP-SM)		1/6" 1/6" 1/6"	0								5	
		-becomes loose at 2.5'		1/6" 2/6" 5/6"										
5		-becomes medium dense at 4.5'		5/6" 5/6" 6/6"	1		NP	NP						
				5/6" 6/6" 9/6"										
10		-with calcareous nodules and fragments from 8.5' to 20'		11/6" 13/6" 15/6"										
		-with gravel from 10.5' to 20'		16/6" 22/6" 25/6"										
15		-becomes very dense		14/6" 21/6" 32/6"	1									10
20			Bottom @ 20'		17/6" 25/6" 28/6"									
25														
30														
35														

COMPLETION DEPTH: 20 ft
DATE BORING STARTED: 06/15/2023
DATE BORING COMPLETED: 06/15/2023
LOGGER: W. Sique
PROJECT NO.: 23.61.014

NOTES: Groundwater was not encountered during dry auger drilling. Borehole was backfilled with soil cuttings.

LOG OF BORING TB-2

PROJECT: Alpha Wolf Recycle Pond
Lea County, New Mexico

CLIENT: LJA Energy, Inc.
Beaumont, Texas



ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 32° 42' 00.64" W 103° 43' 28.25"	SURFACE ELEVATION:	DRILLING METHOD: Dry Augered: 0' to 20' Wash Bored: -- to --	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED	
MATERIAL DESCRIPTION																		
0					Very loose, brown POORLY GRADED SAND (SP)		1/6" 2/6" 2/6"											
					-becomes loose at 2.5'		1/6" 4/6" 2/6"	0		NP	NP					4		
5					-becomes medium dense at 6.5'		4/6" 3/6" 3/6"											
					Medium dense, brown SILTY SAND (SM), with calcareous nodules and fragments		8/6" 9/6" 9/6"	2									16	
10					-becomes very dense at 13.5'		11/6" 19/6" 22/6"											
15							18/6" 27/6" 30/6"											
20					Bottom @ 20'		23/6" 25/6" 33/6"	1									12	
25																		
30																		
35																		

COMPLETION DEPTH: 20 ft
DATE BORING STARTED: 06/15/2023
DATE BORING COMPLETED: 06/15/2023
LOGGER: W. Sique
PROJECT NO.: 23.61.014

NOTES: Groundwater was not encountered during dry auger drilling. Borehole was backfilled with soil cuttings.

LOG OF BORING TB-3

PROJECT: Alpha Wolf Recycle Pond
Lea County, New Mexico

CLIENT: LJA Energy, Inc.
Beaumont, Texas



ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 32° 41' 57.43" W 103° 43' 32.72"	(F) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
		SURFACE ELEVATION: DRILLING METHOD: Dry Augered: 0' to 80' Wash Bored: -- to --												
0	[Symbol: Sand with silt]	Loose, brown POORLY GRADED SAND (SP)		2/6" 3/6" 5/6"										
5		-becomes medium dense at 4.5'		4/6" 5/6" 5/6"	0		NP	NP					4	
10	[Symbol: Sand with silt]	Medium dense, brown POORLY GRADED SAND with SILT (SP-SM)		10/6" 12/6" 15/6"									7	
15		-becomes reddish brown at 8.5'		8/6" 11/6" 13/6"	0									
20	[Symbol: Silty sand]	Dense, reddish brown SILTY SAND (SM)		13/6" 15/6" 20/6"	1		NP	NP					15	
25		-with calcareous nodules and fragments from 13.5' to 33.5'		15/6" 26/6" 34/6"										
30	[Symbol: Silty sand]			20/6" 25/6" 31/6"										
35		-becomes light brown at 33.5'		23/6" 50/6"	1								12	
	[Symbol: Silty sand]			31/6" 50/6"										
				10/6" 12/6" 17/6"	2								21	

COMPLETION DEPTH: 80 ft
DATE BORING STARTED: 06/14/2023
DATE BORING COMPLETED: 06/15/2023
LOGGER: W. Sigue
PROJECT NO.: 23.61.014

NOTES: Groundwater was not encountered during dry auger drilling. Borehole was backfilled with cement grout.

LOG OF BORING TB-3

PROJECT: Alpha Wolf Recycle Pond
Lea County, New Mexico

CLIENT: LJA Energy, Inc.
Beaumont, Texas



ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 32° 41' 57.43" W 103° 43' 32.72"	SURFACE ELEVATION:	DRILLING METHOD: Dry Augered: 0' to 80' Wash Bored: -- to --	(F) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED					
				MATERIAL DESCRIPTION																			
	35			Dense, light brown SILTY SAND (SM) -becomes reddish brown at 43.5'																			
	40								8/6" 7/6" 9/6"														
	45								10/6" 10/6" 13/6"	1										21			
	50								8/6" 15/6" 15/6"														
	55				6/6" 11/6" 11/6"																		
	60			Dense, reddish brown POORLY GRADED SAND with SILT (SP-SM)																			
	65								9/6" 16/6" 20/6"	0													8
	70								12/6" 15/6" 18/6"														
					7/6" 18/6" 22/6"																		

COMPLETION DEPTH: 80 ft
 DATE BORING STARTED: 06/14/2023
 DATE BORING COMPLETED: 06/15/2023
 LOGGER: W. Sigue
 PROJECT NO.: 23.61.014

NOTES: Groundwater was not encountered during dry auger drilling. Borehole was backfilled with cement grout.

LOG OF BORING TB-3

PROJECT: Alpha Wolf Recycle Pond
Lea County, New Mexico

CLIENT: LJA Energy, Inc.
Beaumont, Texas



ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 32° 41' 57.43" W 103° 43' 32.72"	SURFACE ELEVATION:	DRILLING METHOD: Dry Augered: 0' to 80' Wash Bored: -- to --	(F) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
			MATERIAL DESCRIPTION														
75	X	N	Dense, reddish brown POORLY GRADED SAND with SILT (SP-SM)				6/6" 20/6" 17/6"										
80	X	N				Bottom @ 80'				9/6" 13/6" 23/6"							
85																	
90																	
95																	
100																	
105																	

COMPLETION DEPTH: 80 ft
 DATE BORING STARTED: 06/14/2023
 DATE BORING COMPLETED: 06/15/2023
 LOGGER: W. Sigue
 PROJECT NO.: 23.61.014

NOTES: Groundwater was not encountered during dry auger drilling. Borehole was backfilled with cement grout.

LOG OF BORING TB-4

PROJECT: Alpha Wolf Recycle Pond
Lea County, New Mexico

CLIENT: LJA Energy, Inc.
Beaumont, Texas



ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 32° 41' 53.67" W 103° 43' 36.91"	SURFACE ELEVATION:	DRILLING METHOD: Dry Augered: 0' to 20' Wash Bored: -- to --	(P) POCKET PEN (tsf) (T) TORVANE (tsf)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LAB MINI VANE SHEAR (tsf)	COMPRESSIVE STRENGTH (tsf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED						
				MATERIAL DESCRIPTION																				
	0	X	[Symbol]	Loose, brown POORLY GRADED SAND (SP) -becomes medium dense at 6.5'					3/6"															
									3/6"															
									2/6"															
									3/6"															
	5								2/6"					0		NP	NP						3	
									5/6"															
									5/6"															
									6/6"															
									5/6"															
									9/6"															
	10			Very dense, light brown POORLY GRADED SAND with SILT (SP-SM), with calcareous nodules and fragments					11/6"															
											13/6"													
											15/6"													
											16/6"			NP	NP									
							21/6"																	
							24/6"																	
	15			Very dense, light brown POORLY GRADED SAND with SILT (SP-SM), with calcareous nodules and fragments					15/6"															
											20/6"													
							31/6"																	
	20			Bottom @ 20'					23/6"	1														
											25/6"													
											31/6"											10		
	25			Bottom @ 20'																				
	30			Bottom @ 20'																				
	35			Bottom @ 20'																				

COMPLETION DEPTH: 20 ft
 DATE BORING STARTED: 06/15/2023
 DATE BORING COMPLETED: 06/15/2023
 LOGGER: W. Sique
 PROJECT NO.: 23.61.014

NOTES: Groundwater was not encountered during dry auger drilling. Borehole was backfilled with soil cuttings.

KEY TO SYMBOLS AND TERMS USED ON BORING LOGS FOR SOIL

EXHIBIT A

Most Common Unified Soil Classifications System Symbols

	Lean Clay (CL)		Well Graded Sand (SW)
	Lean Clay w/ Sand (CL)		Well Graded Sand w/ Gravel (SW-GM)
	Sandy Lean Clay (CL)		Poorly Graded Sand (SP)
	Fat Clay (CH)		Poorly Graded Sand w/ Silt (SP-SM)
	Fat Clay w/ Sand (CH)		Silt (ML)
	Sandy Fat Clay (CH)		Elastic Silt (MH)
	Silty Clay (CL-ML)		Elastic Silt w/ Sand (MH-SP)
	Sandy Silty Clay (CL-ML)		Silty Gravel (GM)
	Silty Clayey Sand (SC-SM)		Clayey Gravel (GC)
	Clayey Sand (SC)		Well Graded Gravel (GW)
	Sandy Silt (ML)		Well Graded Gravel w/ Sand (SP-GM)
	Silty Sand (SM)		Poorly Graded Gravel (GP)
	Silt w/ Sand (ML)		Peat

Sampler Symbols

Meaning

	Pavement core
	Thin-walled tube sample
	Standard Penetration Test (SPT)
	Auger sample
	Sampling attempt with no recovery
	TxDOT Cone Penetrometer Test

Field Test Data

2.50	Pocket penetrometer reading in tons per square foot
(T)1.13	Torvane Measurement in tons per square foot
8/6"	Blow count per 6 - in. interval of the Standard Penetration Test
	Observed free water during drilling
	Observed static water level

Laboratory Test Data

Wc (%)	Moisture content in percent
Dens. (pcf)	Dry unit weight in pounds per cubic foot
Qu (tsf)	Unconfined compressive strength in tons per square foot
UU (tsf)	Compressive strength under confining pressure in tons per square foot
Str. (%)	Strain at failure in percent
LL	Liquid Limit in percent
PI	Plasticity Index
#200 (%)	Percent passing the No. 200 mesh sieve
()	Confining pressure in pounds per square inch
*	Slickensided failure
**	Did not fail @ 15% strain

Miscellaneous Materials

	Fill		Concrete		Asphalt and/or Base
--	------	--	----------	--	---------------------

RELATIVE DENSITY OF COHESIONLESS & SEMI-COHESIONLESS SOILS

The following descriptive terms for relative density apply to cohesionless soils such as gravels, silty sands, and sands as well as semi-cohesive and semi-cohesionless soils such as sandy silts, and clayey sands.

Relative Density	Typical N ₆₀ Value Range*
Very Loose	0-4
Loose	5-10
Medium Dense	11-30
Dense	31-50
Very Dense	Over 50

* N₆₀ is the number of blows from a 140-lb weight having a free fall of 30-in. required to penetrate the final 12-in. of an 18-in. sample interval, corrected for field procedure to an average energy ratio of 60% (Terzaghi, Peck, and Mesri, 1996).

CONSISTENCY OF COHESIVE SOILS

The following descriptive terms for consistency apply to cohesive soils such as clays, sandy clays, and silty clays.

Typical Compressive Strength (tsf)	Consistency	Typical SPT "N ₆₀ " Value Range**
q _u < 0.25	Very soft	≤ 2
0.25 ≤ q _u < 0.50	Soft	3-4
0.50 ≤ q _u < 1.00	Firm	5-8
1.00 ≤ q _u < 2.00	Stiff	9-15
2.00 ≤ q _u < 4.00	Very Stiff	16-30
q _u ≥ 4.00	Hard	≥ 31

** An "N₆₀" value of 31 or greater corresponds to a hard consistency. The correlation of consistency with a typical SPT "N₆₀" value range is approximate.





APPENDIX C

SOIL DESIGN PARAMETERS FOR BELOW GRADE STRUCTURES

Tolunay-Wong Engineers, Inc.

2521 East Loop 820 North
Fort Worth, Texas 76118
Phone (817) 616-3284 - www.tweinc.com

Soil Design Parameters for Below Grade Structures																		
Soil Layer	Soil Description	Depth Range (ft)	γ (pcf)	γ' (pcf)	Undrained Parameters (Short-Term)						Drained Parameters (Long-Term)							
					c (psf)	ϕ (°)	δ (°)	a (psf)	K_a	K_p	K_o	c' (psf)	ϕ (°)	δ (°)	a (psf)	K_a	K_p	K_o
1	Sand	0 to 2	115	115	--	27	14	--	0.38	2.66	0.55	--	27	14	--	0.38	2.66	0.55
2	Sand	2 to 4	115	115	--	30	15	--	0.33	3.00	0.50	--	30	15	--	0.33	3.00	0.50
3	Sand	4 to 7	115	115	--	35	18	--	0.27	3.69	0.43	--	35	18	--	0.27	3.69	0.43
4	Sand	7 to 15	115	115	--	40	20	--	0.22	4.60	0.36	--	40	20	--	0.22	4.60	0.36
5	Sand	35 to 55	115	115	--	32	16	--	0.31	3.25	0.47	--	32	16	--	0.31	3.25	0.47
6	Sand	55 to 80	115	115	--	35	18	--	0.27	3.69	0.43	--	35	18	--	0.27	3.69	0.43

Legend: γ = Total Unit Weight γ' = Submerged Unit Weight

c = Cohesion

 ϕ = Friction Angle δ = Angle of Wall/Soil Friction (Steel)

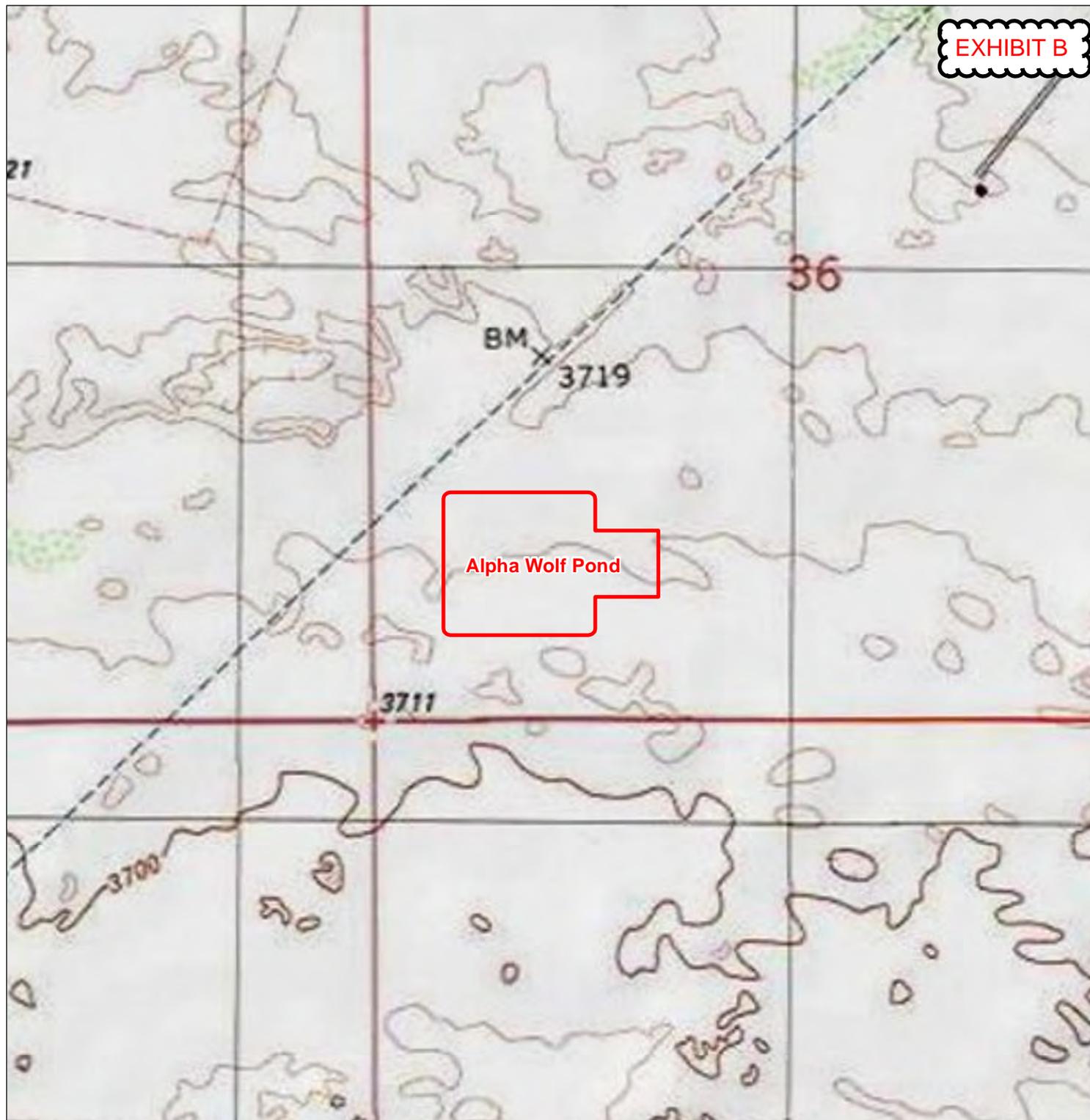
a = Adhesion

 K_a = Active Earth Pressure Coefficient K_p = Passive Earth Pressure Coefficient K_o = At-Rest Earth Pressure Coefficient**Notes:**

1) Depths are from existing grade at the time soil borings were performed

2) References used in the development of the soil parameters were USACE EM 1110-2-2504 and NAVFAC DM-7.2.

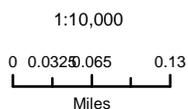
EXHIBIT A



Avant Operating, LLC

Alpha Wolf Pond Topographic Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



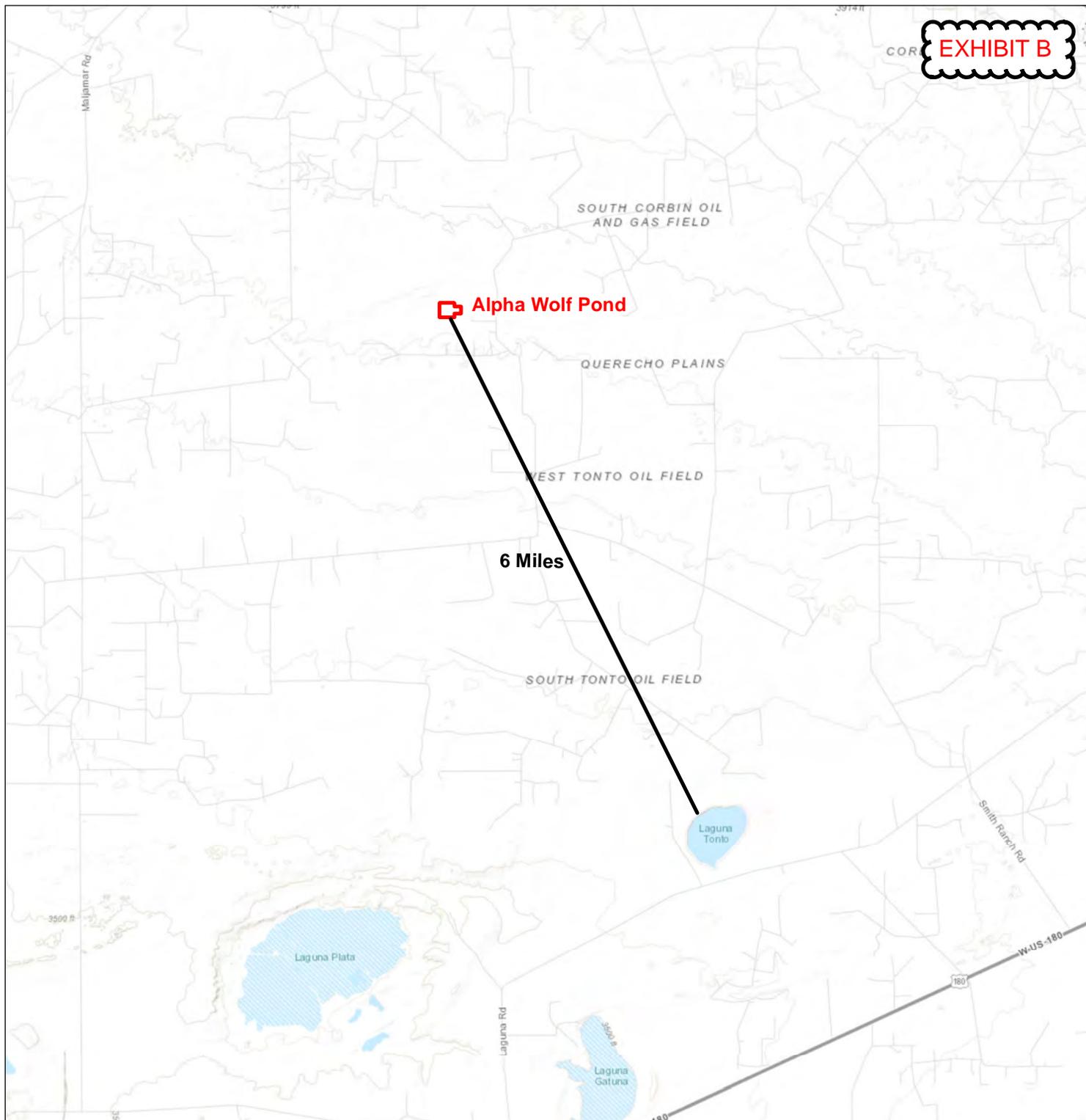
NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., on Oct 18, 2023
for Avant Operating, LLC



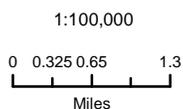
EXHIBIT B



Avant Operating, LLC

Alpha Wolf Pond Significant Water Proximity Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



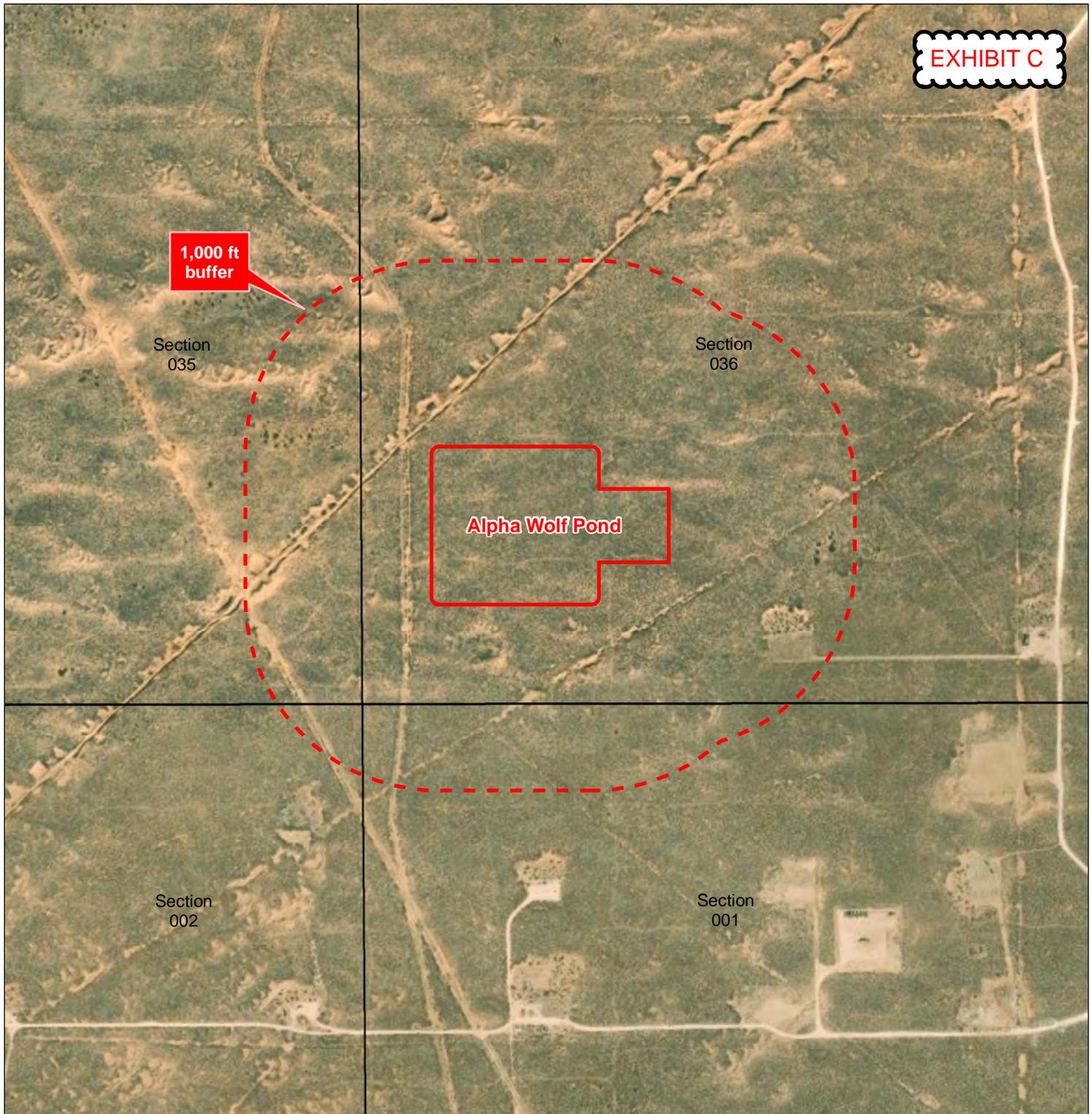
NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



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for Avant Operating, LLC



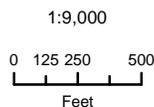
EXHIBIT C



Avant Operating, LLC

Alpha Wolf Pond 1,000 ft Proximity Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



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for Avant Operating, LLC

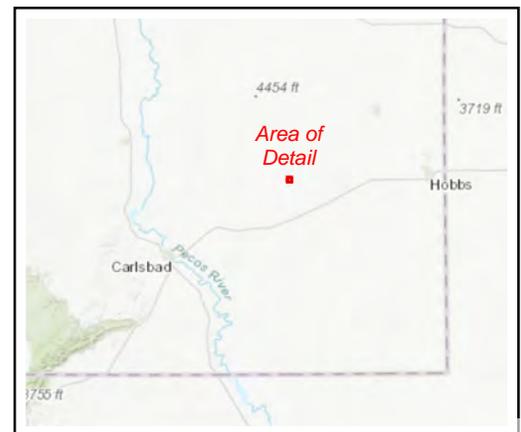
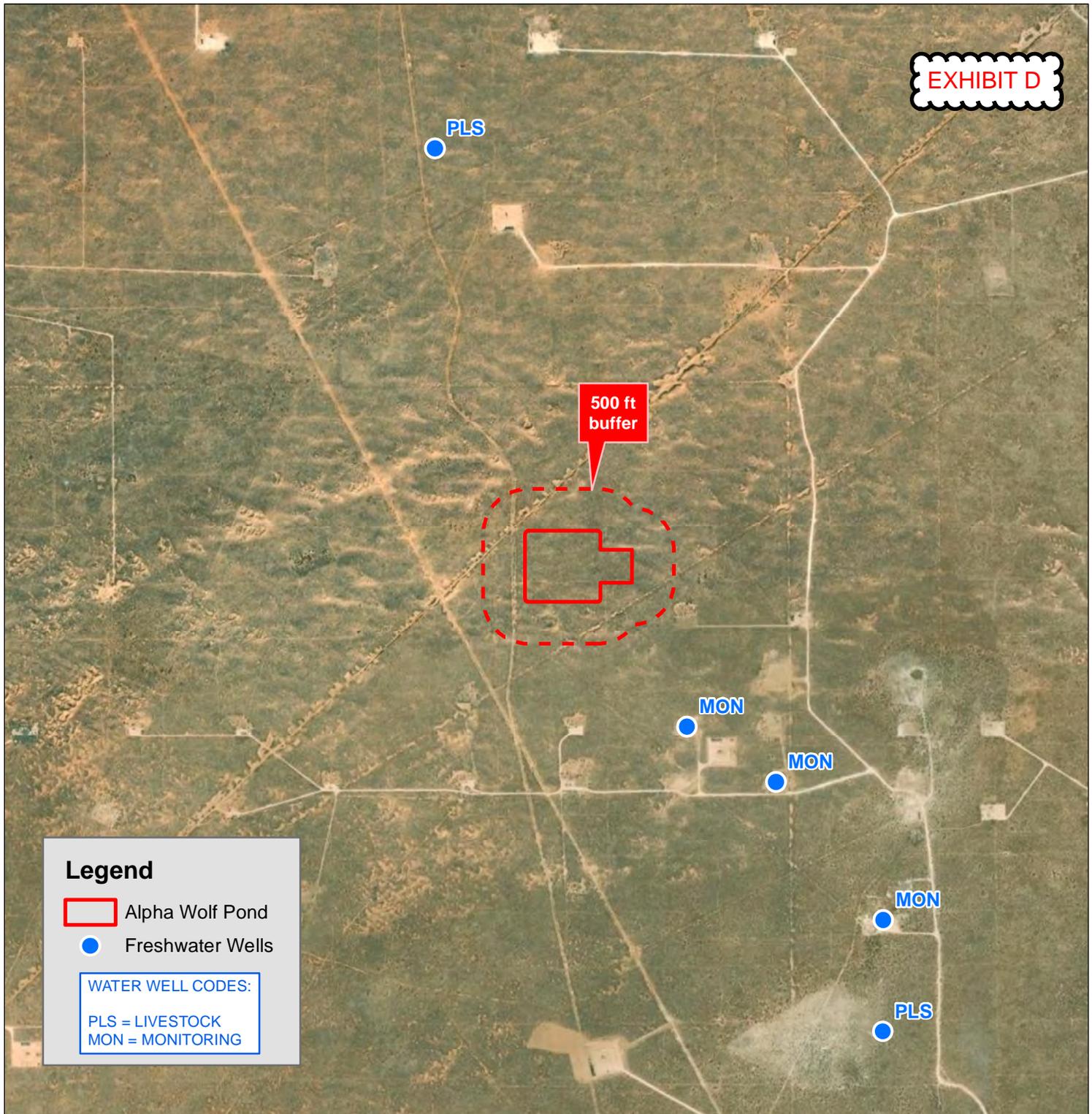


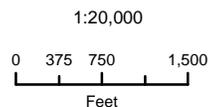
EXHIBIT D



Avant Operating, LLC

Alpha Wolf Pond Water Well Proximity Map

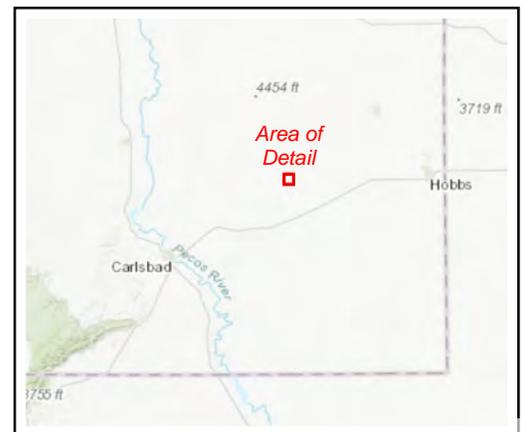
Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., on Oct 18, 2023
for Avant Operating, LLC





New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,
O=orphaned,
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tw	Rng	X	Y	Distance	Depth	Well	Depth	Water	Column
CP00812 POD1		CP	LE	4	4	01	19S	32E	620623	3616973*		2108	200				
CP00677		CP	LE	1	1	26	18S	32E	617750	3621373*		3146	700				

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 2

UTM NAD83 Radius Search (in meters): CENTER OF NORTH POND

Easting (X): 619448

Northing (Y): 3618724

Radius: 3220

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/5/23 3:59 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,
O=orphaned,
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth	Well	Depth	Water	Column
CP00812 POD1		CP	LE	4	4	01	19S	32E	620623	3616973*		2003	200				

Average Depth to Water: --
Minimum Depth: --
Maximum Depth: --

Record Count: 1

UTMNAD83 Radius Search (in meters): CENTER OF SOUTH POND

Easting (X): 619449

Northing (Y): 3618596

Radius: 3220

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/5/23 4:02 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

EXHIBIT D

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,
O=orphaned,
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth	WellDepth	Water Column
CP00812 POD1		CP	LE	4	4	01		19S	32E	620623	3616973*	1952		200	

Average Depth to Water: --
Minimum Depth: --
Maximum Depth: --

Record Count: 1

UTMNAD83 Radius Search (in meters): CENTER OF PAD

Easting (X): 619642

Northing (Y): 3618661

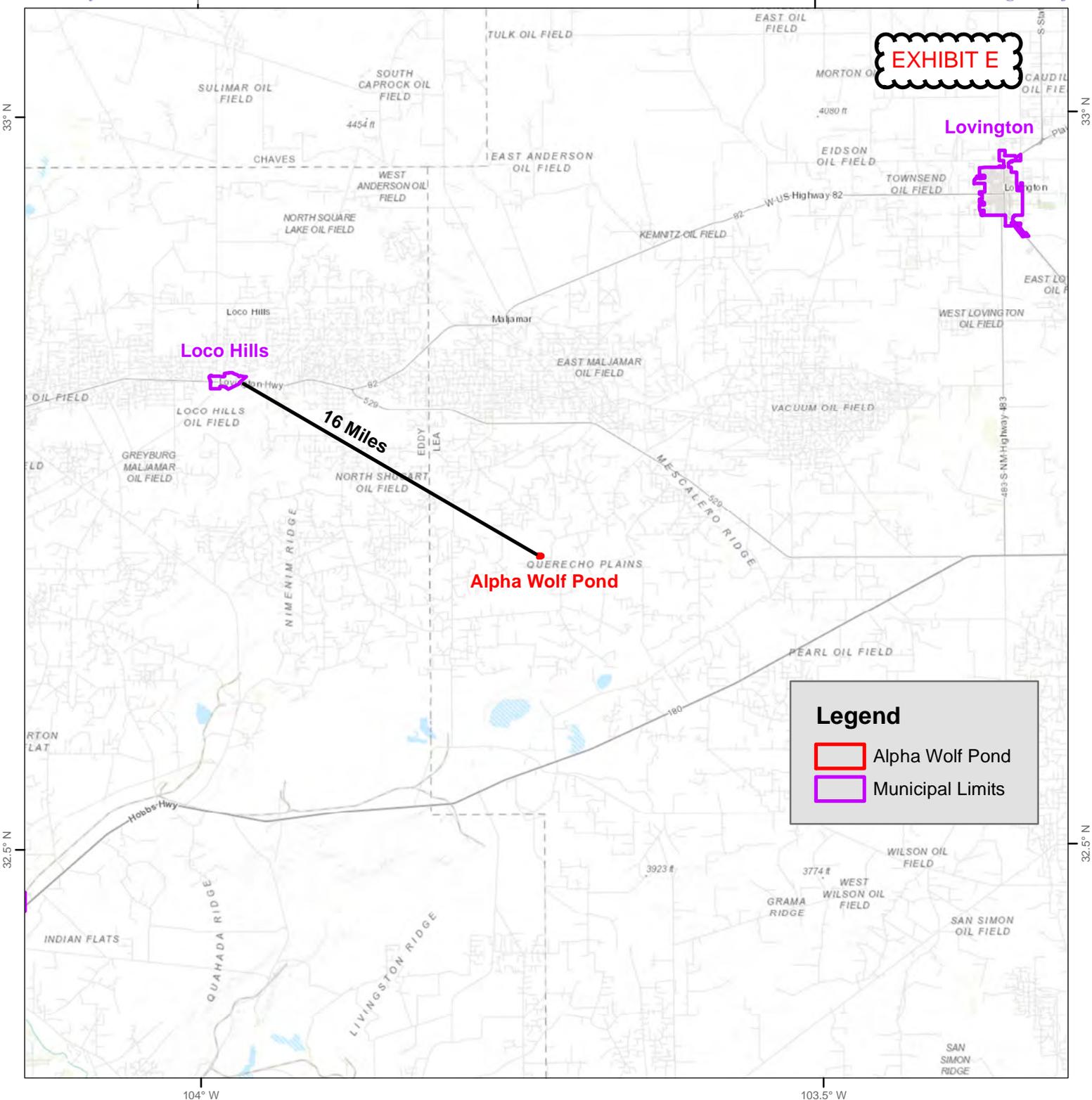
Radius: 3220

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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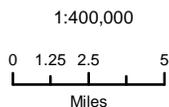
WATER COLUMN/ AVERAGE DEPTH TO WATER



Avant Operating, LLC

Alpha Wolf Pond Municipal Boundary Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico

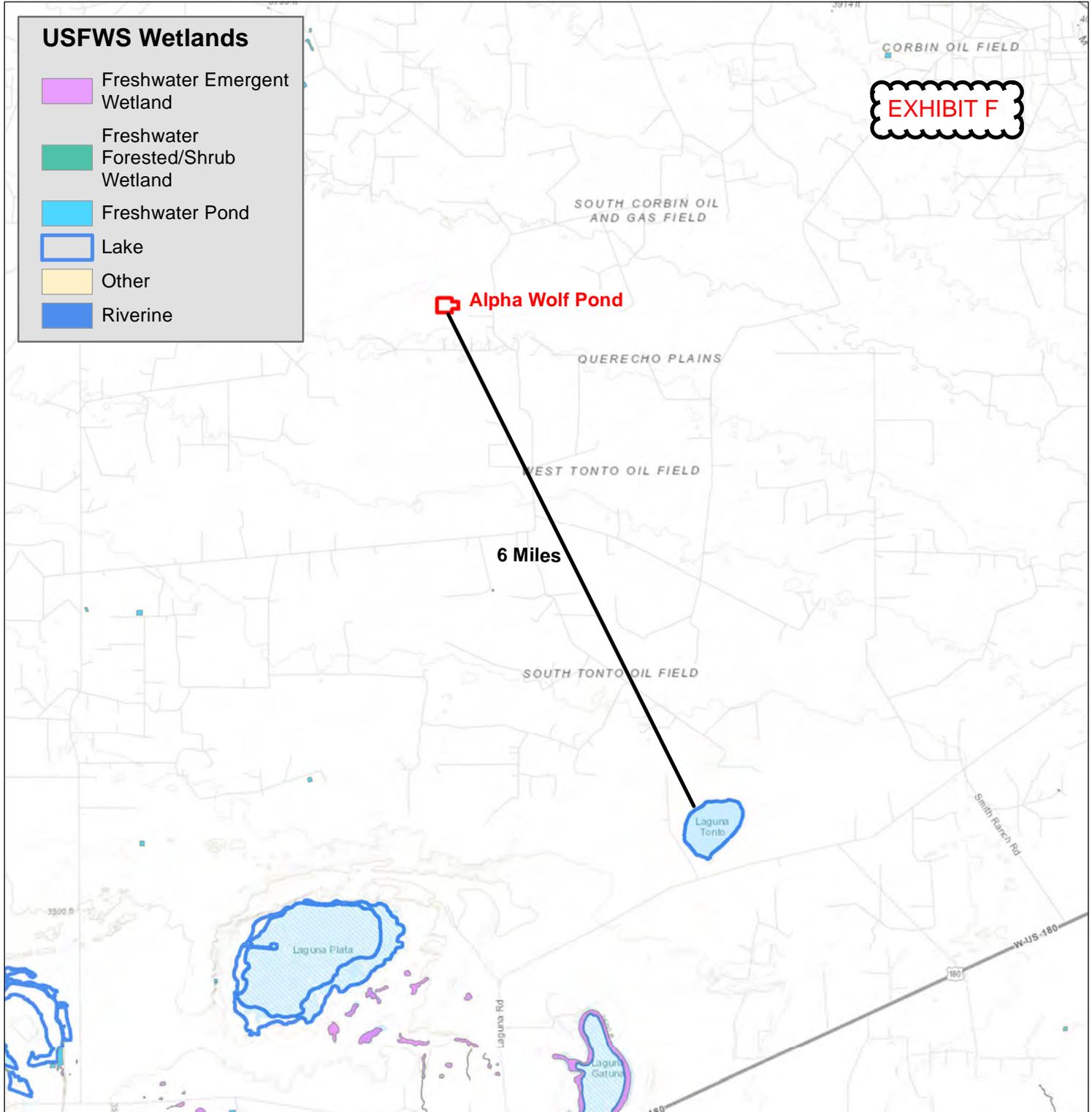


NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., on Oct 18, 2023
for Avant Operating, LLC

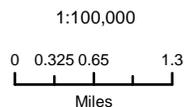




Avant Operating, LLC

Alpha Wolf Pond USFWS Wetlands Proximity Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



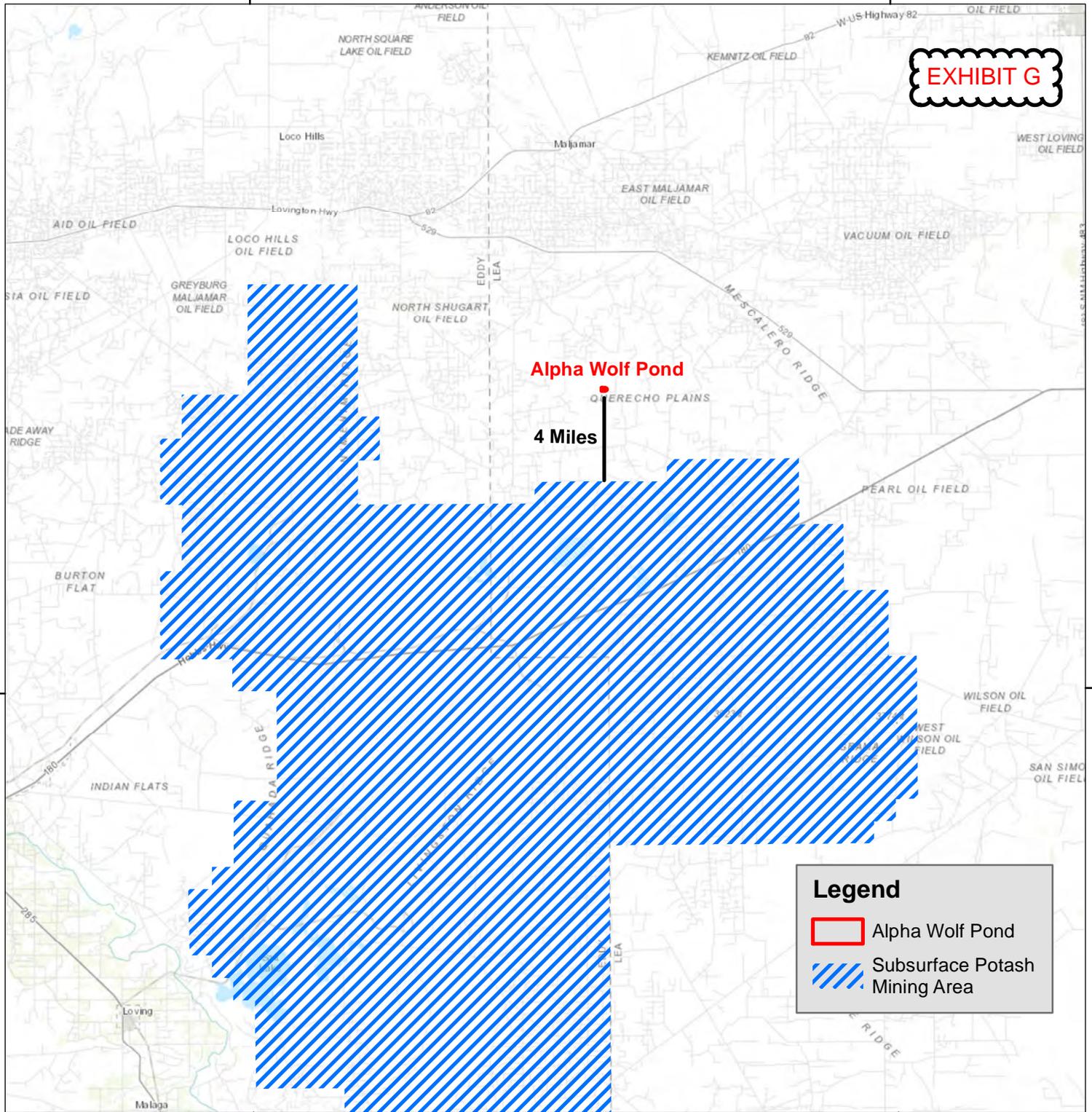
NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



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for Avant Operating, LLC



EXHIBIT G



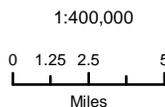
Legend

-  Alpha Wolf Pond
-  Subsurface Potash Mining Area

Avant Operating, LLC

Alpha Wolf Pond Subsurface Mining Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



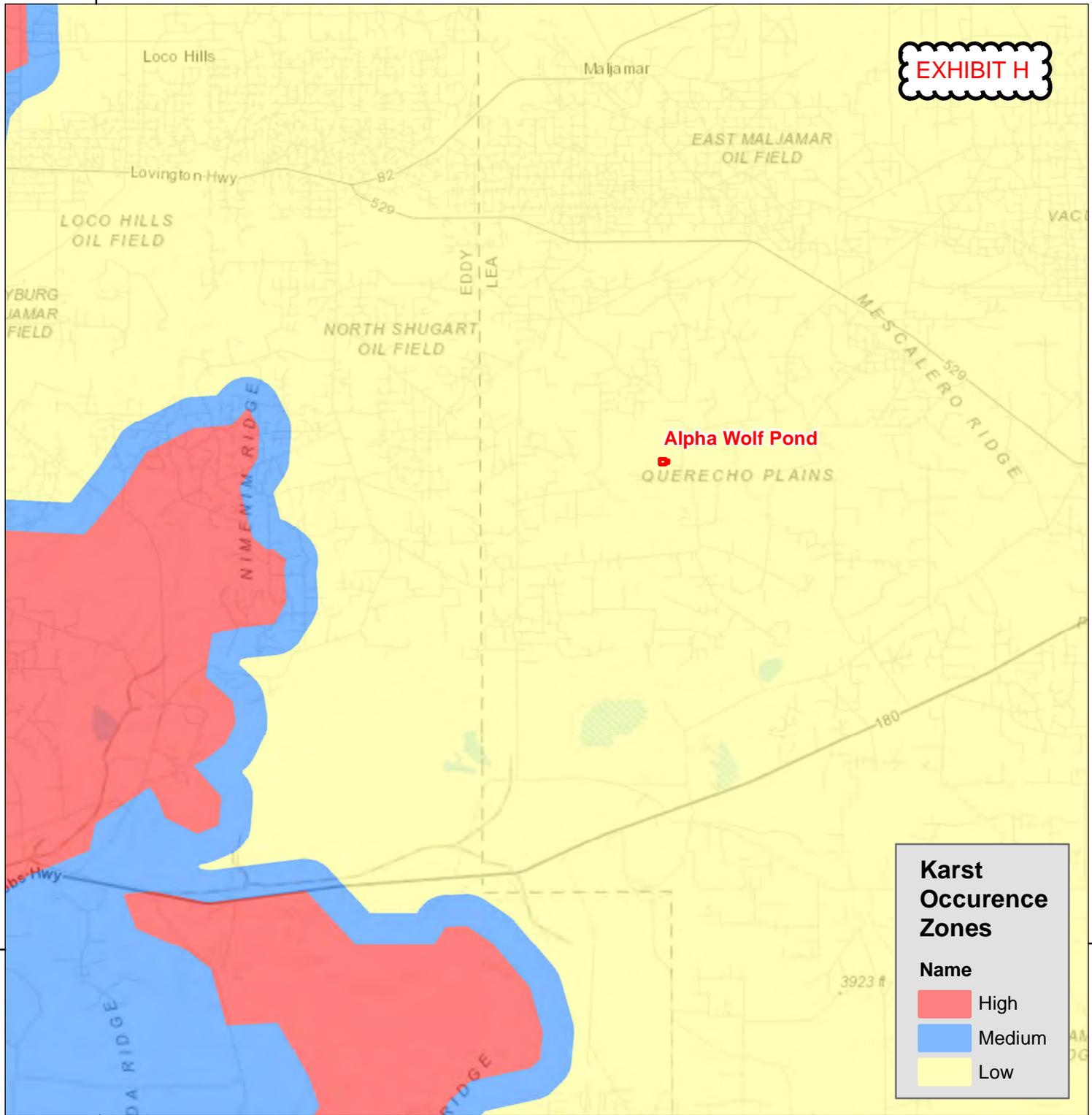
NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



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for Avant Operating, LLC



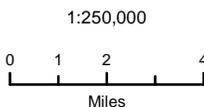
EXHIBIT H



Avant Operating, LLC

Alpha Wolf Pond Karst Occurrence Zones Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico

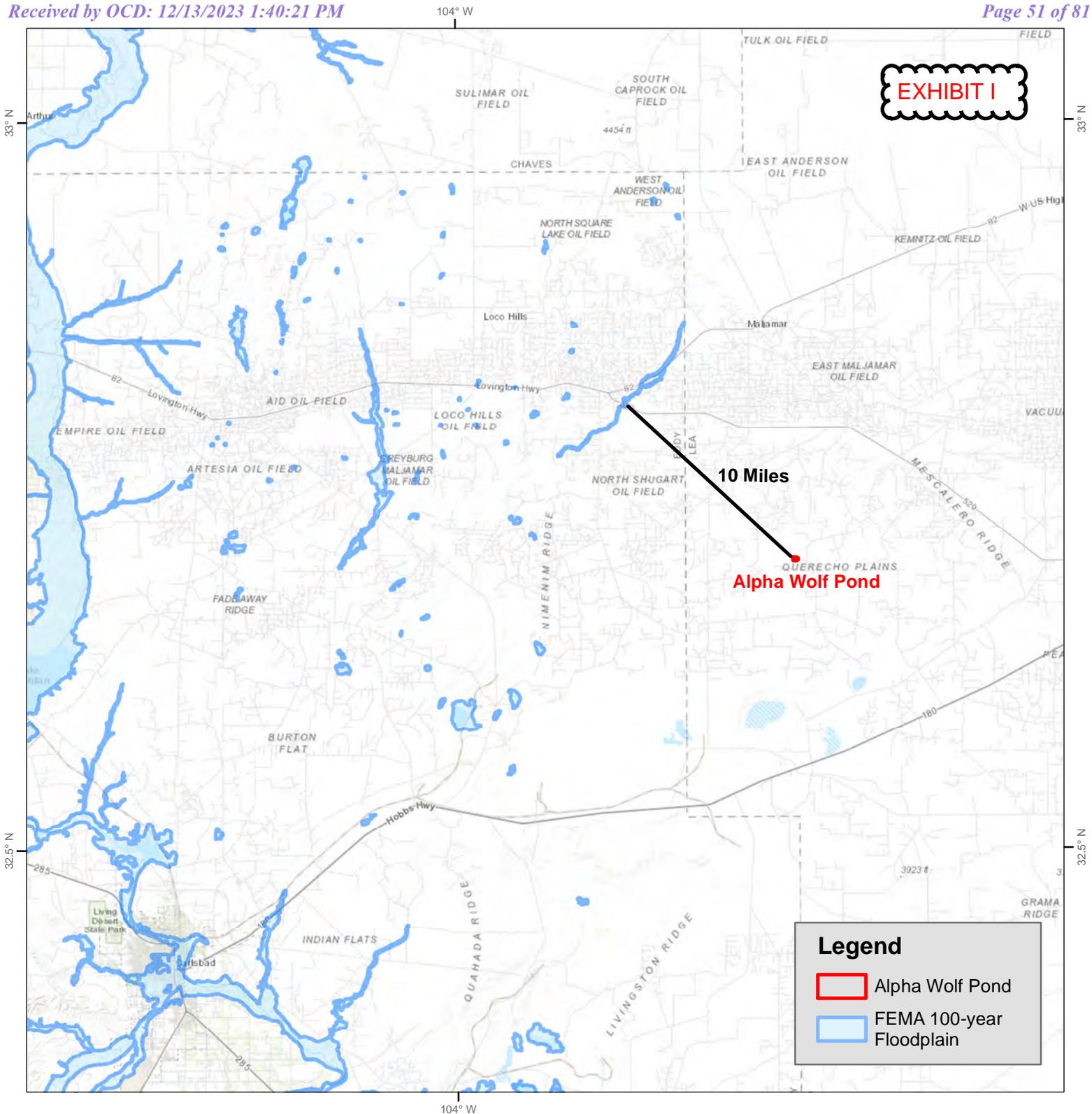


NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., on Nov. 7, 2023
for Avant Operating, LLC

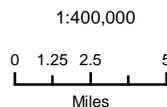




Avant Operating, LLC

Alpha Wolf Pond FEMA 100-year Floodplain Map

Sec. 36, Township 18S, Range 32E
Lea County, New Mexico



NAD 1983 New Mexico State Plane East
FIPS 3001 Feet



Prepared by Permits West, Inc., on Oct 18, 2023
for Avant Operating, LLC



HYDRALINE™ HD60

PRIMARY LINER

HIGH DENSITY POLYETHYLENE – LAYFLAT – MEETS GRI-GM13



EXHIBIT J

PRODUCT DESCRIPTION

HydraLine™ HD60 is made from high density polyethylene (HDPE) resins protected by UV stabilizers to provide exceptional longevity and durability. HydraLine™ HD60 has great chemical resistance and a fairly low permeability as a result of the HDPE properties.

HydraLine™ HD60 requires specialized welding equipment and certified welding technicians to be properly installed. Welding is done with hot wedge welders on long field seams, and extrusion welders are used on detail work and pipe penetrations.

HydraLine™ HD60 is available in smooth, textured, and conductive variations. Colors include black and custom colors with minimum quantity requirements.

PRODUCT USE

HydraLine™ HD-Series is an excellent product for large applications that require UV stability and chemical resistance. HydraLine™ HD-Series geomembranes are a cost effective choice for large and exposed lining projects. This product is successfully used in landfills, waste water treatment lagoons, animal waste lagoons, mining applications and more.

HydraLine™ HD-Series meets the physical property values as stated in GRI test method GM13.

SIZE & PACKAGING

HydraLine™ HD60 is shipped to job sites in large 22.5' or 23' wide master rolls tightly rolled on to a heavy core and deployed by on site equipment. Seaming by certified installation technicians occurs in the field by heat fusion welding.



Waste Lagoon Liner

PRODUCT PART

HydraLine™ HD60B

HydraLine™HD60W

APPLICATIONS

- Landfill Liner & Caps
- Animal Waste Lagoons
- Golf Course Ponds
- Gas Collection Covers
- Pond & Lake Liners
- Irrigation Reservoirs
- Waste Water Treatment Lagoons
- Mining Tailing & Heap Leach Pads
- Canal Lining

HYDRALINE™ HD60**PRIMARY LINER****EXHIBIT J**

HIGH DENSITY POLYETHYLENE – LAYFLAT

		HydraLine™ HD60			
		IMPERIAL		METRIC	
PROPERTIES	TEST METHOD	TEST VALUE	TESTING FREQUENCY (MINIMUM)	TEST VALUE	TESTING FREQUENCY (MINIMUM)
APPEARANCE		Black, White, & Custom Colors Available with Minimum Order Quantity			
THICKNESS (MIN. AVG.)	ASTM D5199	60 Mils	Per roll	1.50 mm	Per roll
FORMULATED DENSITY (MINIMUM)	ASTM D1505 / ASTM D792	0.940 g/cc	200,000 lb	0.940 g/cc	90,000 kg
TENSILE PROPERTIES (MIN. AVG.) ¹ - YIELD STRENGTH - BREAK STRENGTH - YIELD ELONGATION - BREAK ELONGATION	ASTM D6693 Type IV	126 lb/in. 228 lb/in. 12 % 700 %	20,000 lb	22 kN/m 40 kN/m 12 % 700 %	9,000 kg
TEAR RESISTANCE (MIN. AVG.)	ASTM D1004	42 lb	45,000 lb	187 N	20,000 kg
PUNCTURE RESISTANCE (MIN. AVG.)	ASTM D4833	108 lb	45,000 lb	480 N	20,000 kg
STRESS CRACK RESISTANCE ¹	ASTM D5397 (App.)	500 hr	Per GRI-GM10	500 hr	Per GRI-GM10
CARBON BLACK CONTENT (RANGE) ¹	ASTM D4218	2.0-3.0 %	20,000 lb	2.0-3.0 %	9,000 kg
CARBON BLACK DISPERSION	ASTM D5596	Pass	45,000 lb	Pass	20,000 kg

¹ See reference notations for the listed test methods located in the Geosynthetics Research Institute; GRI-GM13 Standard Specification.



HydraLine™ HD60 is made from high density polyethylene (HDPE) resins protected by UV stabilizers to provide exceptional longevity and durability. HydraLine™ HD60 has great chemical resistance and a fairly low permeability as a result of the HDPE properties.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. VIAFLEX MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.viaflex.com

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www.viaflex.com

27-0083 09/22

GEOSYNTHETICS



The Plastics Experts.

Smooth Liner®
HIGH DENSITY POLYETHYLENE

PRODUCT DATA

Property	Test Method	Frequency	Minimum Average Values				
Thickness (minimum avg), mil (mm)	ASTM D5199	Per Roll	30 (0.75)	40 (1.0)	60 (1.5)	80 (2.0)	100 (2.5)
Thickness (minimum), mil (mm)			27 (0.68)	36 (0.9)	54 (1.35)	72 (1.8)	90 (2.25)
Density, g/cc, minimum	ASTM D792, Method B	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (both directions)	ASTM D6693, Type IV						
Strength @ Yield, lb/in width (N/mm)	2in/minute	20,000 lb	66 (11.6)	88 (15.4)	132 (23.1)	176 (30.8)	220 (38.5)
Elongation @ Yield, % (GL=1.3 in)			12	12	12	12	12
Strength @ Break, lb/in width (N/mm)			120 (21)	160 (28)	240 (42)	320 (56)	400 (70)
Elongation @ Break, % (GL=2.0 in)			700	700	700	700	700
Tear Resistance, lbs (N)	ASTM D1004	45,000 lb	22 (98)	30 (133)	45 (200)	60 (267)	72 (320)
Puncture Resistance, lbs (N)	ASTM D4833	45,000 lb	60 (267)	80 (356)	120 (534)	160 (712)	190 (845)
Carbon Black Content, % (range)	ASTM D4218	20,000 lb	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3
Carbon Black Dispersion (Category)	ASTM D5596	45,000 lb	Only near spherical agglomerates: 10 views Cat. 1 or 2				
Stress Crack Resistance (SP NCTL), hrs.	ASTM D5397 Appendix	200,000 lb	500	500	500	500	500
Oxidative Induction Time, minutes	ASTM D3895, 200°C, 1 atm O ₂	200,000 lb	≥140	≥140	≥140	≥140	≥140

AGRU America's geomembranes are certified to pass Low Temp. Brittleness via ASTM D746 (-80°C), Dimensional Stability via ASTM D1204 (±2% @ 100°C). Oven Aging and UV Resistance are tested per GRI GM 13. These product specifications meet or exceed GRI's GM13.

SUPPLY INFORMATION (STANDARD ROLL DIMENSIONS)

secondary liner

THICKNESS		WIDTH		LENGTH		AREA (APPROX.)	
mil	mm	ft	m	ft	m	ft ²	m ²
30	0.75	23	7	1,175	358	27,025	2,511
40	1.0	23	7	900	274	20,700	1,923
60	1.5	23	7	600	183	13,800	1,282
80	2.0	23	7	455	139	10,465	972
100	2.5	23	7	365	111	8,395	780

Note:

Average roll weight is 4,200 lbs (1,905 kg). All rolls are supplied with two slings. Rolls are wound on 6" core. Special length available upon request. Roll length and width have a tolerance of ±1%. The weight values may change due to project specifications (i.e. absolute minimum thickness or special roll length) or shipping requirements (i.e. international containerized shipments).

All information, recommendations and suggestions appearing in this literature concerning the use of our products are based upon tests and data believed to be reliable; however, it is the users responsibility to determine the suitability for their own use of the products described herein. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by AGRU America as to the effects of such use or the results to be obtained, nor does AGRU America assume any liability in connection herewith. Any statement made herein may not be absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein is to be construed as permission or as a recommendation to infringe any patent.

AGRU America, Inc.
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Georgetown, SC 29440 USA

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salesmkg@agruamerica.com
Revision Date: December 3, 2018 12:42 PM

EXHIBIT J



www.agruamerica.com

GEOSYNTHETICS



**AGRU
Geonet
200 MIL**

AGRU America's Geonet is a high-density polyethylene drainage product that is ideal for applications such as landfill cells, detection & collection in double-lined systems, landfill caps for drainage and methane gas collection, and landscape drainage systems. AGRU's Geonet is bixial and biplanar, presenting a rib formation that allows for high flow in both machine and cross-machine directions.

GEONET COMPONENT ⁽¹⁾			
Property	Test Method	Frequency	Minimum Average Values
Thickness, mil (mm)	ASTM D5199	50,000 sf	200 (5.1)
Peak Tensile Strength MD, lbs./in. (N/mm)	ASTM D5035 / 7179	50,000 sf	45 (7.9)
Density, g/cm ³	ASTM D792, Method B	50,000 sf	0.94
Carbon Black Content (%)	ASTM D4218	50,000 sf	2 - 3
Transmissivity ⁽²⁾ , m ² /sec. (gal/min/ft)	ASTM D4716	500,000 sf	2 x 10 ⁻³ (9.6)

Notes:

- (1) Standard roll length is 300'.
- (2) Transmissivity at 21°C, gradient of 0.1, load of 10,000 psf, seat time 15 min between steel plates.
- (3) All roll widths are 14.5 feet. All roll lengths and widths have a tolerance of ±1%.

All information, recommendations and suggestions appearing in this literature concerning the use of our products are based upon tests and data believed to be reliable; however, it is the user's responsibility to determine the suitability for their own use of the products described herein. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by AGRU America as to the effects of such use or the results to be obtained, nor does AGRU America assume any liability in connection herewith. Any statement made herein may not be absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein is to be construed as permission or as a recommendation to infringe any patent.

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Revision Date: February 23, 2018 10:14 AM

EXHIBIT J



NONWOVEN NEEDLE PUNCHED TEXTILES



AGRUTex® 101

NONWOVEN GEOTEXTILE

At AGRU, our core competency is servicing the waste containment industry, and that is why our nonwoven geotextile product line is centric to this industry applications. Our geotextiles are superior in performance for the following applications: geomembrane liner protection, subsurface drainage systems, leachate collection systems, and gas/collection venting systems.

Our capabilities are not limited to our standard product line, and we specialize in made to order products with customized properties designed to meet project specific requirements. Please contact us for solutions available from AGRU.

AGRUTex 101 is a polypropylene, staple fiber, needle punched nonwoven geotextile. The fibers are needled to form a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.

ARGUTex 101 standard products conform to the property values listed below.¹ AGRU America's Laboratories are accredited by the Geosynthetic Accreditation Institute's Laboratory Accreditation Program (GAI-LAP).

Property	Test Method	Frequency	Minimum Average Roll Values	
			Imperial	Metric
Physical				
Mass/Unit Area	ASTM D-5261	100,000 SF	10 oz/yd ²	339 g/m ²
Mechanical				
Tensile Strength (Grab)	ASTM D-4632	100,000 SF	270 lbs	1200 N
Elongation	ASTM D-4632	100,000 SF	50%	50%
CBR Puncture	ASTM D-6241	500,000 SF	725 lbs	3.2 kN
Trapezoidal Tear	ASTM D-4533	100,000 SF	105 lbs	467 N
Endurance				
UV Resistance % Retained at 500 hrs	ASTM D-4355	Per Formulation	70%	70%
Hydraulic²				
Apparent Opening Size ³ (AOS)	ASTM D-4751	500,000 SF	100 US Std. Sieve	0.150 mm
Permittivity, sec ⁻¹	ASTM D-4491	500,000 SF	1.1	1.1
Permeability	ASTM D-4491	500,000 SF	0.29 cm/sec	0.29 cm/sec
Water Flow Rate	ASTM D-4491	500,000 SF	80 g/min/ft ²	3280 l/min/m ²
Roll Sizes			15ft x 525ft	4.6m x 160m

Notes:

1. Effective February 2018 and subject to change without notice.
2. Values established at the time of manufacturing. Handling, storage, and shipping may change these properties.
3. Apparent Opening Size, (AOS), reported as maximum average roll value.

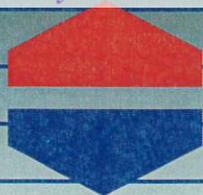
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Recyclex[®] TRM & Recyclex[®] TRM-V

Product Description

EXHIBIT K

Permanent Turf Reinforcement Matting

Recyclex - the first family of permanent turf reinforcement mats (TRM) with fibers made from 100% recycled post-consumer goods - "green or brown bottles". That's right, approximately 20 bottles are diverted from landfills with every pound of Recyclex fibers. American Excelsior Company invented the first biodegradable blanket, and we have done the same with recycled fibers to create Recyclex. Not only is Recyclex environmentally responsible, it is designed to meet your most difficult erosion control challenges. For long-term, permanent erosion control, Recyclex is the answer.

MATERIAL CHARACTERISTICS

Recyclex is made from 100% recycled fibers with 80% or more 5 inches in length or greater. The fibers are crimped to allow a strong, curled, interlocking fiber matrix. Sound familiar to Curlex[®] excelsior fibers? Absolutely! Just as Curlex fibers have been the most successful biodegradable matrix since we invented erosion control blankets, we applied the same concept to our permanent Recyclex Turf Reinforcement Matting. Our crimped fibers conform to terrain details and train water flow to follow the Recyclex curled fiber matrix. In turn, water flow velocity is reduced. Recyclex fibers have a specific gravity of greater than one, meaning the matrix will not float during a hydraulic event. Recyclex fibers are stitched together by two strong layers of UV resistant polypropylene netting to form a three dimensional matrix that is designed to provide permanent surface support for vegetation and structural root systems. Recyclex can be installed similar to an erosion control blanket by placing it over grass seed and topsoil or it can be soil filled and seeded to allow a structural root system to grow directly into the permanent turf reinforcement matting. Recyclex is available in aesthetically pleasing green or earth tone brown.



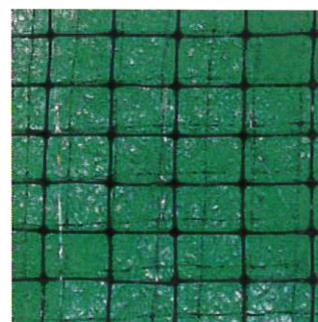
PERFORMANCE CAPABILITIES

	Recyclex TRM	Recyclex TRM-V
Channels		
Shear Stress Rating:	480+ Pa (10.0+ lb/ft ²)	384+ Pa (8.0+ lb/ft ²)
Slopes		
Steepness:	Unlimited gradient, but relative to geotechnical review	

TYPICAL APPLICATIONS

Recyclex TRM's are designed to allow revegetation and provide permanent protection in areas of concentrated flow:

- Ditch bottoms, channel bottoms, swales & slopes
- Steep, reinforced slope veneers
- Landfill down chutes & let down structures
- Pond, small lake, and stream bank shoreline stabilization
- Urban stormwater drainage channels & waterways
- Concentrated flow areas as a TRM component with Curlex Sediment Logs[®]
- Typical Rip Rap or Hard Armor applications



American
Excelsior
Company[®]
Earth Science Division





Recyclex[®] TRM & Recyclex[®] TRM-V

Permanent Turf Reinforcement Matting



SUGGESTED SPECIFICATIONS

General

Recyclex Turf Reinforcement Matting (TRM) is a unique, patented (US 6,855,650 B1), permanent, rolled erosion control products (RECP) with fibers made from 100% recycled post-consumer goods - "green or brown bottles".



Product

Turf Reinforcement Mat shall be manufactured from recycled fibers with 80% or more 5 inches in length, crimped and curled to allow fiber interlocking, which is critical to a strong matrix. The fibers shall be encased between two layers of heavy UV stabilized polypropylene netting and stitched top to bottom to form a three-dimensional matrix. The unique recycled polyester fibers have a memory of 95% of its original crimp after load or hydraulic events. The fibers shall have a specific gravity of greater than 1, which means they will not float during a hydraulic application unlike other polypropylene fibers.

Its three-dimensional matrix is specifically designed to provide permanent surface support and/or structural support for vegetation root systems. Therefore, it is a Turf Reinforcement Matting or Turf Reinforcement matrix in blanket form. Typically, it is installed as a soil filled and seeded TRM that allows the germination of vegetation above, and it provides a permanent structural matrix for the root system to grow into. In addition, it may be installed as a "stand alone" rolled erosion control products (RECP) over the top of soil and seed, which allows vegetation to grow up through its permanent matrix.

Recyclex family TRMs will conform to the following typical physical (Index) properties:

Index Property	Test Method	Recyclex TRM Values	Recyclex TRM-V Values
Mass per Unit Area	ASTM D 6566	0.63 lb/yd ² (342 g/m ²)	0.50 lb/yd ² (271 g/m ²)
Thickness	ASTM D 6525	0.37 in (9.4 mm)	0.29 in (7.5 mm)
Light Penetration	ECTC Guidelines	55%	57%
Resiliency	ASTM D6524, ASTM D1777/ECTC	85%	86%
MD Tensile Strength Max	ASTM D 6818	387.6 lb/ft (5.7 kN/m)	295.2 lb/ft (4.3 kN/m)
TD Tensile Strength Max	ASTM D 6818	340.8 lb/ft (5.0 kN/m)	194.4 lb/ft (2.9 kN/m)
MD Elongation	ASTM D 6818	21.2%	32.2%
TD Elongation	ASTM D 6818	20.3%	40.8%
Ultraviolet Stability	ASTM D 4355 (1,000 hr)	90% (min)	80% (min)
Fiber Memory	WLM-TM RC-17	95%	95%
Specific Gravity	ASTM D 792	1.28	1.21
Porosity	Calculated	97.6%	97.5%

Roll Properties

Recyclex TRM

Width:	8.0 ft (2.4 m)	16.0 ft (4.9 m)
Length:	90.0 ft (27.4 m)	90.0 ft (27.4 m)
Area:	80.0 yd ² (66.9 m ²)	160.0 yd ² (133.8 m ²)
Weight:	50.0 lb (22.7 kg)	100.0 lb (45.4 kg)
Color:	Green or Brown	

Recyclex TRM-V

Width:	8.0 ft (2.4 m)	16.0 ft (4.9 m)
Length:	112.5 ft (34.3 m)	112.5 ft (34.3 m)
Area:	100.0 yd ² (83.6 m ²)	200.0 yd ² (167.2 m ²)
Weight:	50.0 lb (22.7 kg)	100.0 lb (45.4 kg)
Color:	Green or Brown	

Manning's n

Unvegetated	.035 - .040
Vegetated	Consult SCS Vegetal Curve

Disclaimer: Recyclex TRM & Recyclex TRM-V are systems for erosion control and re-vegetation on slopes and channels. American Excelsior Company (AEC) believes that the information contained herein to be reliable and accurate for use in erosion control and re-vegetation applications. However, since physical conditions vary from job site to job site and even within a given job site, AEC makes no performance guarantees and assumes no obligation or liability for the reliability or accuracy of information contained herein for the results, safety, or suitability of using Recyclex TRM or Recyclex TRM-V, or for damages occurring in connection with the installation of any erosion control product whether or not made by AEC or its affiliates, except as separately and specifically made in writing by AEC. These specifications are subject to change without notice.



If you would like to receive more information or consult with one of our Customer Care Center Specialists, please call us toll free at (888-352-9582)

PDF download specifications and disclaimer available in the Technical Support Library at www.curlex.com

Questions? [Contact Us](#)
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Mirafi Mirafi 140N US Fabric Equivalent is US 120NW

US 120NW
(view details)

View Comparison
(side by side)

NTPEP APPROVED - GTX-2019-01-295. US 120NW is a nonwoven needlepunched geotextile made of 100% polypropylene staple filaments. US 120NW resists ultraviolet and biological deterioration, rotting, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. US 120NW will satisfy the requirements as outlined in AASHTO M-288-06 for Class 3 applications and meets the following M.A.R.V. values except where noted:

Mirafi® 140N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 140N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 140N meets Aashto M288-06 Class 3 for elongation > 50%. TenCate Geosynthetics Americas Laboratories are accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP). NTPEP Listed. This data sheet for Mirafi® 140N is provided for comparison purposes only.

Mirafi Mirafi 140N Test Data

PROPERTY	TEST METHOD	ENGLISH	METRIC
Weight Typical	ASTM D-5261	4.5 oz/y ²	152.55 g/m ²
Grab Tensile Strength	ASTM D-4632	120 lbs	534 N
Elongation @ Break	ASTM D-4632	50 %	50 %
CBR Puncture	ASTM D-6241	310 lbs	1,380 N
Trapezoidal Tear	ASTM D-4533	50 lbs	223 N
Apparent Opening Size ^(1,2)	ASTM D-4751	70 US Sieve	0.21 mm
Permittivity ⁽¹⁾	ASTM D-4491	1.7 Sec ⁻¹	1.7 Sec ⁻¹
Water Flow Rate ⁽¹⁾	ASTM D-4491	135 g/min/f ²	5,500 l/m/m ²
UV Resistance @ 500 Hours	ASTM D-4355	70 %	70 %

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Need Help Writing Specifications?

Download our free Guide to Better Geotextile Specifying



An Expert's Manual for Distributors

Download our free Distributor's Manual on Geosynthetics & Geotextiles. This 44 page manual is packed with useful tips and quick reference materials.



Contractor's Application Guide

Download our free Contractor's Guide for the most effective ways to use geosynthetics

EXHIBIT L

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US 120NW

Nonwoven Geotextile



NTPEP APPROVED - GTX-2019-01-295. US 120NW is a nonwoven needlepunched geotextile made of 100% polypropylene staple filaments. US 120NW resists ultraviolet and biological deterioration, rotting, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. US 120NW will satisfy the requirements as outlined in AASHTO M-288-06 for Class 3 applications and meets the following M.A.R.V. values except where noted:



PROPERTY	TEST METHOD	ENGLISH	METRIC
Weight <input type="checkbox"/> Typical	ASTM D-5261	4.5 oz/y ²	152.55 g/m ²
Grab Tensile Strength	ASTM D-4632	120 lbs	534 N
Elongation @ Break	ASTM D-4632	50 %	50 %
Mullen Burst ⁽³⁾	ASTM D-3786	225 psi	1,551 kPa
Pin Puncture ⁽³⁾	ASTM D-4833	65 lbs	289 N
CBR Puncture	ASTM D-6241	340 lbs	1,513 N
Trapezoidal Tear	ASTM D-4533	50 lbs	223 N
Apparent Opening Size ^(1,2)	ASTM D-4751	70 US Sieve	0.21 mm
Permittivity ⁽¹⁾	ASTM D-4491	1.7 Sec ⁻¹	1.7 Sec ⁻¹
Water Flow Rate ⁽¹⁾	ASTM D-4491	135 g/min/f ²	5,500 l/m/m ²
UV Resistance @ 500 Hours	ASTM D-4355	70 %	70 %

⁽¹⁾ At the time of manufacturing. Handling, storage, and shipping may change these properties.

⁽²⁾ Maximum average roll value (MaxARV).

⁽³⁾ Historical reference values. These properties are no longer recognized by ASTM or AASHTO for geosynthetics.

US 120NW Shipping & Packaging Information

SIZE	DIAMETER	WIDTH	WEIGHT	AREA	ROLLS PER TRAILER
12.5' x 360'	14"	12.5'	172 lbs	500 y ²	260
15' x 360'	14"	15'	200 lbs	600 y ²	198

US Fabrics, Inc. | 3904 Virginia Avenue | Cincinnati, OH 45227
Phone: (800) 518-2290 | Fax: (513) 217-4420 | email: info@usfabrics.com

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

EXHIBIT M

Contact us for free consultations at 800-662-5021



BROADBAND PRO 4-SPEAKER BIRD REPELLER SYSTEM

COMBINES SONIC AND ULTRASONIC TECHNOLOGY



Repel birds with multi-faceted sonic and ultrasonic sounds! The BroadBand PRO's 4-speaker system simultaneously emits sounds that are both audible and inaudible to humans that confuse, disorient, and intimidate pest birds, keeping them away. Birds will not linger when exposed to these sounds.

Option to add 3 Visual Scares to package for added efficacy.

- Covers up to 6 acres
- Uses sonic and ultrasonic technology
- Weather resistant box designed to

withstand outdoor use



- Includes installation consultation
- 30 Day Electronics Performance Satisfaction Guarantee

Reviews

(0) Write a review

International voltage options available upon request.

From: **\$821.43**

STANDARD OR + 3 VISUAL SCARES

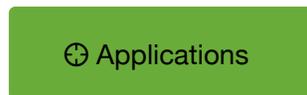
Standard

\$821.43

- 1 +

Add to cart

[Clear](#)



With both ultrasonic and sonic frequencies, next

Date: 11/28/2023
Project: Alpha Wolf Recycle Pond

Pond Closure Estimate

Description	TOTAL
Labor, materials, equipment and disposal fees to remove liner in recycle ponds.	\$ 520,000.00
60 mil HDPE Smooth Liner @ 662,190 sq ft	
200 mil Geonet @ 662,190 sq ft	
40 mil HDPE Smooth liner @ 662,190 sq ft	
10 oz. Geotextile @ 662,190 sq ft	
Recycle X TRM-450 (Brown) @ 198,390 sq ft	
Remove the leak detection including 6" SDR-11 perforated pipe with drainage rock	
Mass Excavation & re-contouring	\$ 200,000.00
Spread stockpiled topsoil	
Seeding location	

TOTAL \$ 720,000.00

EXHIBIT N

ALPHA WOLF POND - 1.2MM BBL PRODUCED WATER CONTAINMENT & RECYCLING FACILITY

SEC. 36, TOWNSHIP 18S, RANGE 32E
LEA COUNTY, NEW MEXICO

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SHEET NUMBER	DESCRIPTION
B1265-1001-C-1000	COVER SHEET
B1265-1001-C-1001	NOTES
B1265-1001-C-1002	SITE PLAN
B1265-1001-C-1003	GRADING PLAN
B1265-1001-C-1004	SECTIONS
B1265-1001-C-1005	SECTIONS/DETAILS
B1265-1001-C-1006	SUMP & LEAK DETECTION DETAILS
B1265-1001-C-1007	LINER & ANCHOR TRENCH DETAILS
B1265-1001-C-1008	FENCE DETAIL
B1265-1001-C-1009	GAGE LADDER DETAIL
B1265-1001-C-2001	ROAD AND CULVERT SECTIONS

SUMMARY OF QUANTITIES			
NO.	ITEM	QTY	UNIT
1	CLEARING AND GRUBBING	26.0	AC
2	STRIP AND STOCKPILE TOPSOIL (6" AVERAGE)	20900.0	CU YD
3	ESTIMATED CUT (BELOW EXISTING GRADE)	140359.0	CU YD
4	ESTIMATED FILL (ABOVE EXISTING GRADE)	121384.0	CU YD
5	8' FENCE	5300.0	LF
6	20' DOUBLE GATE	1.0	EA
7	3' WALK GATE	1.0	EA
8	12' x 12" WATER TRANSFER GATE	12.0	EA
9	RUB SHEET 60 MIL HDPE (TEXTURED)	24200.0	SQ FT
10	PRIMARY LINER 60 MIL HDPE (SMOOTH)	749120.0	SQ FT
11	GEONET 200 MIL	749120.0	SQ FT
12	SECONDARY LINER 40 MIL HDPE (SMOOTH)	749120.0	SQ FT
13	10 OZ GEOTEXTILE	749120.0	SQ FT
14	RECYCLE X TRM-450 (BROWN)	122745.0	SQ FT
15	6" HDPE DR11 PIPE WITH PERFORATIONS	200.0	LF
16	GAGE LADDER	2.0	EA
17	DRAIN ROCK	2.0	CU YD
18	ANCHOR TRENCH	10170.0	LF
19	Ø12" RCP CULVERT	80.0	LF

NOTE: SUMMARY OF QUANTITIES ARE ESTIMATES ONLY, AND SHALL BE VERIFIED BY CONTRACTOR

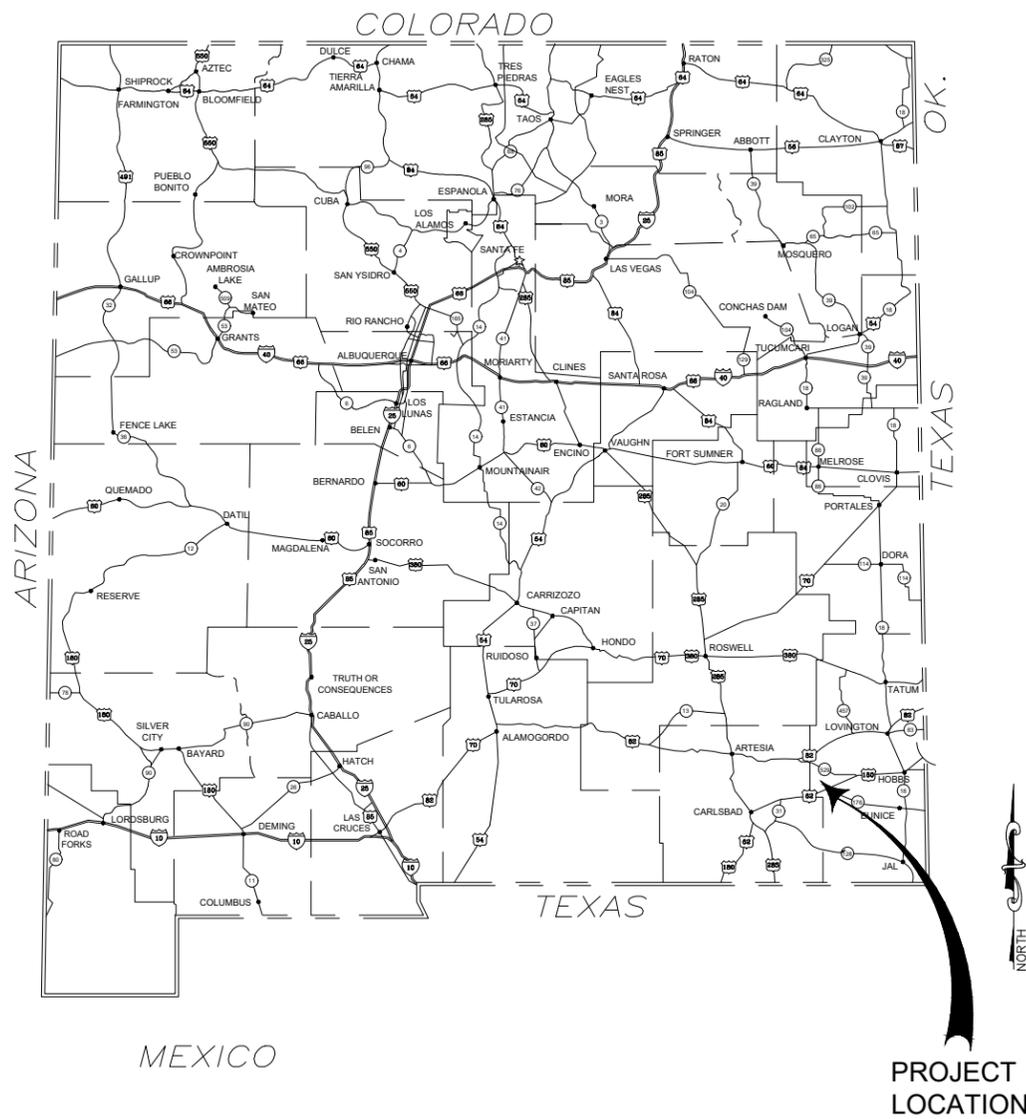
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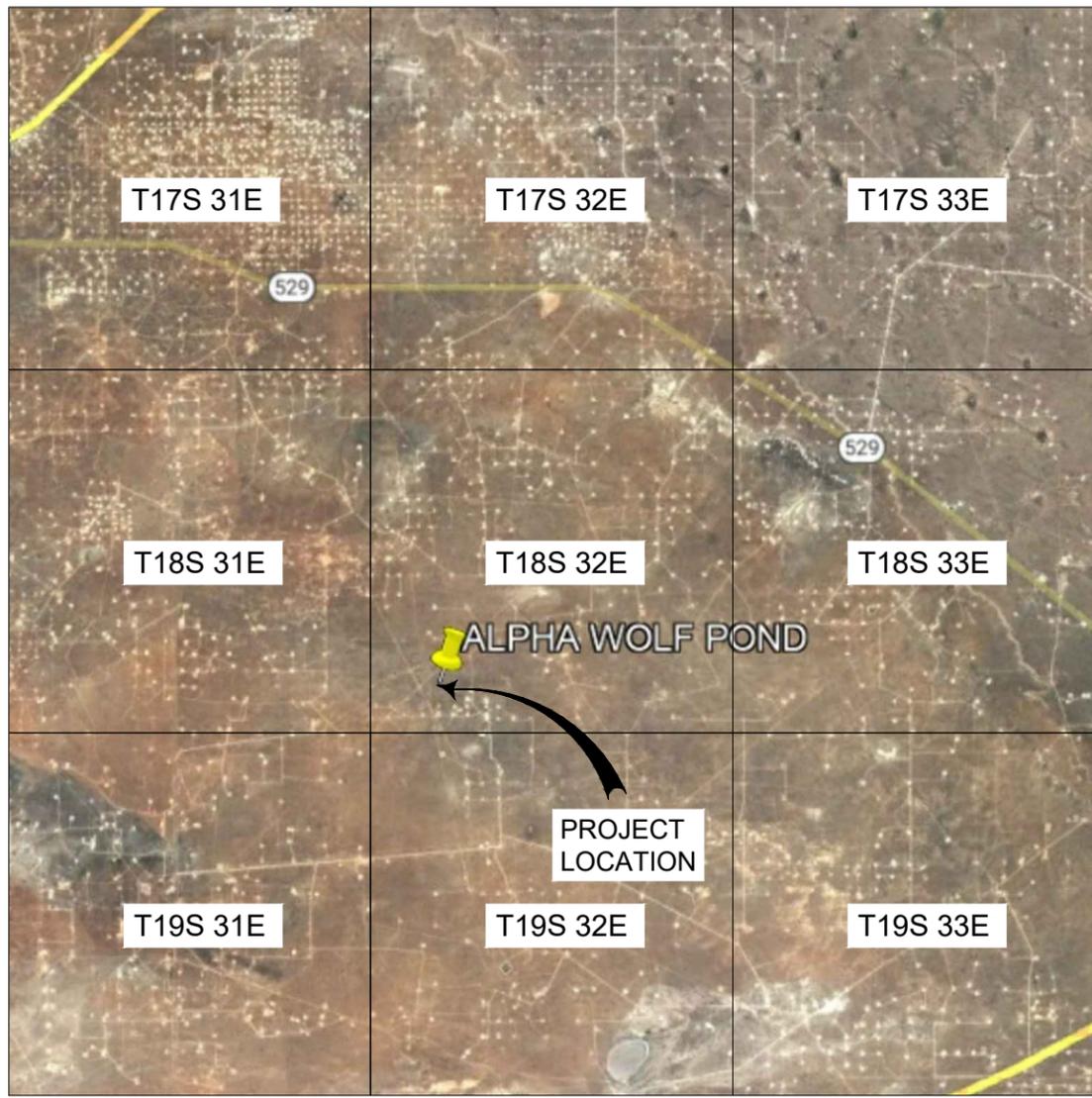
ISSUE	DATE	BY	DESCRIPTION	CHKD	APPD
0	09/20/23	TAH	ISSUED FOR CONSTRUCTION	HER	RCW



ALPHA WOLF POND 1.2MM BBL PRODUCED WATER CONTAINMENT & RECYCLING FACILITY COVER SHEET					
DRAWN BY	TAH	PROJ. MGR	HER	SCALE	NOTED
DRAWING NO.	B1265-1001-C-1000	PROJ. NO.	B1265-1001	ISSUE NO.	0



LOCATION MAP
SCALE: NTS



VICINITY MAP
SCALE: NTS



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 MAY OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

EXHIBIT O

GENERAL NOTES:

GENERAL NOTES

- 1. NEW MEXICO ADMINISTRATIVE CODE TITLE 19, CHAPTER 15, PART 34, DESIGN CRITERIA FOR RECYCLING CONTAINMENTS SHALL APPLY TO THIS PROJECT.
2. ALL BOUNDARY, TOPOGRAPHIC AND UTILITY INFORMATION SHOWN ARE BASED ON SURVEY INFORMATION FURNISHED BY CLIENT.
3. THE CONTRACTOR SHALL IDENTIFY AND LOCATE UTILITY LINES, MONITORING WELLS, SURVEY MONUMENTS, AND OTHER NEARBY STRUCTURES PRIOR TO PERFORMING WORK.
4. COORDINATE INFORMATION IS BASED ON STATE PLANE COORDINATES, NEW MEXICO EAST, NAD 83. THE CONTRACTOR SHALL IDENTIFY ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION.
5. 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

LINER NOTES

- 1. INSTALLER TO SIGN SUBGRADE ACCEPTANCE FORM (PROVIDED BY OWNER REPRESENTATIVE) DAILY PRIOR TO INSTALLATION.
2. CONTRACTOR TO PROVIDE SUBMITTAL OF LINER PANEL LAYOUT.
3. A 3" DIAMETER MINIMUM PIECE OF 40MIL LINER SHALL BE EXTRUDED WELDED WHERE THE PIE SHAPED CORNER SECTIONS MEET FOR SEAM REINFORCEMENT.
4. 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.
5. CONTRACTOR SHALL PLACE SANDBAGS ON LINER DURING INSTALLATION AS REQUIRED TO PREVENT WIND UPLIFT UNTIL POND IS FILLED TO A DEPTH OF 3 FEET.
6. CONTRACTOR SHALL INSPECT GRADED SURFACE FOR DEBRIS, ROCKS OR OTHER MATERIAL THAT MAY DAMAGE THE LINER.
7. CONTRACTOR SHALL ROLL SURFACE WITH A SMOOTH ROLLER TO ELIMINATE RUTS.
8. CONTRACTOR SHALL USE BLACK 60 MIL HDPE SMOOTH GEOMEMBRANE AS THE PRIMARY LINER AND BLACK 40 MIL HDPE SMOOTH GEOMEMBRANE AS THE SECONDARY LINER.
9. LINER TO BE INSTALLED PER MANUFACTURER'S RECOMMENDING PROCEDURES.
10. ALL SEAMS MUST BE WELDED WITH A 6" MINIMUM OVERLAP.
11. 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 PER THE INSTALLATION QUALITY ASSURANCE MANUAL.
12. FOR AIR PRESSURE TESTING (ASTM 5820), THE FOLLOWING PROCEDURES ARE APPLICABLE TO THE SEAMS WELD WITH DOUBLE SEAM FUSION WELDER.
a. THE EQUIPMENT USED SHALL CONSIST OF AN AIR TANK OR PUMP CAPABLE OF PRODUCING A MINIMUM 35 PSI AND A SHARP NEEDLE WITH A PRESSURE

GAUGE ATTACHED TO INSERT INTO THE AIR CHAMBER.

- b. SEAL BOTH ENDS OF THE SEAM BY HEATING AND SQUEEZING THEM TOGETHER. INSERT THE NEEDLE WITH THE GAUGE INTO THE AIR CHANNEL. PRESSURIZE THE AIR CHANNEL TO A MINIMUM OF 35 PSI. NOTE TIME STARTS AND WAIT A MINIMUM OF 5 MINUTES TO CHECK. IF PRESSURE AFTER 5 MINUTES HAD DROPPED LESS THAN 2 PSI THE TEST IS SUCCESSFUL (THICKNESS OF MATERIAL MAY CAUSE VARIANCE).
c. CUT OPPOSITE SEAM END AND LISTEN FOR PRESSURE RELEASE TO VERIFY FULL SEAM HAS BEEN TESTED.
d. IF THE TEST FAILS, FOLLOW THESE PROCEDURES.
i. WHILE CHANNEL IS UNDER PRESSURE WALK THE LENGTH OF THE SEAM LISTENING FOR A LEAK.
ii. WHILE CHANNEL IS UNDER PRESSURE APPLY A SOAPY SOLUTION TO THE SEAM EDGE AND LOOK FOR BUBBLES FORMED BY AIR ESCAPING.
iii. RE-TEST THE SEAM IN SMALLER INCREMENTS UNTIL THE LEAK IS FOUND.
e. ONCE LEAK IS FOUND USING ONE OF THE PROCEDURES ABOVE, CUT OUT THE AREA AND RETEST THE PORTIONS OF THE PORTIONS OF THE SEAMS BETWEEN THE LEAK AREAS PER 6A AND 6B ABOVE. CONTINUE THIS PROCEDURE UNTIL ALL SECTIONS OF THE SEAM PASS THE PRESSURE TEST.
f. REPAIR THE LEAK WITH A PATCH AND VACUUM TEST.
13. ALL NON-DESTRUCTIVE TESTS WILL BE NOTED IN THE NON-DESTRUCTIVE LOGS.
14. LINER SHALL BE PROTECTED WITH A 10 OZ. NONWOVEN GEOTEXTILE IF ROCK OR OTHER ANGULAR MATERIALS WITH A DIMENSION GREATER THAN 3/4 INCH ARE PRESENT.
15. SUMPS SHALL BE BACKFILLED WITH NON-ANGULAR MAXIMUM 3/8 INCH SIZED PEA GRAVEL.
16. LINER GAS VENTS SHALL BE SPACED ALONG THE INSIDE SLOPE AT APPROXIMATELY 100 FEET ON CENTER OR MINIMUM 2 VENTS PER SIDE.
17. 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 SYSTEM.
18. LAY BOTH LINERS IN ANCHOR TRENCH. BACKFILL ANCHOR TRENCH IN 2 LIFTS AND COMPACT IN ACCORDANCE WITH SITE PREPARATION NOTES THIS SHEET.

EARTHWORK NOTES

- 1. FILL FOR LEVEES SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE SITE PREP NOTES ABOVE AND THE GEOTECHNICAL REPORT. CONSTRUCT EACH LAYER CONTINUOUSLY AND APPROXIMATELY HORIZONTAL FOR THE WIDTH AND LENGTH OF THE DIKE. FILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SITE PREP NOTES ABOVE AND THE GEOTECHNICAL REPORT.
2. 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.
3. PERFORM ONE NUCLEAR DENSITY GAGE TEST PER 2500 CY OR AS DIRECTED BY ENGINEER.
4. 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.
5. ALL REPLACED TOP SOIL TO BE SMOOTH DRUM ROLLED UP TO FENCELINE.

SITE PREPARATION NOTES:

- 1. GEOTECHNICAL REPORT PROVIDED BY TOLLUNAY-WONG PROJECT NO. 23.61.014, REPORT NO. 4001, JULY 20, 2023.
2. SITE PREPARATION FOR THE PROJECT SITE SHOULD INCLUDE STRIPPING ALL SURFACE VEGETATION, TOPSOIL, DELETERIOUS AND/OR WEAK SOILS, TO EXPOSE A COMPETENT SUBGRADE.
3. THE EXPOSED SOIL SUBGRADE SHOULD BE PROOF-ROLLED WITH AT LEAST A 20-TON PNEUMATIC ROLLER, LOADED DUMP TRUCK OR EQUIVALENT TO DETECT WEAK AREAS UPON WHICH PROPER COMPACTION WOULD BE DIFFICULT TO OBTAIN ON THE BACKFILL MATERIALS. WEAK AREAS ARE GENERALLY DEFINED AS LOCATIONS THAT PUMP AND/OR RUT IN EXCESS OF ABOUT 2-INCHES OR AS DEEMED UNSATISFACTORY BASED ON OBSERVATIONS OF THE PROOF-ROLL PROCESS BY THE GEOTECHNICAL ENGINEER-OF-RECORD OR THEIR QUALIFIED REPRESENTATIVE. UPON IDENTIFICATION, WEAK AREAS SHOULD BE REMOVED DOWN TO COMPETENT MATERIAL AND REPLACED WITH PROPERLY COMPACTED STRUCTURAL CLAY FILL.
4. THE EXPOSED SUBGRADE COULD CONTAIN COHESIONLESS SAND SOILS WHICH HAVE THE POTENTIAL TO BECOME UNSTABLE AND YIELD WHEN EXCESSIVELY DRY. REMEDIATION OF THE EXPOSED SUBGRADE SOILS SHOULD INCLUDE REMOVAL AND REPLACEMENT WITH SELECT FILL OR CHEMICAL STABILIZATION OF THESE SOILS WILL LIKELY BE NECESSARY DURING CONSTRUCTION.
5. IF EXISTING COHESIONLESS SOILS ARE USED FOR CONSTRUCTION THE MINIMUM SIDE SLOPE SHOULD BE 4:1. ANY FILL REQUIRED FOR THE CONTAINMENT LEVEE SHOULD BE GENERAL CLAY FILL OF MODERATE TO HIGH PLASTICITY AND LOW PERMEABILITY. CLAY SOILS WITH A LIQUID LIMIT (LL) RANGE OF 40 TO 60 AND A PLASTICITY INDEX (PI) RANGE OF 20 TO 40 SHOULD MEET LOW PERMEABILITY CRITERIA FOR A CONTAINMENT BERM. FOR RE-USE OF THE EXCAVATED SOILS FROM CONSTRUCTION OF THE POND, THE ONSITE MATERIALS SHOULD BE CHECKED FOR COMPLIANCE WITH THIS CRITERIA AND WITH THE APPROPRIATE REGULATORY GUIDELINES PRIOR TO USE.
6. CONTAINMENT LEVEE MATERIAL SHOULD BE FREE OF ROOTS, DEBRIS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS. THE CLAY BERM MATERIAL SHOULD BE PLACED IN THIN LIFTS, NOT EXCEEDING 8-IN LOOSE MEASURE, MOISTURE-CONDITIONED BETWEEN ±3% OF OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698.
7. THE AREA OF THE CONTAINMENT BERM FOOTPRINTS SHALL BE STRIPPED DOWN TO COMPETENT FOUNDATION SOILS. WE ANTICIPATE A DEPTH OF STRIPPING ON THE ORDER OF 4 TO 6 INCHES WILL BE NEEDED TO REMOVE VEGETATION AND DELETERIOUS MATERIAL. ONCE COMPETENT BEARING SOILS ARE REACHED AT THE DESIGN BASE ELEVATION, THE SUBGRADE SHOULD BE PROOFROLLED WITH AT LEAST A 20-TON PNEUMATIC ROLLER, LOADED DUMP TRUCK, OR EQUIVALENT, TO DETECT WEAK AREAS. IF WEAK AREAS ARE ENCOUNTERED, THEY SHOULD BE REMOVED AND REPLACED WITH PROPERLY-COMPACTED FILL SOILS AS INDICATED ABOVE.
8. SIDE SLOPES SHALL BE 1(V):4(H) FOR THE PROPOSED CONTAINMENT BERMS. SIDE SLOPES OF SOILS STEEPER THAN 1(V):4(H) COULD HAVE THE POTENTIAL FOR INSTABILITY AND SHALLOW SURFACE SLIDES. IF SIDE SLOPES STEEPER THAN 1(V):4(H) ARE PLANNED ONCE THE CONTAINMENT BERM SYSTEM ARRANGEMENT IS FINALIZED, TWE SHOULD BE ALLOWED TO REVIEW THE FINAL LEVEE LAYOUT AND TYPICAL CROSS-SECTION AND PROVIDE COMMENTS. THE LEVEE SIDE SLOPES SHOULD BE PROTECTED FROM EROSION DUE TO NORMAL SURFACE RUNOFF AND TEMPORARY INUNDATION BY VARYING WATER LEVELS WITHIN THE CONTAINMENT SYSTEMS.
9. STRUCTURAL CLAY FILL USED AS BACKFILL AND/OR FILL FOR THIS PROJECT SHOULD CONSIST OF A CLEAN SANDY LEAN CLAY (CL) OR LEAN CLAY WITH SAND (CL) MATERIAL WITH A LIQUID LIMIT (LL) OF 40 OR LESS AND A PLASTICITY INDEX (PI) FROM 10 TO 20. STRUCTURAL CLAY FILL SHOULD BE PLACED IN THIN LIFTS, MOISTURE CONDITIONED BETWEEN -1% AND +3% OF OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD TEST METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORTS (ASTM D 698).
10. WE ANTICIPATE THE ONSITE SOILS COULD BE CONSIDERED SUITABLE FOR REUSE AS STRUCTURAL CLAY FILL; HOWEVER, TESTING SHOULD BE PERFORMED TO ENSURE COMPLIANCE PRIOR TO PLACEMENT.
11. MAINTAINING THE SITE TO PREVENT PONDING AND/OR STANDING WATER DURING AND FOLLOWING CONSTRUCTION IS ESSENTIAL. PONDING OF SURFACE RUNOFF COULD CAUSE CONSTRUCTION DELAYS AND/OR INHIBIT SITE ACCESS. IF THE SUBGRADE MATERIALS BECOME WET AND SOFT, CONSIDERATION CAN BE GIVEN TO EITHER DRYING EFFORTS OR REMOVAL/REPLACEMENT OF THE WET MATERIAL WITH STRUCTURAL FILL. ALLOWING WATER TO POND ONSITE COULD RESULT IN SOIL SWELLING AND/OR SOFTENING THEREBY RESULTING IN HIGH MAINTENANCE COSTS AND POTENTIAL FAILURE. WE RECOMMEND POSITIVE DRAINAGE BE ESTABLISHED TO TRANSMIT WATER AWAY FROM THE SITE SO THAT PERCHED OR PONDED WATER DOES NOT COLLECT ADJACENT TO ANY NEW FOUNDATIONS.
12. EARTHWORK CONTRACTOR TO COMPLY WITH THE DESIGN AND CONSTRUCTION PLAN IN GROUND CONTAINMENTS, INCLUDED IN THIS SET.

SITE NOTES:

- 1. ALL BEARINGS, DISTANCES AND COORDINATES ARE BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD 83, IN US SURVEY FEET
2. CONTRACTOR SHALL CONTACT "ONE-CALL" FOR LOCATION OF ANY MARKED OR UNMARKED BURIED PIPELINES OR CABLES ON PAD AND/OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.
3. LJA ENERGY IS NOT RESPONSIBLE FOR UNDERGROUND UTILITIES OR PIPELINES.
4. CONTOUR INTERVALS = 1 FT

SWPPP NOTES:

- 1. THE CONTRACTOR SHALL DEVELOP AND IMPLEMENT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT (CGP) OF THE EPA. THE STORM WATER POLLUTION PREVENTION PLAN SHALL INCLUDE DEVELOPING, PERMITTING, INSTALLING AND MAINTAINING SWPPP BMP'S AS WELL AS PERMANENT SEEDING WHEN THE PROJECT IS COMPLETED.
2. THE CONTRACTOR SHALL PREVENT SOILS FROM ERODING FROM THE SITE ONTO OTHER PROPERTY BY CONSTRUCTING TEMPORARY EROSION CONTROL BERMS OR INSTALLING SILT FENCES AT THE PROPERTY LINES AS INDICATED ON THE APPROVED SWPPP.
3. THE CONTRACTOR SHALL MITIGATE EROSION OF TEMPORARY OR PERMANENT DIRT SWALES BY INSTALLING CHECK DAMS IN THE SWALES PERPENDICULAR TO THE DIRECTION OF FLOW, AND AT INTERVALS SPECIFIED ON THE SWPPP.
4. THE CONTRACTOR SHALL PREPARE AND MAINTAIN A COPY OF THE SWPPP ON-SITE AT ALL TIMES, AND SHALL COMPLY WITH THE REQUIREMENTS INDICATED ON THAT PLAN. COST IS INCIDENTAL TO CONSTRUCTION.
5. BEST MANAGEMENT PRACTICES (BMPs) SHALL BE UTILIZED TO CONTROL SEDIMENT SO THAT NO ADDITIONAL SEDIMENT RESULTING FORM CONSTRUCTION ACTIVITIES DISCHARGE TO WATERWAYS.
6. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST AND EROSION CONTROL REGULATIONS. THE CONTRACTOR SHALL PREPARE AND OBTAIN ANY NECESSARY DUST OR EROSION CONTROL PERMITS FROM REGULATORY AGENCIES.
7. THE CONTRACTOR SHALL PROMPTLY REMOVE ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY TO KEEP IT FROM WASHING OFF THE PROJECT SITE.

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Handwritten signature of Robin C. Warrick and date 9/20/23

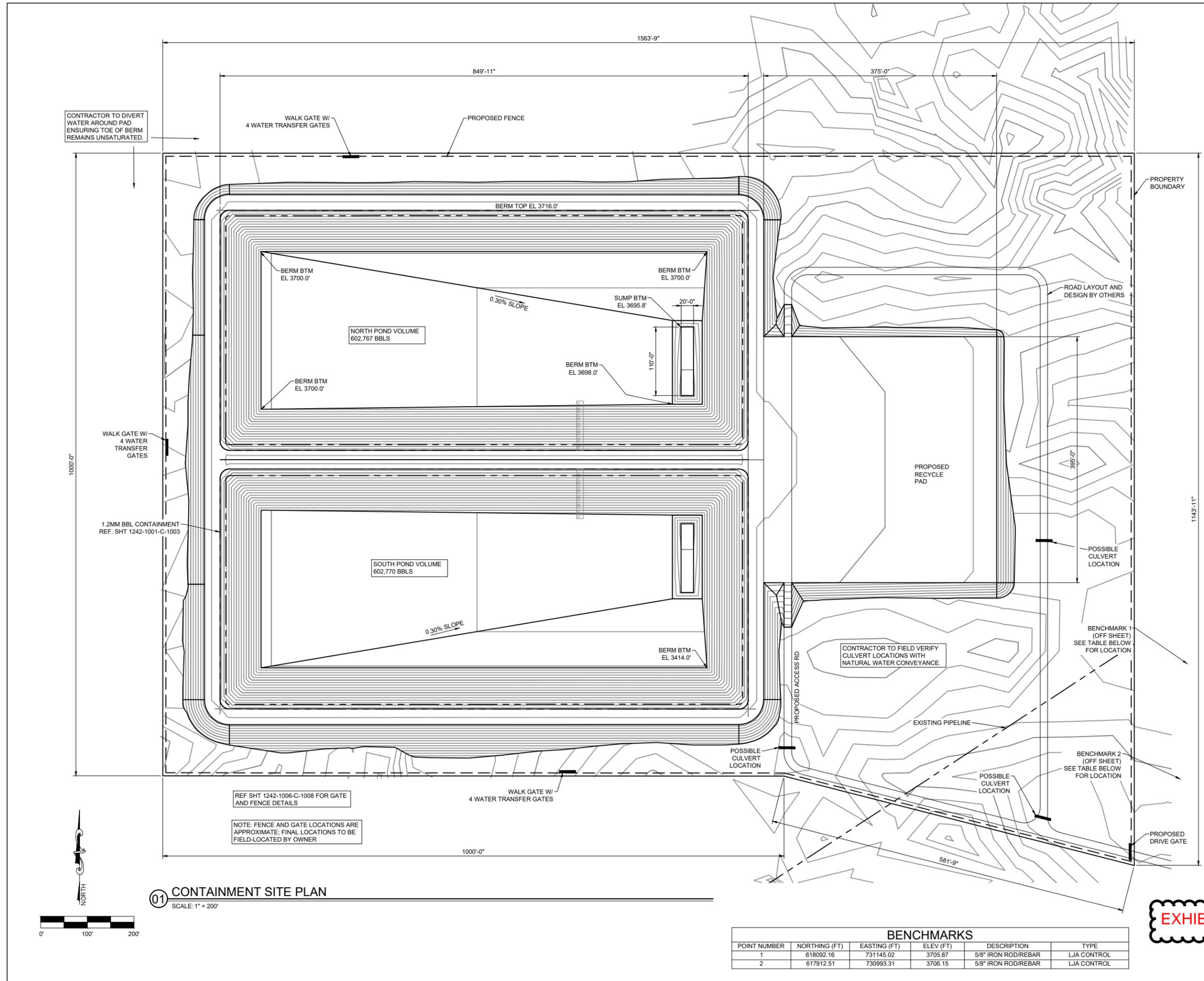
Table with 5 columns: ISSUE, DATE, BY, DESCRIPTION, CHKD, APPD. Row 1: 0, 09/20/23, TAH, ISSUED FOR CONSTRUCTION, HER, RCW



ALPHA WOLF POND 1.2MM BBL
PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
PROJECT NOTES

Table with 4 columns: DRAWN BY, PROJ. MGR, SCALE, PROJ. NO. Row 1: TAH, HER, N/A, B1265-1001

EXHIBIT O



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ROBIN C. WARRICK
 NEW MEXICO PROFESSIONAL ENGINEER
 22888
 9/20/23
 ROBIN C. WARRICK, P.E. #22888

ISSUE	DATE	BY	DESCRIPTION	CHKD	APPD
0	09/20/23	TAH	ISSUED FOR CONSTRUCTION	HER	RCW



ALPHA WOLF POND 1.2MM BBL PRODUCED WATER CONTAINMENT & RECYCLING FACILITY SITE PLAN & NOTES

DRAWN BY: TAH PROJ MGR: HER SCALE: 1" = 150' PROJ NO: B1265-1001

DRAWING NO: B1265-1001-C-1002 ISSUE NO: 0

01 CONTAINMENT SITE PLAN
 SCALE: 1" = 200'

BENCHMARKS

POINT NUMBER	NORTHING (FT)	EASTING (FT)	ELEV (FT)	DESCRIPTION	TYPE
1	618092.16	731145.02	3705.87	5/8" IRON ROD/REBAR	LJA CONTROL
2	617912.51	730993.31	3706.15	5/8" IRON ROD/REBAR	LJA CONTROL

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CONTAINMENT COORDINATES

PI	NORTHING	EASTING	ELEV
1	619040.75	727834.47	3716.00
2	619040.55	728684.39	3716.00
3	618640.29	728684.38	3716.55
4	618640.26	728675.96	3717.00
5	618239.91	728684.45	3716.00
6	618240.11	727834.45	3716.00
7	618640.50	727820.71	3716.00
8	618640.50	727842.94	3717.00
9	618837.93	728709.40	3715.55
10	618837.93	729084.39	3713.74
11	618442.93	729084.39	3713.74
12	618442.93	728709.42	3715.55
13	618640.50	727778.93	3707.92
14	618442.93	728742.34	3715.39
15	618442.93	728754.42	3715.38
16	618371.44	728742.34	3708.60
17	618371.44	728754.42	3708.72
18	618889.44	728742.40	3711.40
19	618889.44	728754.40	3711.70
20	618837.93	728742.39	3715.39
21	618837.93	728754.40	3715.38

STAGE STORAGE

ELEVATION	N. CONT. (BBL)	S. CONT. (BBL)
3695	0.00	0.00
3696	369.68	369.69
3697	1107.79	1107.85
3698	2109.03	2109.15
3699	7889.28	7889.66
3700	29026.02	29027.32
3701	61489.26	61491.82
3702	95891.88	95895.46
3703	131722.50	131726.93
3704	169003.37	169008.60
3705	207756.76	207762.83
3706	248004.94	248012.01
3707	289770.16	289778.50
3708	333074.71	333084.67
3709	377940.83	377952.90
3710	424390.81	424405.57
3711	472446.89	472465.04
3712	522131.35	522153.68
3713	573466.45	573493.88
3714	626474.46	626507.99
3715	681177.65	681218.40
3716	737598.27	737647.48

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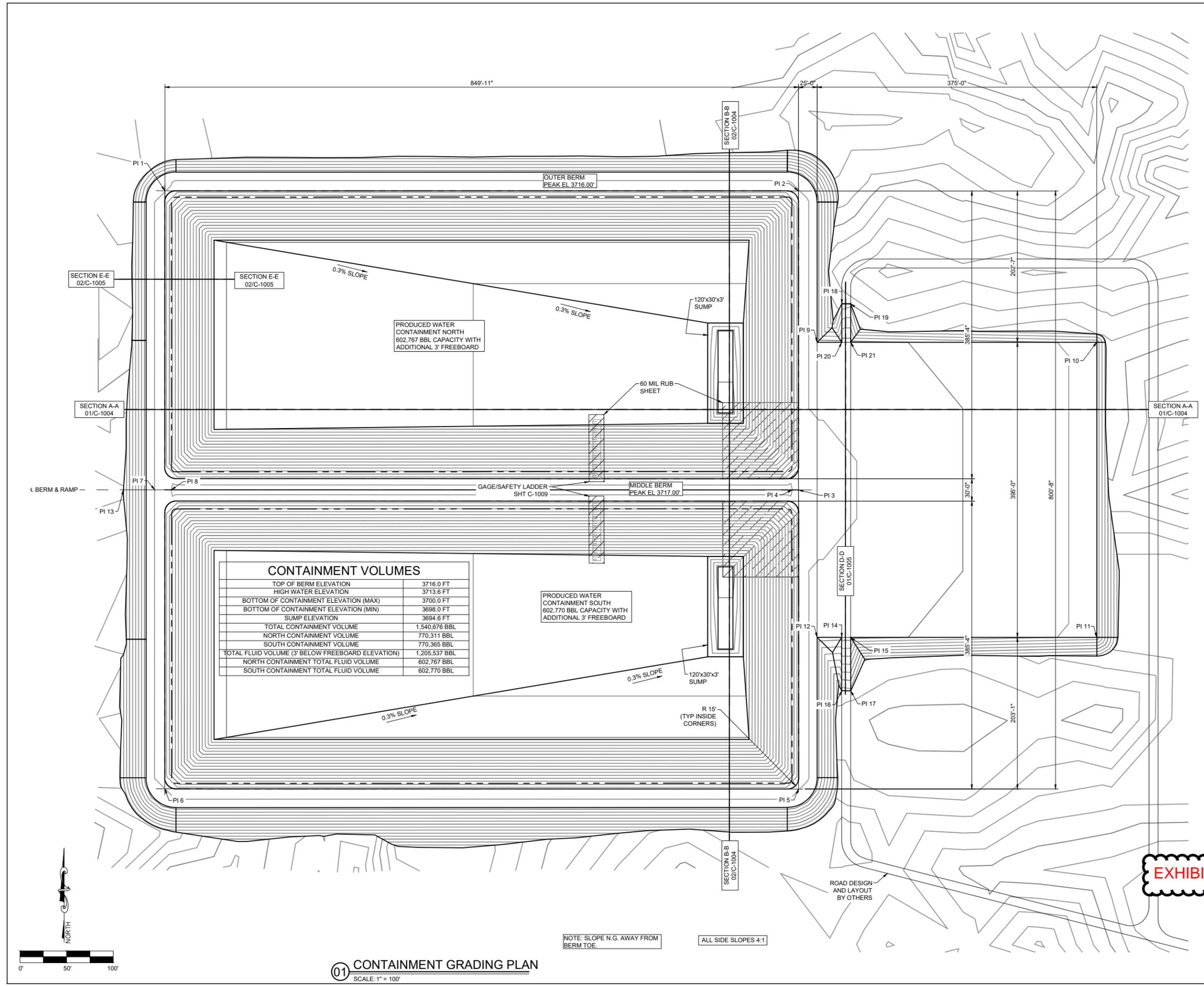
ISSUE	DATE	TAH	BY	DESCRIPTION	CHKD	APPD
0	09/20/23	TAH	HER	ISSUED FOR CONSTRUCTION	HER	RCW

EXHIBIT O



ALPHA WOLF POND 1.2MM BBL
 PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
 GRADING PLAN

DRAWN BY TAH	PROJ. MGR HER	SCALE 1" = 125'	PROJ. NO. B1265-1001
DRAWING NO. B1265-1001-C-1003	ISSUE NO. 0		



CONTAINMENT VOLUMES

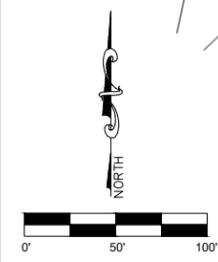
TOP OF BERM ELEVATION	3716.0 FT
HIGH WATER ELEVATION	3713.6 FT
BOTTOM OF CONTAINMENT ELEVATION (MAX)	3700.0 FT
BOTTOM OF CONTAINMENT ELEVATION (MIN)	3698.0 FT
SUMP ELEVATION	3694.6 FT
TOTAL CONTAINMENT VOLUME	1,540,676 BBL
NORTH CONTAINMENT VOLUME	770,311 BBL
SOUTH CONTAINMENT VOLUME	770,365 BBL
TOTAL FLUID VOLUME (3' BELOW FREEBOARD ELEVATION)	1,205,537 BBL
NORTH CONTAINMENT TOTAL FLUID VOLUME	602,767 BBL
SOUTH CONTAINMENT TOTAL FLUID VOLUME	602,770 BBL

PRODUCED WATER CONTAINMENT SOUTH
 602,770 BBL CAPACITY WITH
 ADDITIONAL 3' FREEBOARD

PRODUCED WATER CONTAINMENT NORTH
 602,767 BBL CAPACITY WITH
 ADDITIONAL 3' FREEBOARD

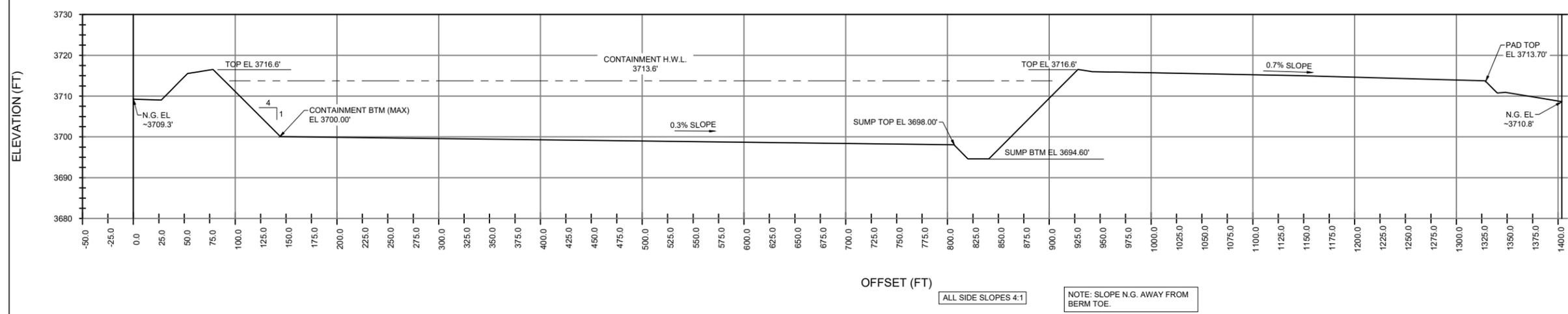
NOTE: SLOPE N.G. AWAY FROM BERM TOE.

ALL SIDE SLOPES 4:1

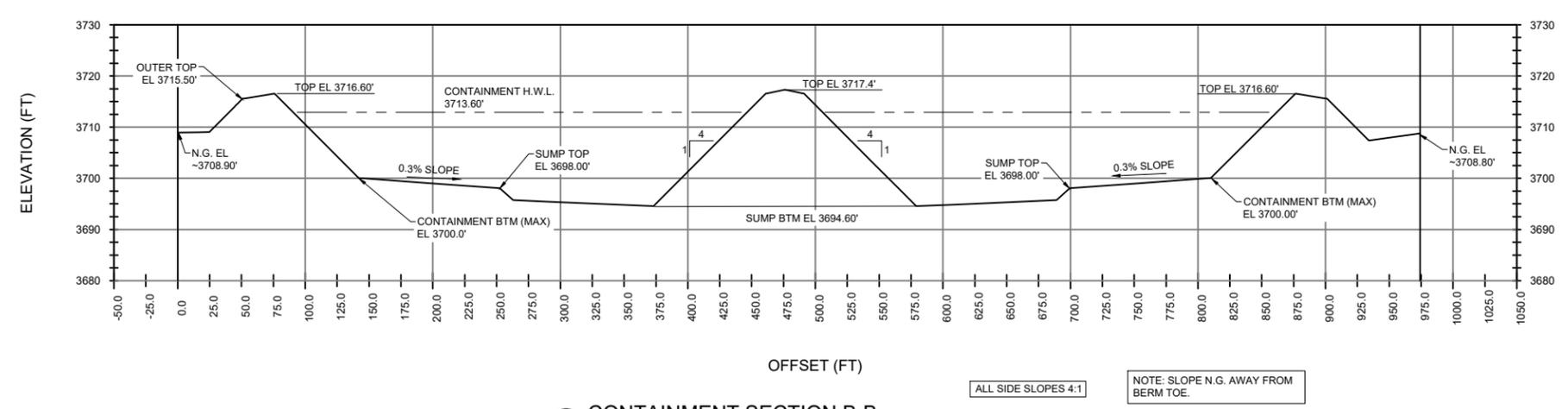


01 CONTAINMENT GRADING PLAN
 SCALE: 1" = 100'

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01 CONTAINMENT SECTION A-A
SCALE: N.T.S. 1H:4V



02 CONTAINMENT SECTION B-B
SCALE: N.T.S. 1H:4V

LJA Energy, Inc.
3600 W Sam Houston Parkway S
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
FRN - F-23057

ROBIN C. WARRICK
NEW MEXICO
PROFESSIONAL ENGINEER
22888
9/20/23
ROBIN C. WARRICK, P.E. #22888

ISSUE	DATE	BY	DESCRIPTION	CHKD	APPD
0	09/20/23	TAH	ISSUED FOR CONSTRUCTION	HER	RCW

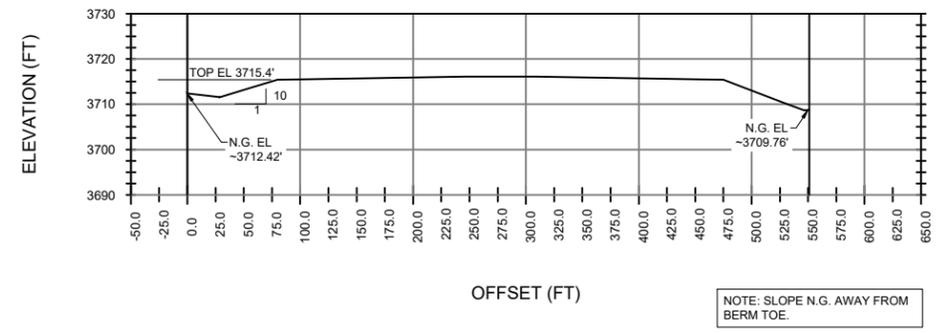


ALPHA WOLF POND 1.2MM BBL
PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
SECTIONS

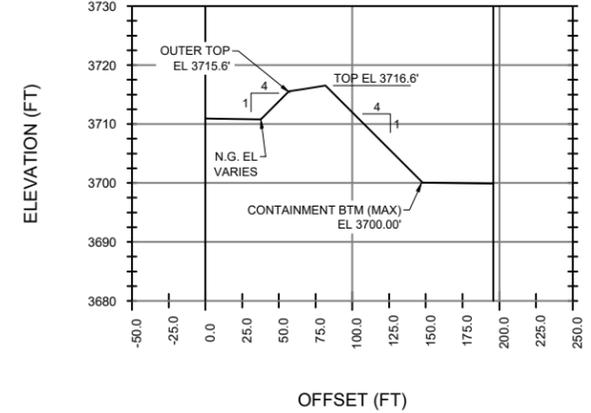
DRAWN BY TAH	PROJ. MGR HER	SCALE N.T.S.	PROJ. NO. B1265-1001
DRAWING NO. B1265-1001-C-1004			ISSUE NO. 0

EXHIBIT O

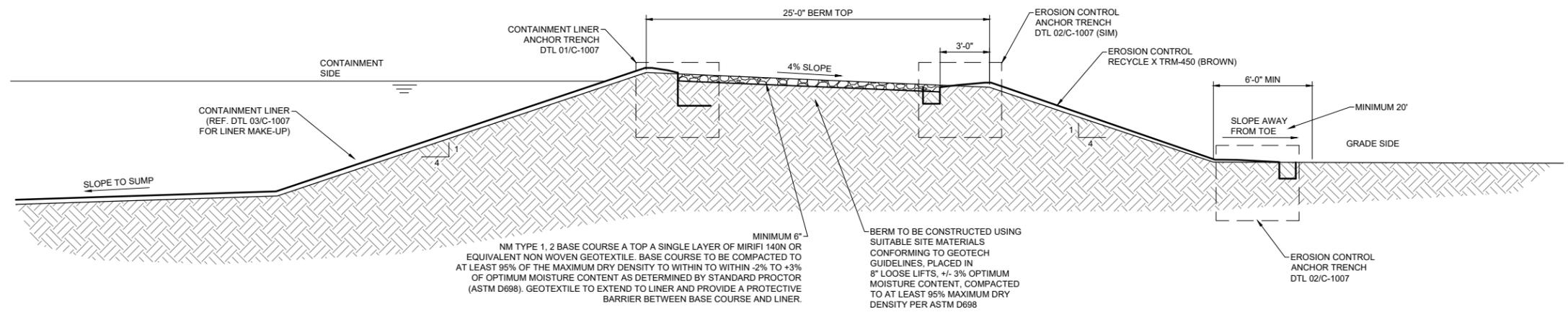
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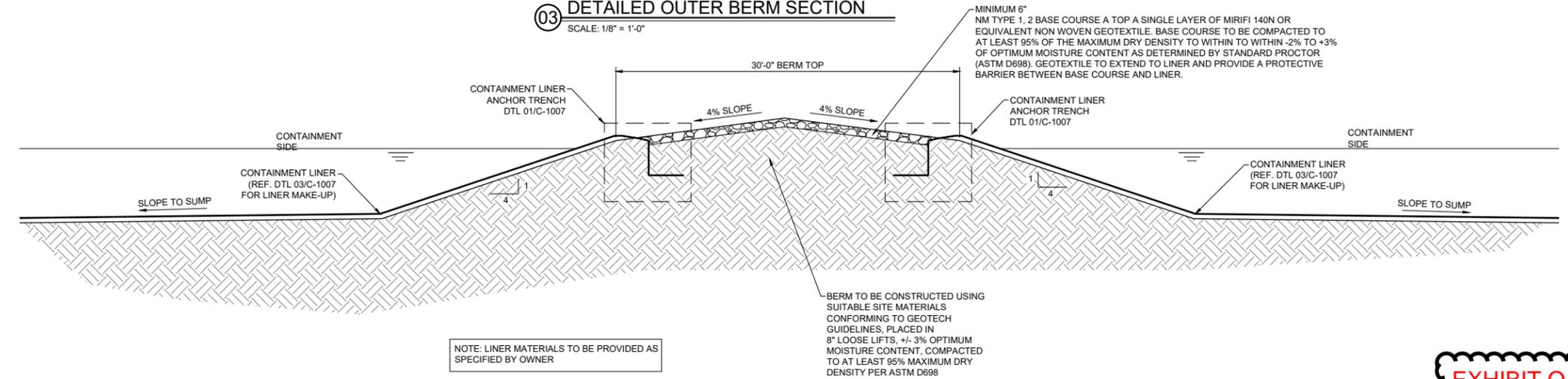
01 RAMP SECTION D-D
SCALE: N.T.S. 1H:4V



02 TYPICAL BERM SECTION E-E
SCALE: N.T.S. 1H:4V



03 DETAILED OUTER BERM SECTION
SCALE: 1/8" = 1'-0"



04 DETAILED MIDDLE BERM SECTION
SCALE: 1/8" = 1'-0"

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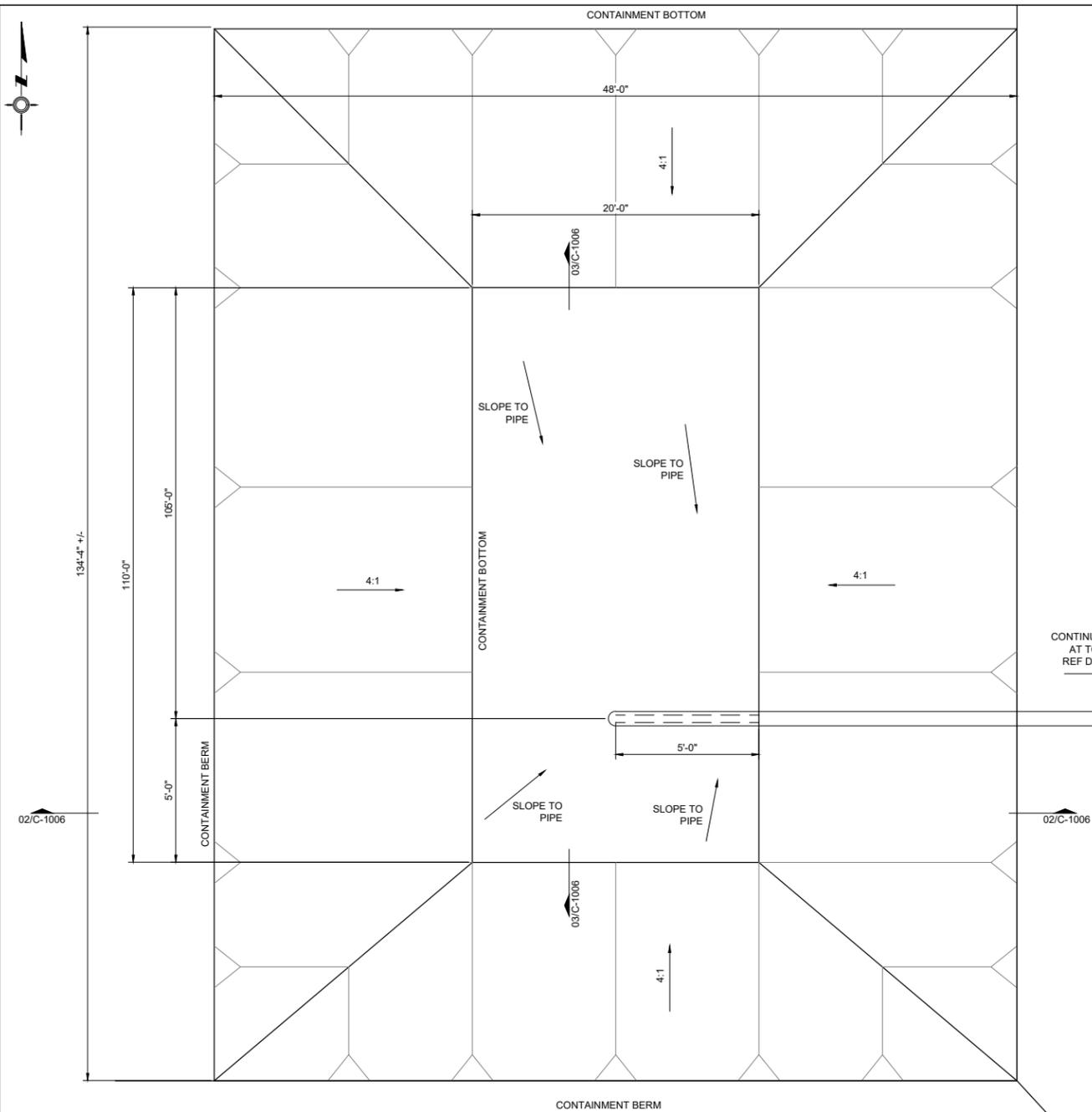
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0	09/20/23	TAH	ISSUED FOR CONSTRUCTION	HER	RCW



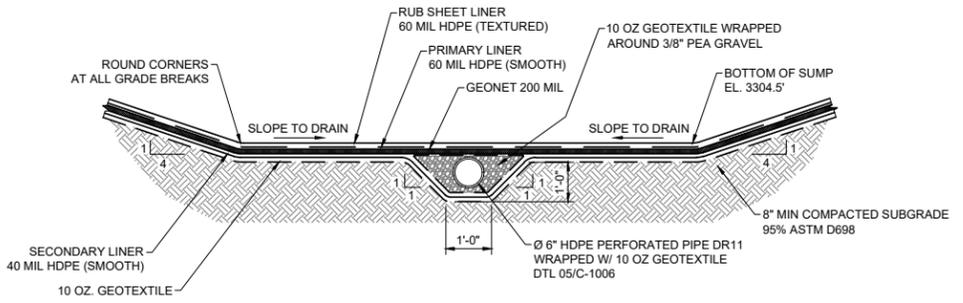
ALPHA WOLF POND 1.2MM BBL
PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
SECTIONS/DETAILS

DRAWN BY TAH	PROJ. MGR HER	SCALE N.T.S.	PROJ. NO. B1265-1001
DRAWING NO. B1265-1001-C-1005	ISSUE NO. 0		

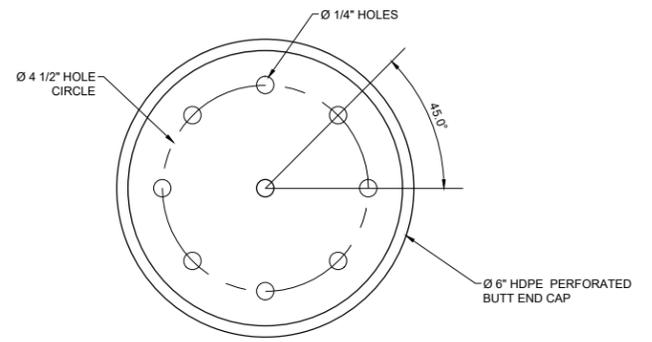
EXHIBIT O



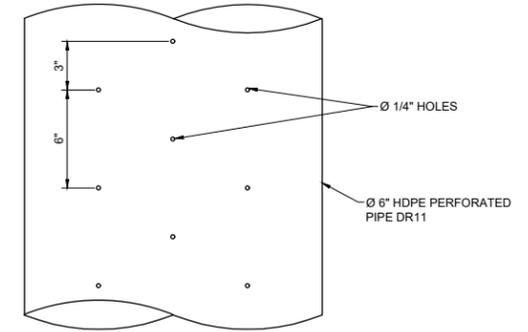
01 CONTAINMENT SUMP PLAN VIEW
SCALE: N.T.S.



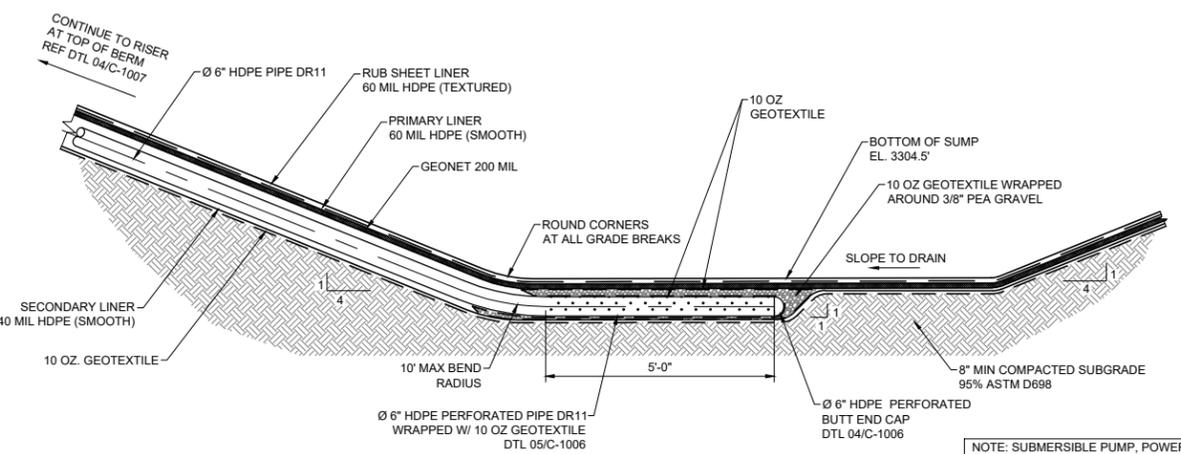
03 LEAK DETECTION SYSTEM
SCALE: N.T.S.



04 PERFORATED END CAP DETAIL
SCALE: 3" = 1'-0"



05 PIPE PERFORATION DETAIL
SCALE: N.T.S.



02 LEAK DETECTION SYSTEM
SCALE: N.T.S.

NOTE: SUBMERSIBLE PUMP, POWER CORD AND PULL CABLE SPECIFIED BY OWNER

EXHIBIT O

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FRN - F-23057



R.C.W. 9/20/23
ROBIN C. WARRICK, P.E. #22888

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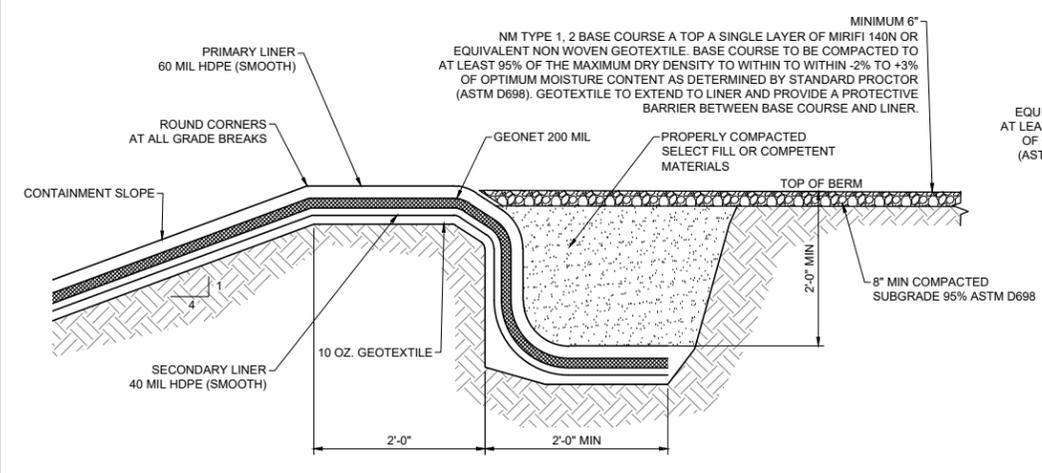


ALPHA WOLF POND 1.2MM BBL
PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
SUMP & LEAK DETECTION DETAILS

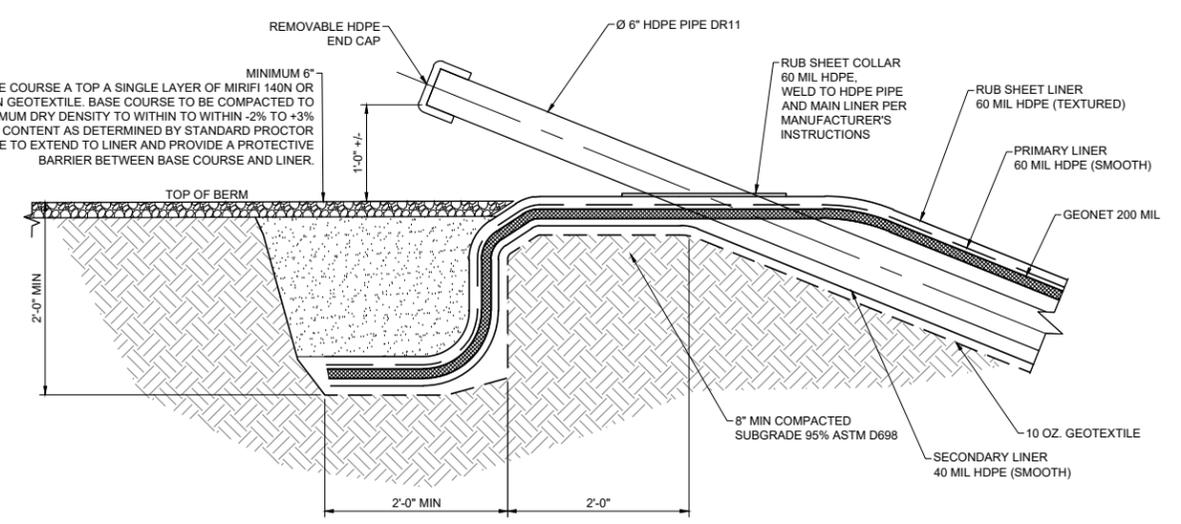
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TAH	HER	NOTED	B1265-1001

DRAWING NO.	ISSUE NO.
B1265-1001-C-1006	0

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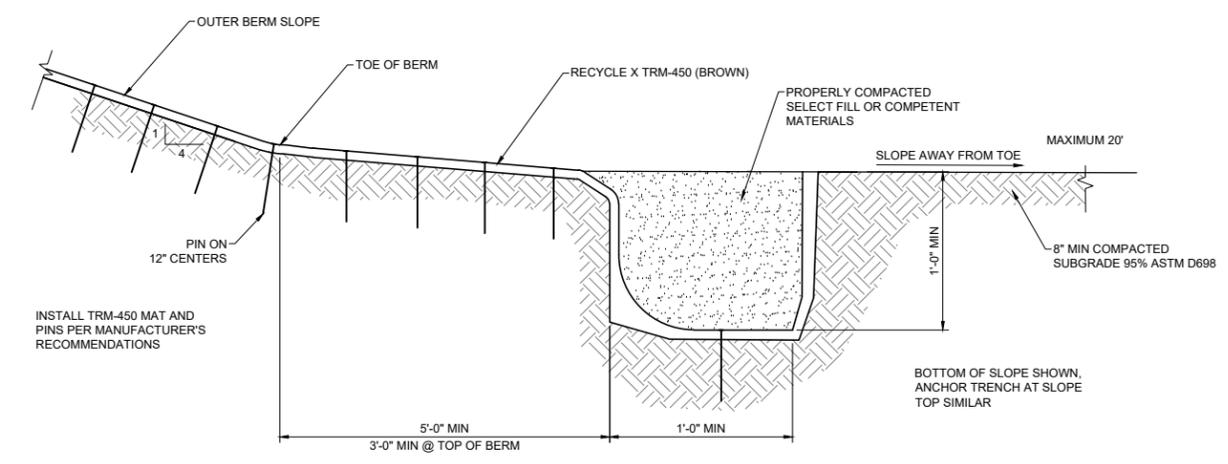


01 CONTAINMENT LINER ANCHOR TRENCH DETAIL
SCALE: 1/2" = 1'-0"

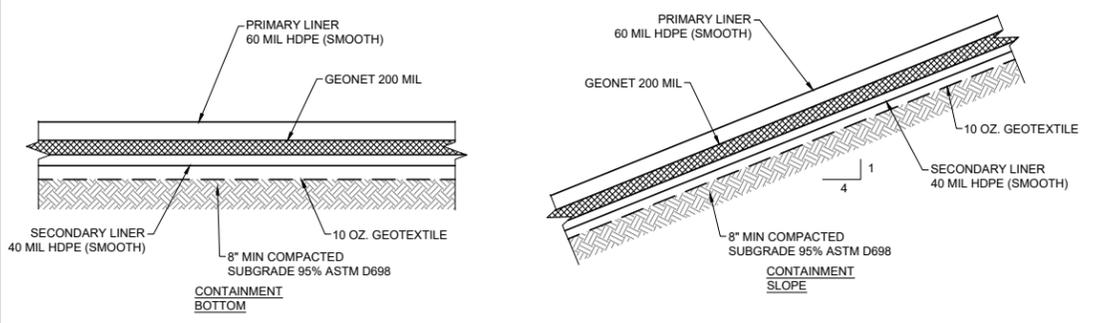


04 LEAK DETECTION PIPE RISER
SCALE: 1/2" = 1'-0"

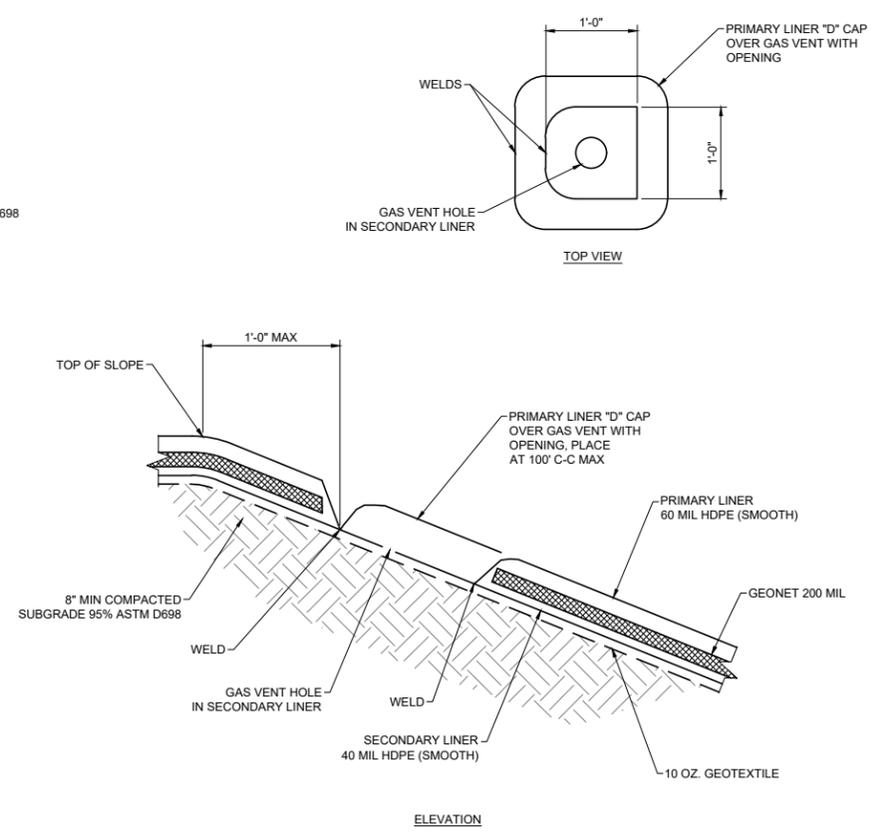
NOTE: SUBMERSIBLE PUMP, POWER CORD AND PULL CABLE SPECIFIED BY OWNER



02 EROSION CONTROL ANCHOR TRENCH DETAIL
SCALE: 1/2" = 1'-0"



03 TYPICAL CONTAINMENT LINER DETAIL
SCALE: 3/4" = 1'-0"



05 TYPICAL GAS VENT
SCALE: 3/4" = 1'-0"

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9/20/23
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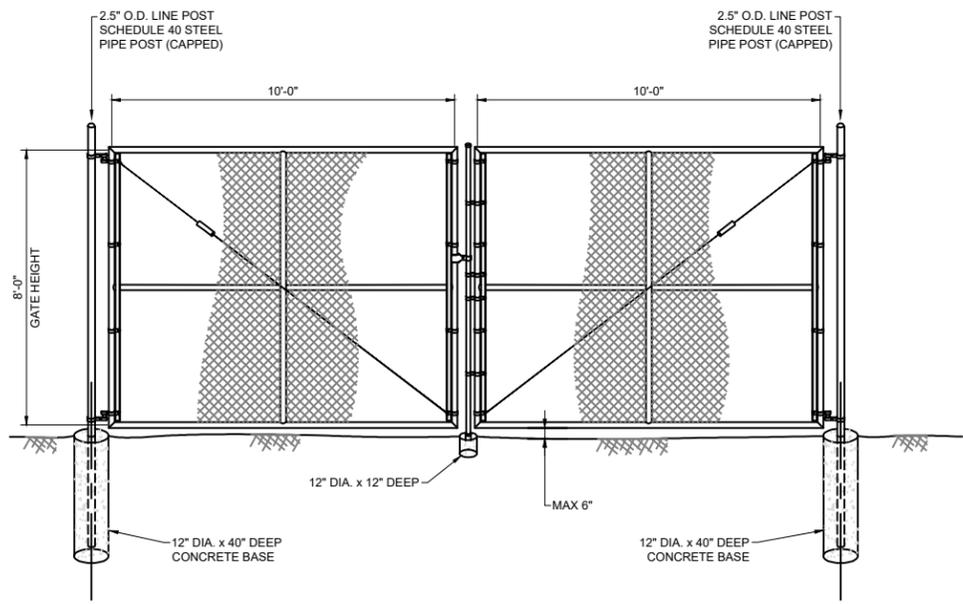
ISSUE	DATE	BY	DESCRIPTION	CHKD	APPD
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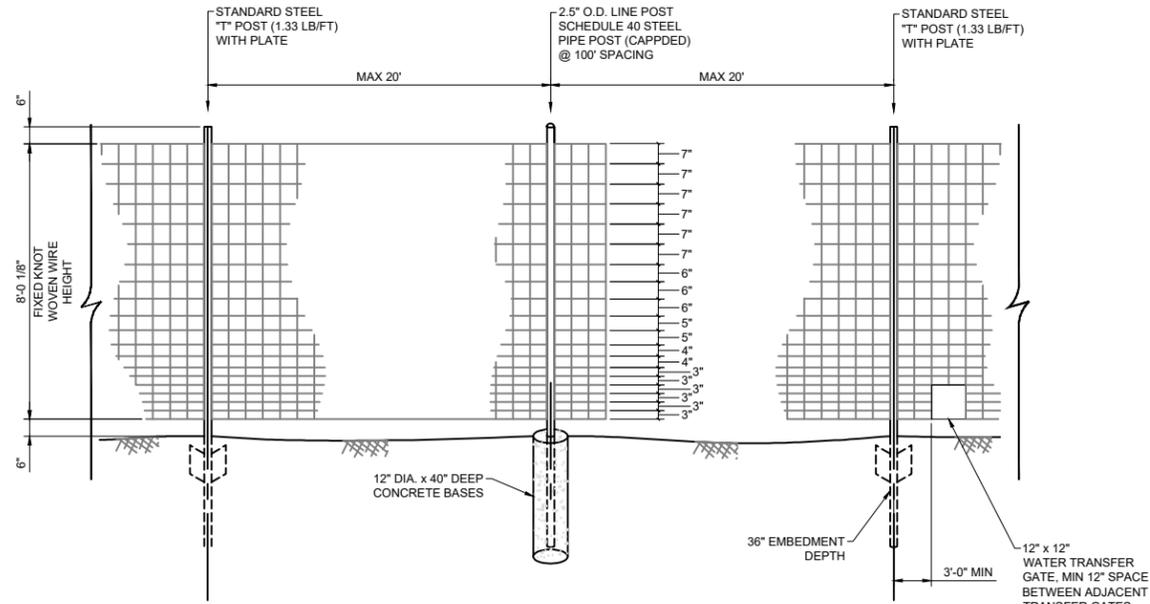
ALPHA WOLF POND 1.2MM BBL
PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
LINER & ANCHOR TRENCH DETAILS

DRAWN BY TAH	PROJ. MGR HER	SCALE NOTED	PROJ. NO. B1265-1001
DRAWING NO. B1265-1001-C-1007	ISSUE NO. 0		

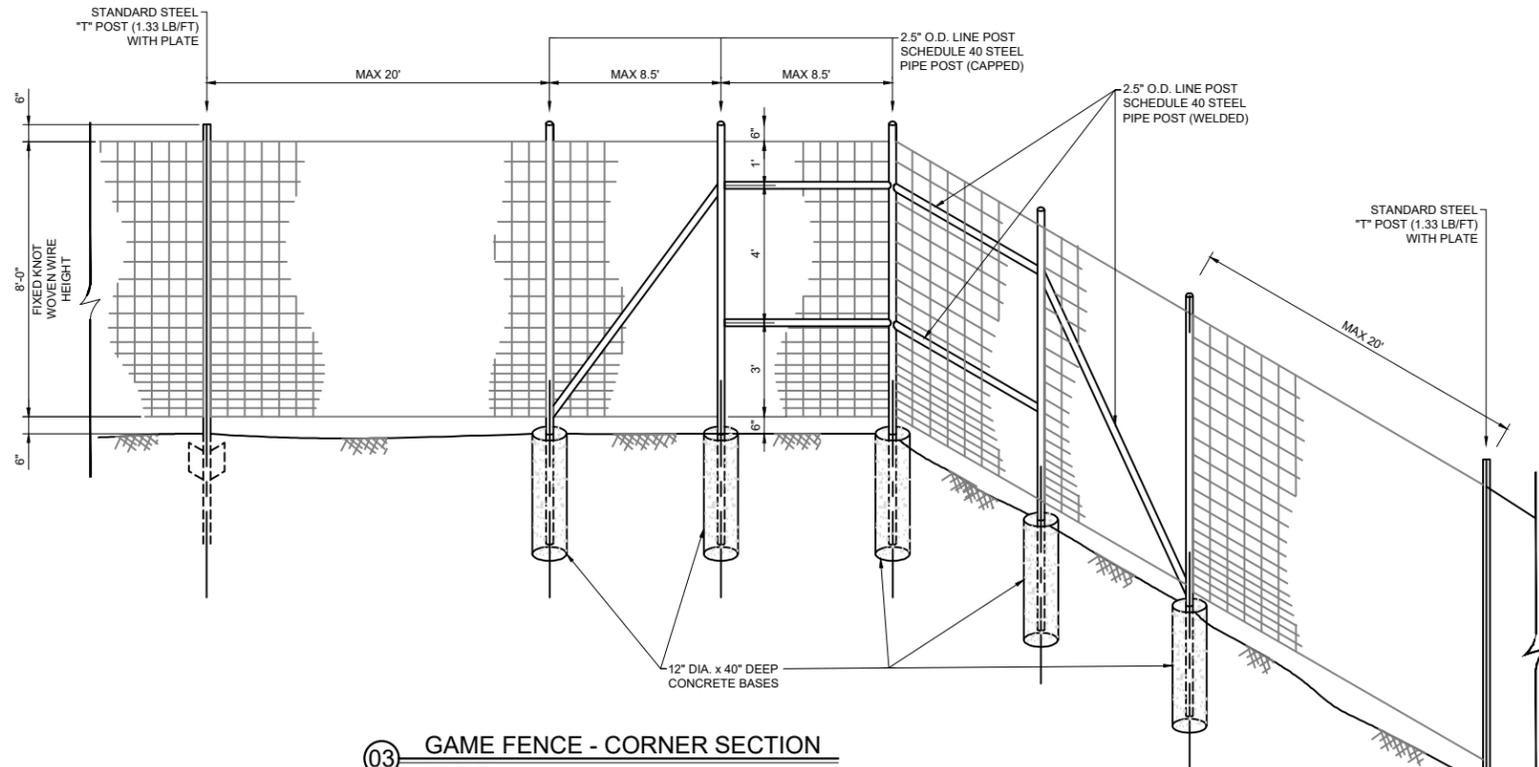
EXHIBIT O



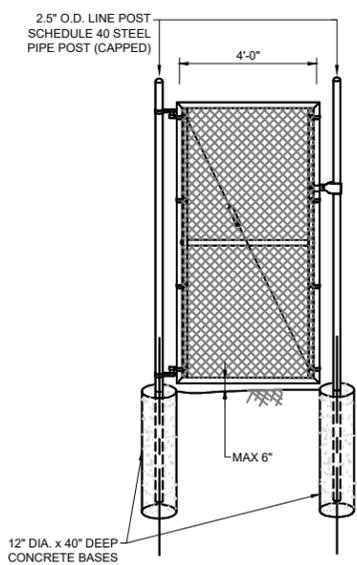
01 DOUBLE SWING GATE
SCALE: NTS



02 GAME FENCE - LINE SECTION
SCALE: NTS



03 GAME FENCE - CORNER SECTION
SCALE: NTS



04 WALK GATE
SCALE: NTS

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- NOTES:**
- GATES AND FENCE LOCATED AS DIRECTED BY OWNER.
 - FENCE SHALL BE ELECTRICALLY GROUNDING IN ACCORDANCE WITH REGULATIONS AROUND SUBSTATIONS AND WHERE OVERHEAD POWER LINES CROSS FENCE LINES.
 - FENCE POSTS FOUNDATIONS TO BE A MINIMUM 2' FROM ALL PIPELINES.
 - LOCAL BUILDING CODES AND PERMITS PREVAIL.
 - ALL FENCE AND GATE MATERIAL TO BE HOT-DIP GALVANIZED.
 - END OF EMBEDDED POST TO BE 4" ABOVE BOTTOM OF CONCRETE.
 - FOR WOVEN WIRE, TOP AND BOTTOM STRANDS SHALL BE 12 1/2 GAUGE OR HEAVIER; INTERMEDIATE STRANDS SHALL BE 14 1/2 GAUGE OR HEAVIER.
 - ALL WIRE SHALL HAVE CLASS III GALVANIZATION.
 - STANDARD WOVEN WIRE FENCES MAY HAVE LINE POSTS SPACED UP TO 15 FEET APART. HI-TENSILE WOVEN WIRE FENCE MAY HAVE LINE POSTS SPACED UP TO 20 FEET APART. CLOSER SPACING IS REQUIRED WHERE NEEDED FOR INCLINES OR CHANGES IN TOPOGRAPHY.
 - CONCRETE FOOTINGS SHALL HAVE TOPS CROWNED.
 - TO PREVENT WIRE FROM SLIPPING ON STEEL POST, DOUBLE WRAP ALL WIRE AROUND STEEL POST OR WELD CHAIN LINK LOOPS.

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 FRN - F-23057

ROBIN C. WARRICK
 NEW MEXICO
 22888
 PROFESSIONAL ENGINEER
 9/20/23
 ROBIN C. WARRICK, P.E. #22888

ISSUE	DATE	BY	DESCRIPTION	CHKD	APPD
0	09/20/23	TAH	ISSUED FOR CONSTRUCTION	HER	RCW

AVANT
 NATURAL RESOURCES

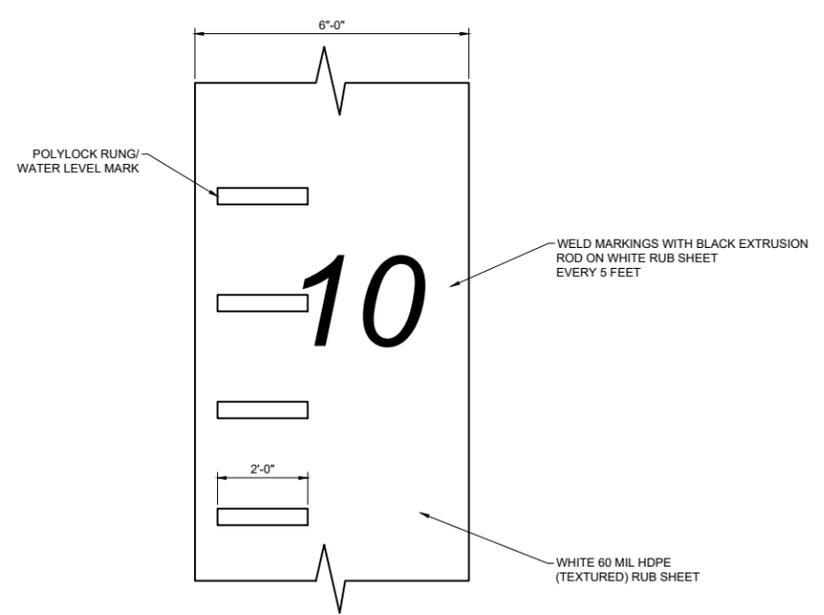
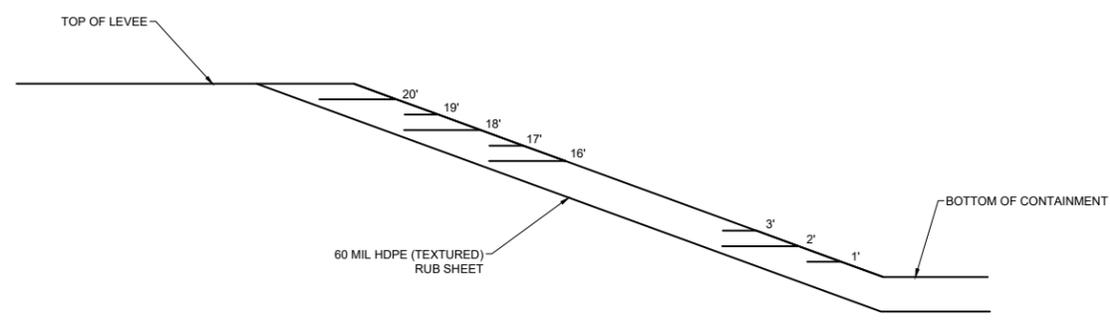
ALPHA WOLF POND 1.2MM BBL
 PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
 FENCE DETAILS

DRAWN BY	PROJ. MGR	SCALE	PROJ. NO.
TAH	HER	NOTED	B1265-1001

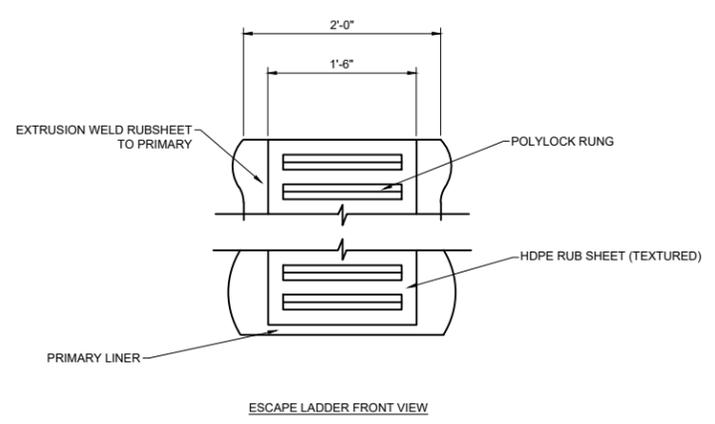
DRAWING NO.	ISSUE NO.
B1265-1001-C-1008	0

EXHIBIT O

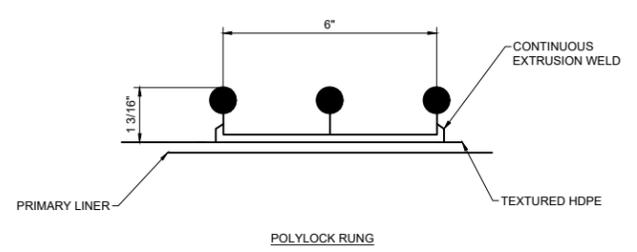
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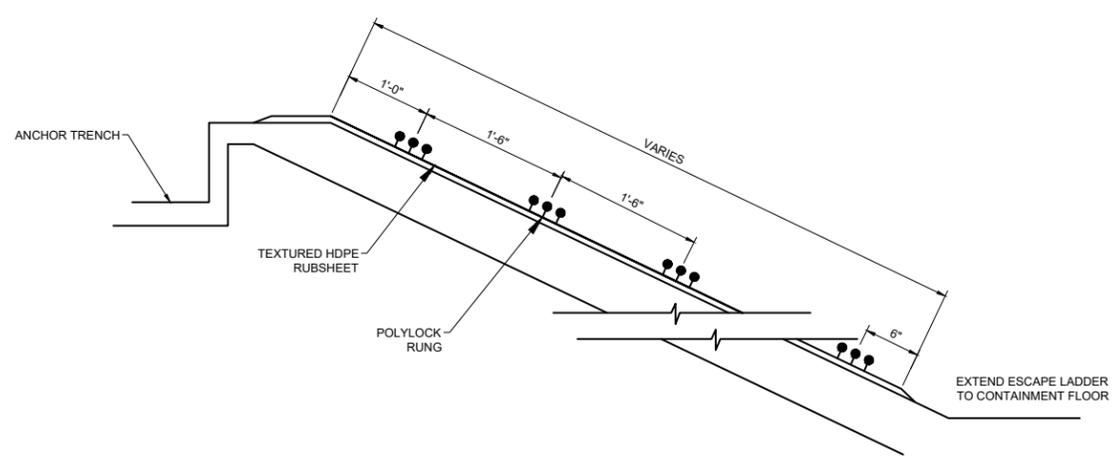
01 WATER LEVEL MARKS
SCALE: NTS



ESCAPE LADDER FRONT VIEW



POLYLOCK RUNG



02 ESCAPE LADDER DETAILS
SCALE: NTS

NOTE: GAGE LADDER SPECIFIED BY OWNER

EXHIBIT O

LJA Energy, Inc.
3600 W Sam Houston Parkway S
Suite 600
Houston, Texas 77042
Phone 713.953.5200
Fax 713.953.5026
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 ROBIN C. WARRICK, P.E. #22888

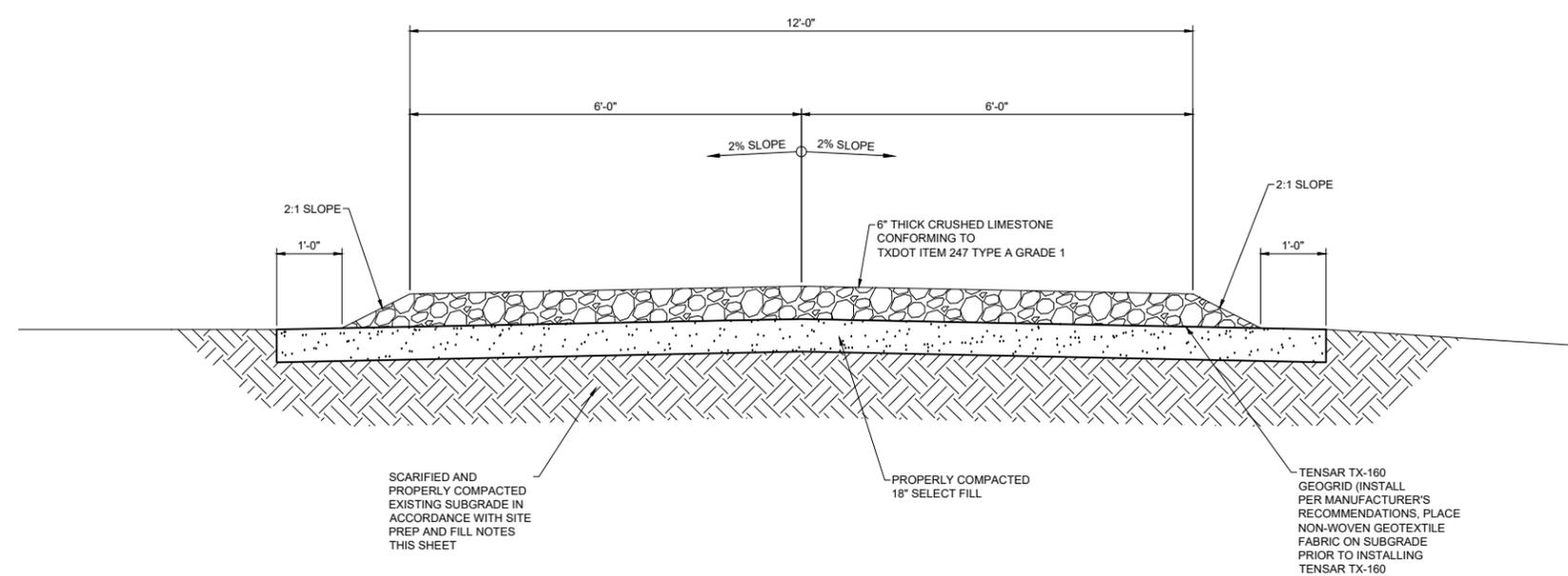
0	09/20/23	TAH	ISSUED FOR CONSTRUCTION	HER	RCW
ISSUE	DATE	BY	DESCRIPTION	CHKD	APPD



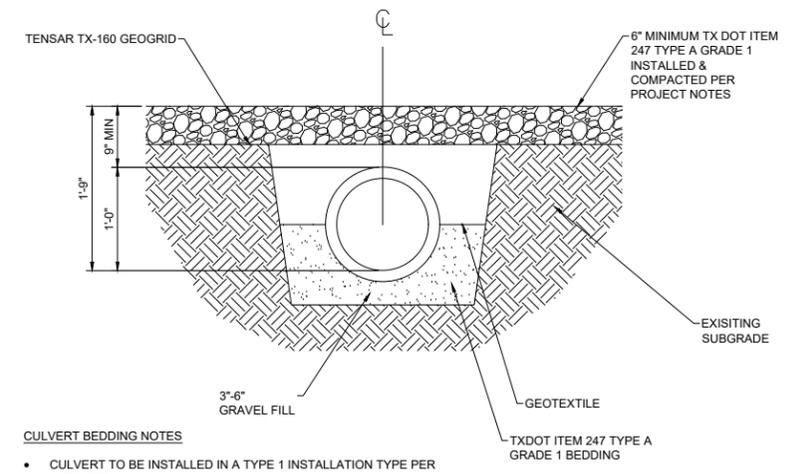
ALPHA WOLF POND 1.2MM BBL
PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
GAGE LADDER DETAILS

DRAWN BY	PROJ. MGR	SCALE	PROJ. NO.
TAH	HER	NOTED	B1265-1001
DRAWING NO.	ISSUE NO.		
B1265-1001-C-1009	0		

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01 TYPICAL ROAD SECTION
 SCALE: 3/8" = 1'-0"



02 RCP CULVERT BEDDING SECTION
 SCALE: 1/4" = 1'-0"

- CULVERT BEDDING NOTES**
- CULVERT TO BE INSTALLED IN A TYPE 1 INSTALLATION TYPE PER ACPA DESIGN MANUAL.
 - CULVERT TO BE Ø12" CLASS 3 REINFORCED CONCRETE PIPE.

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RCW 9/20/23
 ROBIN C. WARRICK, P.E. #22888

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ALPHA WOLF POND 1.2MM BBL
 PRODUCED WATER CONTAINMENT & RECYCLING FACILITY
 ROAD AND CULVERT SECTIONS

DRAWN BY TAH	PROJ. MGR. HER	SCALE AS NOTED	PROJ. NO. B1265-1001
DRAWING NO. B1265-1001-C-2001	ISSUE NO. 0		

EXHIBIT O

PERMITS WEST, INC.

PROVIDING PERMITS for LAND USERS

37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

December 1, 2023

Jim Bordegaray, Director
Commercial Resources Division
NM State Land Office
P. O. Box 1148
Santa Fe NM 87504

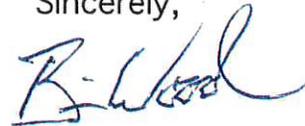
Dear Mr. Bordegaray:

As required by the NM Oil Conservation, and on behalf of Avant Operating, LLC, I am notifying the NM State Land Office as surface owner that Avant is filing the attached C-147 for its proposed Alpha Wolf Recycle Ponds & Pad in SW4 36-18s-32e, Lea County.

Avant will be filing an Application for a Business Lease to Construct/Operate a Frac Pond, Multi-Well Fluid Management Pit, or Recycling Containment Facility with the NM State Land Office in December.

Please call me if you have any questions.

Sincerely,



Brian Wood

QUIK SEND EXPRESS
7 AVENIDA VISTA GRANDE STE B7
SANTA FE, NM 87508
505-303-3558
Fax: 505-365-2737
quiksendexpress@gmail.com

USPS First Class Mail 9.20
Track #: 70211970000189013661
Ret Rcpt: 9590940274172055273074

SUBTOTAL 9.20
TAX 0.00
TOTAL 9.20
TEND Visa *Amex* 9.20

Total shipments: 0
Customer: None selected

12/01/2023
01:52 PM

#129849

7021 1970 0001 8901 3661

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Extra Services & Fees (check box, add fee as appropriate)		
<input type="checkbox"/> Return Receipt (hardcopy)	\$	
<input type="checkbox"/> Return Receipt (electronic)	\$	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$	
<input type="checkbox"/> Adult Signature Required	\$	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$	
Postage	\$	
Total Postage and Fees	\$	
Sent To	<i>NMSLO</i>	
Street and Apt. No., or PO Box No.		
City, State, ZIP+4®	<i>SF</i>	

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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

Form C-147
Revised October 11, 2022

https://www.emnrd.nm.gov/ocd/ocd-e-permitting/

Recycling Facility and/or Recycling Containment

Type of Facility: [X] Recycling Facility [X] Recycling Containment*
Type of action: [X] Permit [X] 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: AVANT OPERATING, LLC (For multiple operators attach page with information) OGRID #: 330396
Address: 1515 WYNKOOP, SUITE 700, DENVER, CO 80202
Facility or well name (include API# if associated with a well): ALPHA WOLF RECYCLING PONDS & FACILITY
OCD Permit Number: (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr SW4 Section 36 Township 18 S Range 34 E County: LEA
Surface Owner: [] Federal [X] State [] Private [] Tribal Trust or Indian Allotment

2. [X] Recycling Facility:
Location of recycling facility (if applicable): Latitude 32.69920 Longitude -103.72361 NAD83
Proposed Use: [] Drilling* [X] Completion* [X] 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.
[X] Fluid Storage
[X] Above ground tanks [X] 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. [X] Recycling Containment: North pond: 32.69979 & -103.72567
[] Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable): Latitude 32.69864 Longitude -103.72568 NAD83 South pond
[X] For multiple or additional recycling containments, attach design and location information of each containment
[X] Lined [] Liner type: Thickness 60 & 40 mil [] LLDPE [X] HDPE [] PVC [] Other
[] String-Reinforced
Liner Seams: [X] Welded [] Factory [X] Other FIELD WELDED Volume: 602,770 bbl Dimensions: L 849' x W 385' x D 16'
[] Recycling Containment Closure Completion Date: EACH EACH 13' D EXCLUDING OF 2 FREEBOARD

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 \$ 720,000.00 (work on these facilities cannot commence until bonding amounts are approved)

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

5.

Fencing:

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

Alternate. Please specify 8' HIGH 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.

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

9.

Recycling Facility and/or Containment Checklist:

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

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

10.

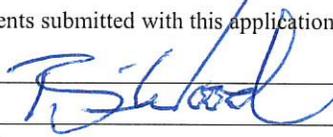
Operator Application Certification:

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

Name (Print): BRIAN WOOD

Title: CONSULTANT

Signature: _____



Date: 12-1-23

e-mail address: brian@permitswest.com

Telephone: 505 466-8120

11.

OCD Representative Signature: _____ Approval Date: _____

Title: _____

OCD Permit Number: _____

OCD Conditions _____

Additional OCD Conditions on Attachment

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Wednesday, December 13, 2023 2:26 PM
To: brian@permitswest.com; jeanette@permitswest.com
Subject: 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142]
Attachments: C-147 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142].pdf

1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142]

Good afternoon Mr. Wood,

NMOCD has reviewed the recycling containment permit application and related documents, submitted by [330396] Avant Operating, LLC on December 2, 2023, for 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] in M-36-18S-32E, Lea County, New Mexico. [330396] Avant Operating, LLC requested variances from 19.15.34 NMAC for 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142].

The following variances have been approved:

- The variance from 19.15.34.13.E NMAC for the installation of two ultrasonic Broadband Pro 4 Speaker Bird Repeller Systems is approved.
- The variance to NMAC 19.15.34.12.D to install an 8' high fixed knot woven wire fence is approved.

The form C-147 and related documents for the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] is approved with the following conditions of approval:

- The purpose of this permit is for oil and gas activities regulated under the NMAC 19.15.34.3 STATUTORY AUTHORITY: 19.15.34 NMAC is adopted pursuant to the Oil and Gas Act, Paragraph (15) of Section 70-2-12(B) NMSA 1978, which authorizes the division to regulate the disposition of water produced or used in connection with the drilling for or producing of oil and gas or both and Paragraph (21) of Section 70-2-12(B) NMSA 1978 which authorizes the regulation of the disposition of nondomestic wastes from the exploration, development, production or storage of crude oil or natural gas.
- [330396] Avant Operating, LLC shall construct, operate, maintain, close, and reclaim the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] in compliance with 19.15.34 NMAC.
- 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] is approved for five years of operations from the date of permit application of December 2, 2023. 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] permit expires on December 2, 2028.
- 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] will consist of two (2) earthen impoundments with a capacity of 602,767 BBL each containment. The total operational volume of 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] is 1,205,537 BBL The proposed liner system cross-section for the earthen containments is as follows: prepare subgrade, 10 oz. geotextile, 40-mil HDPE secondary liner, 200-mil geonet, 60-mil HDPE primary liner.
- The total closure cost estimate for 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142], included in the application, in the amount of \$720,000.00, meets the requirements of NMAC 19.15.34.15.A.(1). The financial assurance should be mailed to the Oil Conservation Division; Bonding and Compliance; 1220 South St Frances Drive; Santa Fe, NM 87505.
- [330396] Avant Operating, LLC cannot receive produced water in the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] until after the original copy of the financial assurance has been accepted by NMOCD.
- [330396] Avant Operating, LLC shall notify NMOCD when construction of the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] commences.

- [330396] Avant Operating, LLC shall notify NMOCD when recycling operations commence and cease at 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142].
- A minimum of 3-feet freeboard must be maintained 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] recycling containment, at all times during operations.
- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operation of the facility is considered ceased and a notification of cessation of operations should be sent electronically to [OCD Online](#). An extension to extend the cessation of operation, not to exceed six months, must be submitted using a C-147 form through [OCD Online](#).
- [330396] Avant Operating, LLC shall submit monthly reports of recycling and reuse of produced water, drilling fluids, and liquid oil field waste on NMOCD form C-148 through [OCD Online](#) even if there is zero activity.
- [330396] Avant Operating, LLC, shall inspect the recycling containment and associated leak detection systems weekly while it contains fluids. [330396] Avant Operating, LLC shall maintain a current log of such inspections and make the log available for review by the division upon request according to 19.15.34.13.A.
- [330396] Avant Operating, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142]. The closure criteria for this site is for DGW 51 feet – 100 feet.

Please reference number 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] in all future communications.

Regards,

Victoria Venegas • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

506 W. Texas Ave. Artesia, NM 88210

(575) 909-0269 | Victoria.Venegas@emnrd.nm.gov

<https://www.emnrd.nm.gov/ocd/>



District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(575) 393-6161 Fax:(575) 393-0720

District II
 811 S. First St., Artesia, NM 88210
 Phone:(575) 748-1283 Fax:(575) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 294258

CONDITIONS

Operator: Avant Operating, LLC 1515 Wynkoop Street Denver, CO 80202	OGRID: 330396
	Action Number: 294258
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	The form C-147 and related documents for the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] is approved with conditions of conditions of approval. 330396] Avant Operating, LLC shall construct, operate, maintain, close, and reclaim the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] in compliance with 19.15.34 NMAC. • [330396] Avant Operating, LLC cannot receive produced water in the 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142] until after the original copy of the financial assurance has been accepted by NMOCD. • [330396] Avant Operating, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 1RF-513 - ALPHA WOLF RECYCLING PONDS & FACILITY ID [fVV2334737142].	12/13/2023