

Variance Request for Audible Bird Deterrent

Re: Leatherneck Reuse Water Recycling Facility and Containment Pit

Matador Production Company would like to request the OCD's approval for a variance regarding bird deterrents at the location described above. Matador proposes to utilize the Bird-X Mega Blaster Pro, creating intermittent distress calls to create a "danger zone" that frightens native and or migrating birds and wildlife from the water recycling facility and containment pit area. Two units would be installed, each containing 2 built-in high output amplifiers and houses 20 speakers, capable of producing up to 125 decibels and a frequency range from 2,000 – 10,000Hz.

Please note that EOG Resources, Inc. is currently utilizing this same bird deterrent, which was approved by the OCD on several current permits

Bird X Specs

- Coverage: Up to 30 acres from single unit
- Box dimensions: Box 1: 23" x 18" x 16" (23 lbs., unit & speaker), Box 2: 32" x 24" x 5" (17 lbs., solar panel)
- Power Input: 12vDC (3 amps) via solar panel and battery
- Sound Pressure: up to 125 decibels
- Frequency: 2,000–10,000 Hz
- Library of predator calls

Siting Criteria- Section 8



February 15, 2019

#5E26816 BG#11

Mr. Cliff Humphreys
Matador Resources Company
5400 LBJ Freeway, Suite 1500
Dallas, TX 75240

**Subject: C-147 Recycling Containment Permit Siting Criteria Attachment, Proposed
Leatherneck Recycling Facility, Eddy County, New Mexico**

Dear Mr. Humphreys:

Souder, Miller & Associates (SMA) is pleased to submit the enclosed C-147 Siting Criteria Explanation and supporting documentations for the proposed Leatherneck Recycling Containment Pond to be constructed in central Eddy County, New Mexico. The proposed recycling containment will be composed of a lined pond with an approximate maximum capacity of 43.8 acre feet, and be located in Township 20S, Range 29E, western Section 30 east of Magnum Road approximately 4 miles north of its intersection with Highway 62.

Below are details on the siting criteria in Section 8 of the C-147 permit. Supporting documentation are included in the Appendices indicated in each siting criteria explanation. Information obtained from the supporting documentation was confirmed during a site visit by Lucas Middleton with SMA July 12, 2018.

8.1 Groundwater is greater than 50 feet below the bottom of the recycling containment

Groundwater, as indicated by lithology logs from recent drilling activities, has been recorded at 3178 feet above mean sea level (amsl). The proposed facility is located at an elevation of approximately 3,243 feet above mean sea level (amsl). The base of the containment pond is less than 8 feet below surrounding grade at an elevation of approximately 3,234 ft amsl. The depth to groundwater will be greater than 50 feet at this elevation of approximately 3,180, which is over 50 feet from below the bottom of the Recycling Containment. SMA drilled a soil bore was to 65 feet below ground at the lowest elevation in the potential containment area and found groundwater at 63 feet below surface grade (See appendix A.) Supporting information from nearby United States Geological Society (USGS) monitoring wells, and recent lithology logs are included as Appendix A.

8.2 Facility is located within municipal boundary or within a defined fresh water well field

The facility is located over 8 miles from the nearest municipality (City of Carlsbad) in an area consisting predominantly of oil and gas development and is not within any defined freshwater field as no municipal water wells are present near the facility location. A vicinity map of the facility on a USGS topographic map is included as Figure 1. A map indicating the location of wells registered with the NMOSE is included as Appendix A.

8.3 Facility is located within an area overlying a subsurface mine

Information from the USGS Topographic map covering the location of the facility as well as a map from the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) indicates that no subsurface mines or quarries are present within the facility boundaries. There are no quarries or subsurface mines within a one (1) mile radius of the facility boundaries. A vicinity map of the facility on a USGS topographic map is included as Figure 1. A map indicating the location of active mines from the EMNRD website is included as Appendix B.

8.4 Facility is located within an unstable area

The facility is in generally flat topography with no nearby mapped faults. The USGS Seismic hazard map places the region as a low-risk area for potential earthquakes or other seismic hazards. As such, SMA believes the facility is not located in an unstable area. A vicinity map of the facility on a USGS topographic map is included as Figure 1, and a geologic map of the area with known faults is included as Figure 3. A seismic hazards map is included as Appendix C.

This site is within the High Karst Occurrence Potential area according to the BLM GIS Base map. SMA field staff geoscientist and Cave and Karst Surface Evaluation contractor David S. Belski found no cave or karst concerns in or around the site, the report is included in Appendix C.

(SMA) was retained by Matador Production Company to prepare a geotechnical report. From the site's subsurface investigation through obtaining soil test borings, the nature of the substrata soils has been determined as suitable for the site as proposed. SMA's official report and drill logs can be made available upon request.

8.5 Facility is located within a 100-year floodplain

The facility is located within FEMA Zone D in an area that is not covered by printed flood maps. Information from the FEMA Floodplain online database indicates that no known 100-year floodplains are present within 10 miles of the facility. A screenshot of the proposed facility area from the online FEMA Floodplain database is included as Appendix D, with site outlined in purple.

8.6 Facility is located within 300 feet of a continuously flowing watercourse or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake

The nearest continually flowing watercourse, as indicated on the USGS topographic map, is several miles away; the nearest ephemeral water course is also located several miles away. No lakebeds, sinkholes, or playa lakes are within 200 feet of the facility. FEMA indicates a possible flood stream approximately 0.5 miles to the west of the proposed facility. A vicinity map of the facility on a USGS topographic map is included as Figure 1, an aerial photo of the project area is included as Figure 2, and the FEMA hydrographic Map is included in Appendix D. The absence of watercourses, lakebeds, sinkholes, and playa lakes in the vicinity of the proposed facility was confirmed by a site visit conducted by SMA on July 12, 2018 and David S. Belski Cave of Karst Surface Evaluation on August 24, 2018.

8.7 Facility is located within 1,000 feet of an existing residence, school, hospital, institution, or church at time of initial inspection

The facility is located several miles from the nearest private residence. The closest facilities to the proposed facility are existing oil field tank batteries and well pads located in all directions. A vicinity map of the facility on a USGS topographic map is included as Figure 1, and an aerial photo of the project area is included as Figure 2. The absence of residences, schools, hospitals, churches, or institutions in the vicinity of the proposed facility was confirmed by a site visit conducted by Mr. Lucas Middleton of SMA on July 12, 2018.

8.8 Facility is located within 500 feet of a spring or fresh water well in existence at time of initial inspection

The nearest freshwater well registered with the NMOSE or USGS is located over a mile to the west of the proposed facility. No springs are indicated on USGS topographic maps within 1,000 feet of the proposed facility. A vicinity map of the facility on a USGS topographic map is included as Figure 1, and an aerial photo of the project area indicating the location of registered wells is included as Figure 2. Supporting information from nearby NMOSE wells and the USGS monitoring wells is included as Appendix A. The absence of springs or drinking water wells in the vicinity of the proposed facility was confirmed by a site visit conducted by Mr. Lucas Middleton of SMA on July 12, 2018.

8.9 Facility is located within 500 feet of a wetland

The nearest wetland as mapped by the United States Fish and Wildlife Service is present approximately 4 miles to the southwest of the proposed facility. A map prepared by the US FWS online wetland database is included as Appendix E. The absence of potential wetlands in the vicinity of the proposed facility was confirmed by a site visit conducted by Mr. Lucas Middleton of SMA on July 12, 2018.

If you have any questions, please do not hesitate to call me at 575-689-7040 or to e-mail me at austin.weyant@soudermiller.com

Sincerely,
SOUDER, MILLER AND ASSOCIATES

J. Austin Weyant
Senior Scientist

Enclosures: Figure 1: Vicinity Map on USGS Topographic Quad
 Figure 2: Site Aerial Photo
 Figure 3: Geologic Map of Proposed Facility Area
 Figure 4: NMOSE Well Locations Hydrographic Map
 Figure 5: Hydrographic Map

Appendix A: Groundwater & Well Information (NMOSE & USGS)
Appendix B: Active Mine/Quarry Map (NM EMNRD)

Appendix C: USGS Seismic Hazard Map

Appendix D: FEMA Floodplain Information

Appendix E: Wetlands & Critical Habitat Map (US FWS)

Figure 1: Vicinity Map on USGS Topographic Quad

Figure 2: Site Aerial Photo



Legend

 Leatherneck Treatment Facility

Project Location

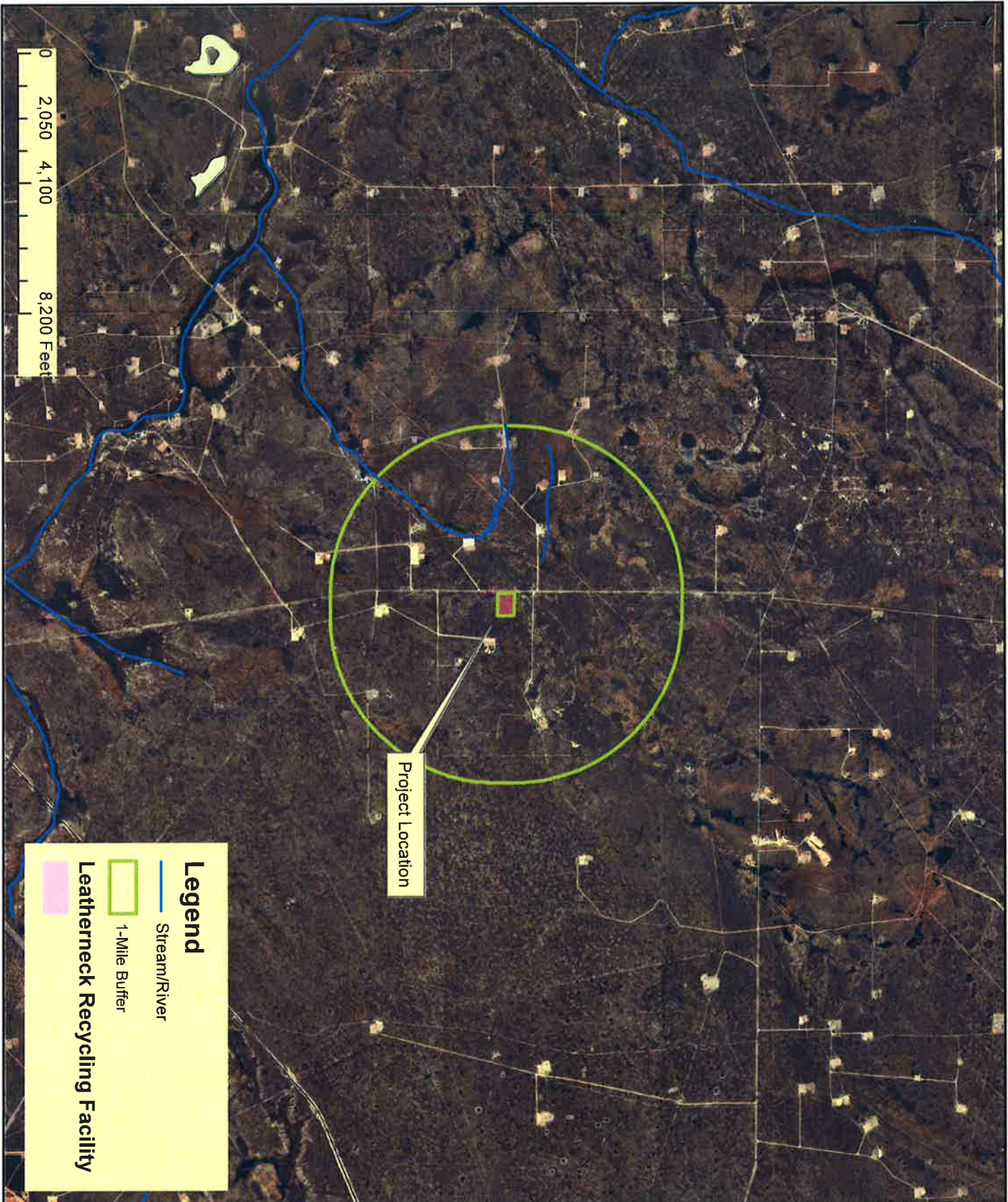
PRELIMINARY NOT FOR CONSTRUCTION	Site Map Aerial Photograph Matador - Leatherneck Recycling Facility	 SMA Souders, Miller & Associates Engineering • Planning • Surveying www.soudersmiller.com Serving the Southwest & Rocky Mountains	5454 Venice Avenue NE, Suite D Albuquerque, NM 87113 Phone: (505) 926-0294	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Rev #</th> <th>Date</th> <th>Description</th> <th>By</th> <th>Check</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Rev #	Date	Description	By	Check																									
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Figure 3: Geologic Map of Proposed Facility Area

Figure 4: NMOSE Well Locations Hydrographic Map

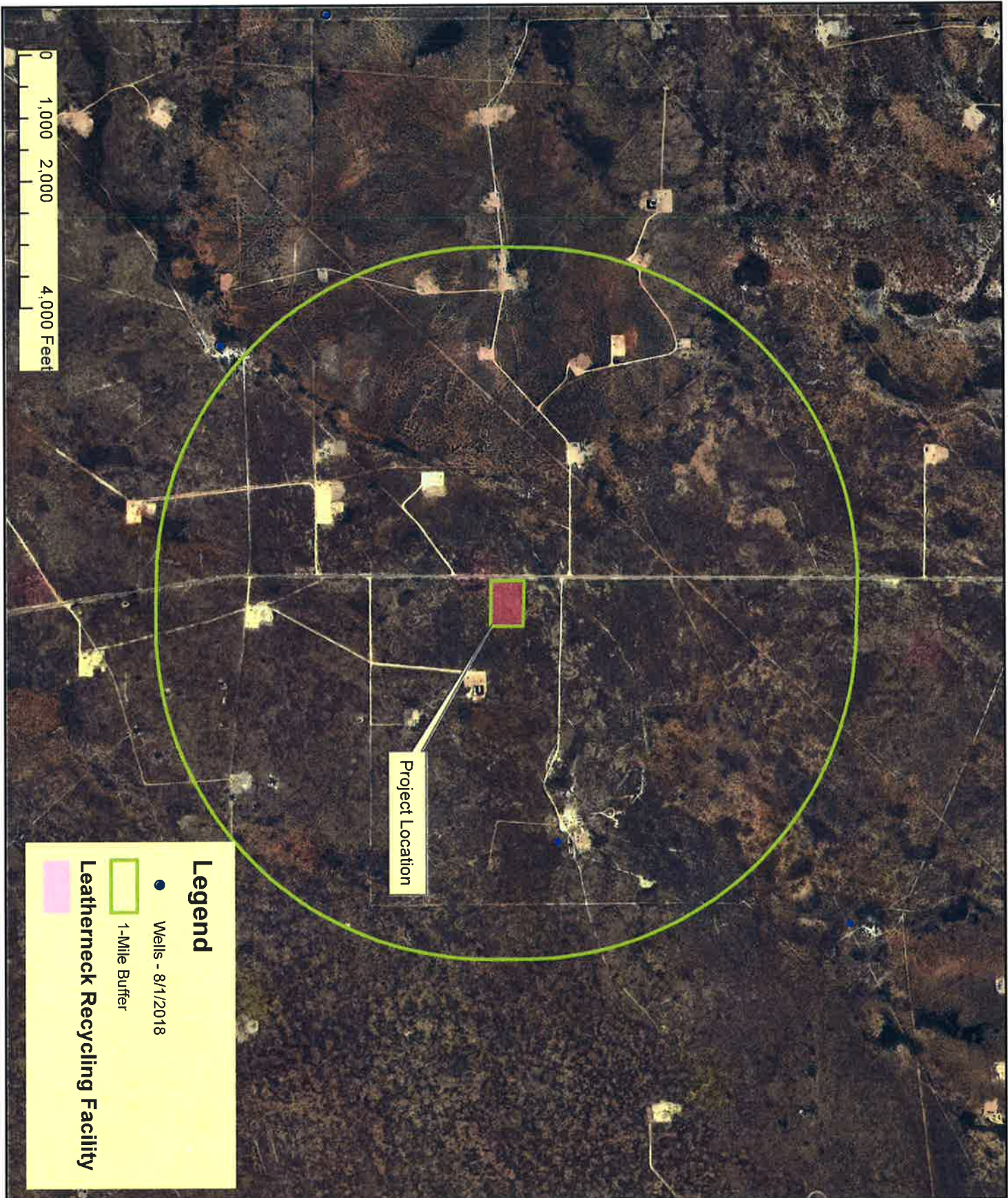
Figure 5: Hydrographic Map



Rev #	Date	Description	By	Check

PRELIMINARY NOT FOR CONSTRUCTION	Site Map Hydrographic Map Matador - Leatherneck Recycling Facility	 SMA Souder, Miller & Associates Engineering • Environmental • Surveying www.soudermiller.com Serving the Southwest & Rocky Mountains 5454 Venice Avenue NE, Suite D Albuquerque, NM 87113 Phone (505) 920-0294
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Appendix A
Groundwater & Well Information (NMOSE & USGS)
On site Drill logs & depth to groundwater



Rev#	Date	Description	By	Check

Site Map NMOSE Well Locations Matador - Leatherneck Recycling Facility		 SMA Souders, Miller & Associates Engineering • Environmental • Surveying www.soudersmiller.com Serving the Southwest & Rocky Mountain	5454 Venice Avenue NE, Suite D Albuquerque, NM 87113 Phone: (505) 920-0294
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Date: _____ Drawn: _____ Checked: _____	Title: _____ Project No: _____ Client: _____	



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the (R=POD has been replaced, POD suffix indicates the POD has been replaced & no longer serves a water right file.) 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	POD Sub.	Code	basin	County	64	16	4	Sec	Tws	Rng	X	Y	Distance	Well	Depth	Water
CP 00936 POD1	CP	ED	3	4	2	30	20S	29E	583661	3601238*	1171	70	52	18		

Average Depth to Water: 52 feet
Minimum Depth: 52 feet
Maximum Depth: 52 feet

Record Count: 1

UTM NAD83 Radius Search (in meters):

Easting (X): 582517.27

Northing (Y): 3600983

Radius: 1609

*UTM location was derived from PLSS - see Help

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

10/30/18 4:17 PM

Page 1 of 1

WATER COLUMN/AVERAGE
DEPTH TO WATER



Field Screening

Location Name: <u>Lea Per neck</u>				Date: <u>1-29-19</u>				Borehole <u>9</u> Project Location			
Sample Name:	Collection Time:	EC (ms)	Temp (°C)	PID Reading /pf	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:			
BH1 - Surface	9:20				Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet				
BH1 - 5					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	with gypsum			
BH1 - 10					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	with gypsum			
BH1 - 15					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	with gypsum			
BH1 - 20					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	with gypsum			
BH1 - 25					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	6 and 25			
BH1 - 30					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	Sand			
BH1 - 35					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet	with gypsum			
BH1 - 40					Light Tan Dark Brown Olive Gray Yellow	Gravel Rock Silt Clay	Dry Moist Wet				



Field Screening

Location Name:

Leather neck

Date:

1-27-19

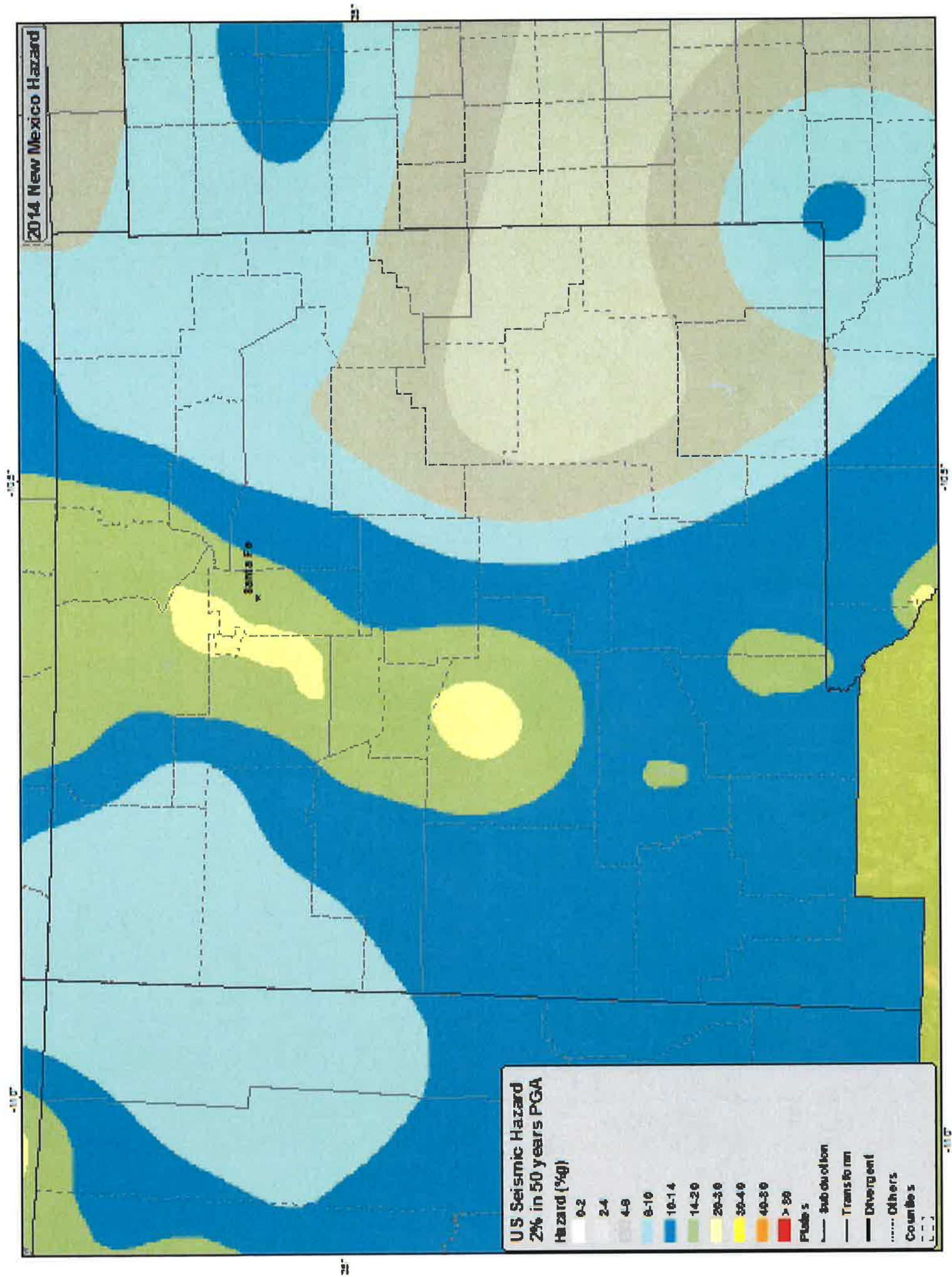
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Appendix B
Active Mine/Quarry Map (NM EMNRD)

A detailed map of Eddy County, New Mexico, and its surrounding areas. The map shows the Pecos River flowing through the region, with several dams marked. Major roads are depicted in red, including US Highway 82 and NM Highway 225. Key geographical features include the Azotea Mesa, Happy Valley, Indian Flats, and the Big Sink. The map also shows the borders of Texas to the west and Chaves and Lea counties to the east. The city of Carlsbad is prominently marked, along with other locations like Artesia and Lordsburg. The map includes a scale bar and a north arrow.



Appendix C
USGS Seismic Hazard Map and Cave and Karst Surface
Evaluation



US Seismic Hazard
2% in 50 years PGA
Hazard (%g)

0-2	2-4	4-6	6-10	10-14	14-20	20-30	30-40	40-50	> 50
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Plateaus

- Subduction
- Transform
- Divergent
- Others
- Counties

**SOUDER, MILLER & ASSOCIATES
201 S. HALAGUENO
CARLSBAD NM 88220**

**LEATHERNECK FRAC POND SITE, MATADOR RESOURCES
SECTIONS 30, TOWNSHIP 20 SOUTH, RANGE 29 EAST
EDDY COUNTY, NEW MEXICO
CAVE AND KARST SURFACE EVALUATION**

24 AUGUST 2018

Work was started and completed on 24 August, 2018.

The LEATHERNECK FRAC POND SITE, MATADOR RESOURCES, was identified and the area walked on a 50 meter grid checking for cave and karst surface occurrences. A 200 meter corridor was also walked around the entire proposed facility.

The locations of the corner stakes were found using Garmin GPSMAP 64 hand-held GPS units with 13S, NAD 83 as the datum.

STAKE LOCATION	EUTM	NUTM	
CENTER OF PAD	582509	3600993	NOT STAKED
NW CORNER STAKE	582398	3601072	
SW CORNER STAKE	582397	3600914	
NE CORNER STAKE	582618	3601072	
SE CORNER STAKE	582616	3600912	
BURIED PIPE LINE	582725	3600904	BEARING 237°/057°

A buried pipe line cuts the SW corner of the 200 meter corridor. It does not enter into the proposed frac pond perimeter.

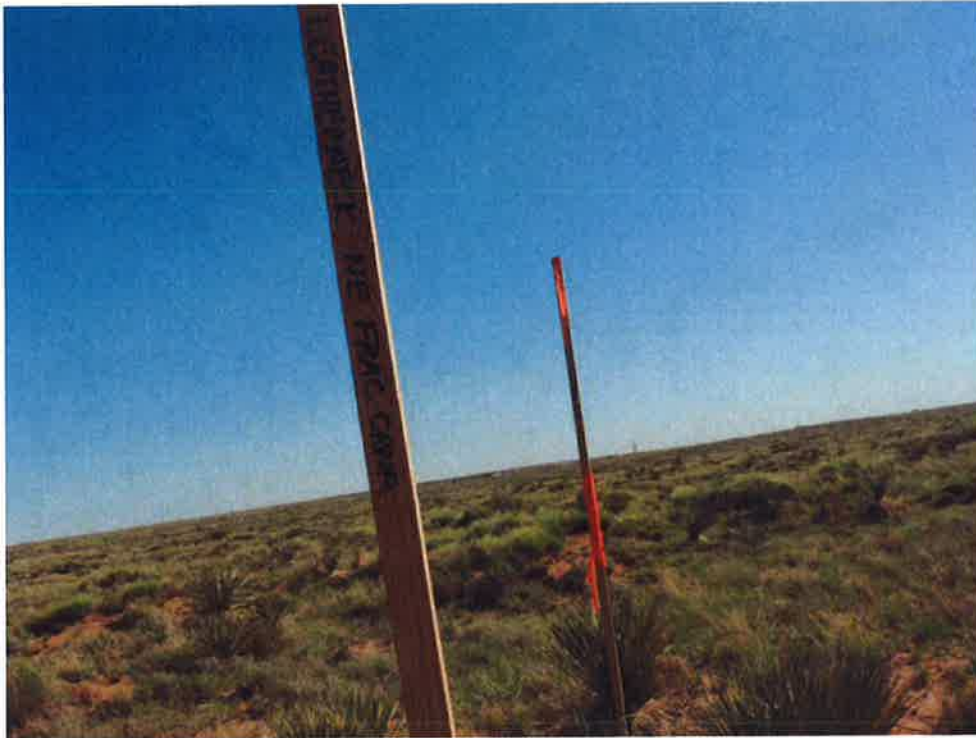
Ground consists of red/brown sandy soil. Some caliche/limestone gravel is present.

No cave or karst concerns were identified.

Photographs were taken and are included in this report.

David S. Belski

Cave and Karst Surface Evaluation



NE FRAC POND CORNER STAKE, 582618E, 3601072N



NW FRAC POND CORNER STAKE, 582509E, 3601072N



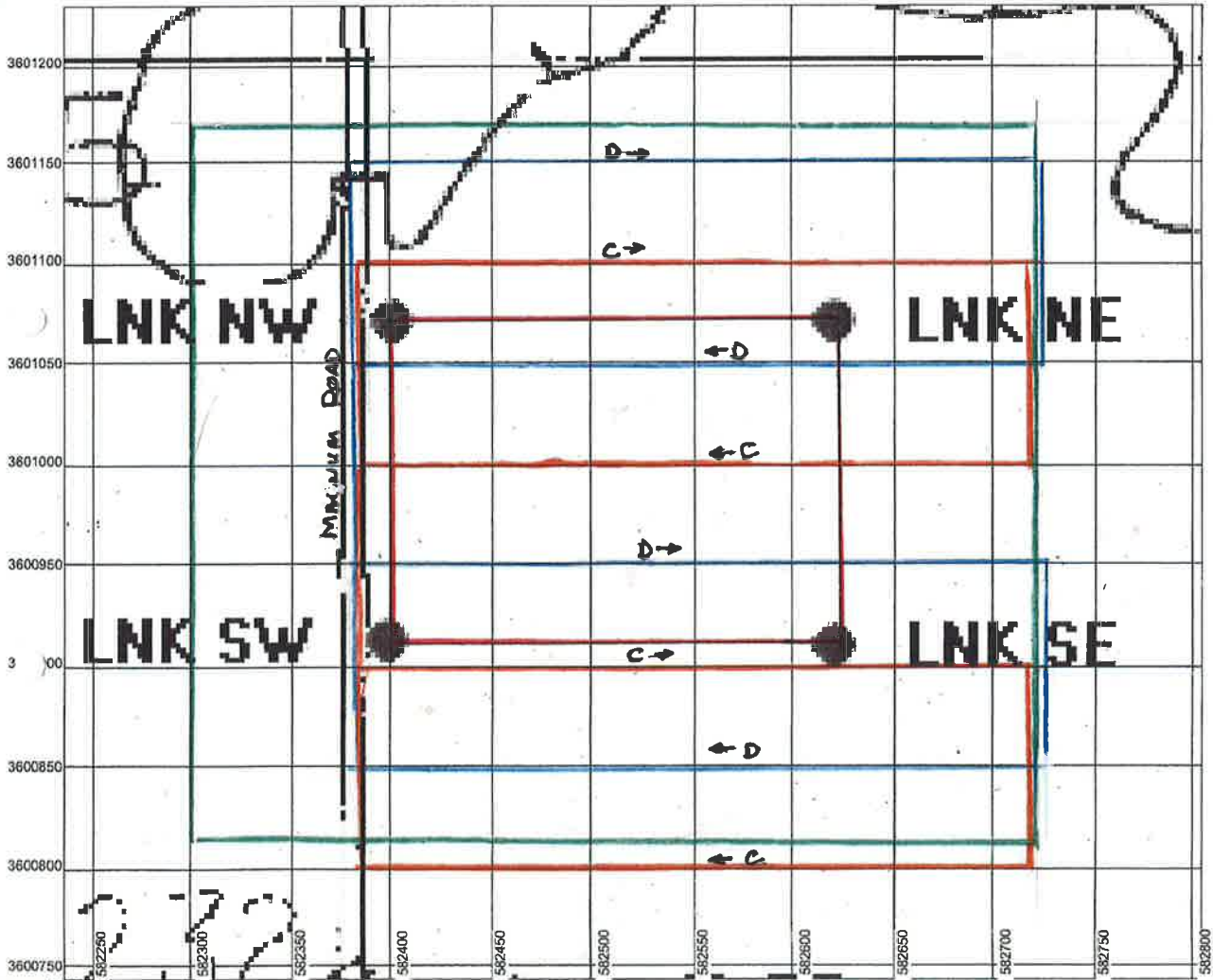
SW FRAC POND CORNER STAKE, 582397E, 3600914N



SE FRAC POND CORNER STAKE, 582616E, 3600912N



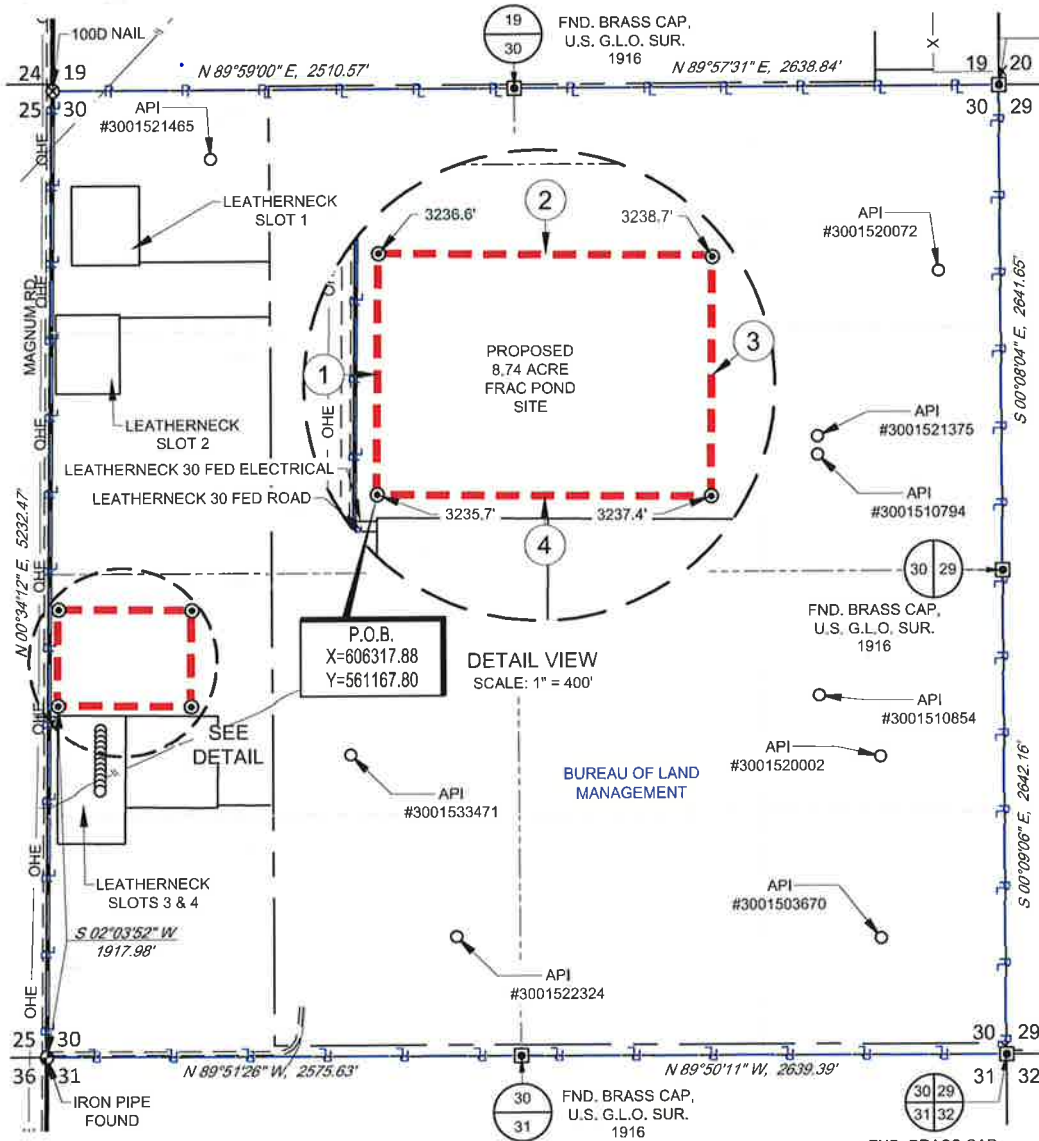
BURIED PIPE LINE @ 582725E, 3600904N, BEARING 237°/057°



SCALE: 1" = 1000'

0' 500' 1000'

SECTION 30, TOWNSHIP 20-S, RANGE 29-E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



**LEATHERNECK
FRAC POND SITE**

Metes and Bounds Description of a proposed 8.74 acre frac pond site located within Section 30, Township 20 South, Range 29 East, N.M.P.M., in Eddy County, New Mexico.

BEGINNING at a 1/2" iron rod with cap stamped "Topographic" set for the Southwest corner of this site, from whence an iron pipe found for the Southwest corner of said Section 30, bears: S 02°03'52" W, a distance of 1917.98 feet;

Thence N 00°34'14" E, a distance of 525.00 feet to a 1/2" iron rod with cap stamped "Topographic" set for the Northwest corner of this site;

Thence S 89°25'46" E, a distance of 725.00 feet to a 1/2" iron rod with cap stamped "Topographic" set for the Northeast corner of this site;

Thence S 00°34'14" W, a distance of 525.00 feet to a 1/2" iron rod with cap stamped "Topographic" set for the Southeast corner of this site;

Thence N 89°25'46" W, a distance of 725.00 feet to the Point of Beginning.

LEGEND

- RANGE LINE
- SECTION LINE
- QUARTER SECTION LINE
- SIXTEENTH SECTION LINE
- PROPOSED SITE
- TRACT BORDER
- ROAD WAY
- FENCE LINE
- EXISTING PIPELINE
- OVERHEAD ELECTRIC
- IRON ROD SET
- MONUMENT
- IRON PIPE FOUND
- NAIL FOUND

LINE TABLE

LINE	BEARING	DISTANCE
1	N 00°34'14" E	525.00'
2	S 89°25'46" E	725.00'
3	S 00°34'14" W	525.00'
4	N 89°25'46" W	725.00'



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM



Michael Blake Brown, P.S. No. 18329
JULY 23, 2018

**LEATHERNECK
FRAC POND SITE**

REVISION:

INT DATE

DATE: 07/23/18

FILE:BO_LEATHERNECK_FRAC_POND_SITE

DRAWN BY: EAH

SHEET: 1 OF 3

NOTES:

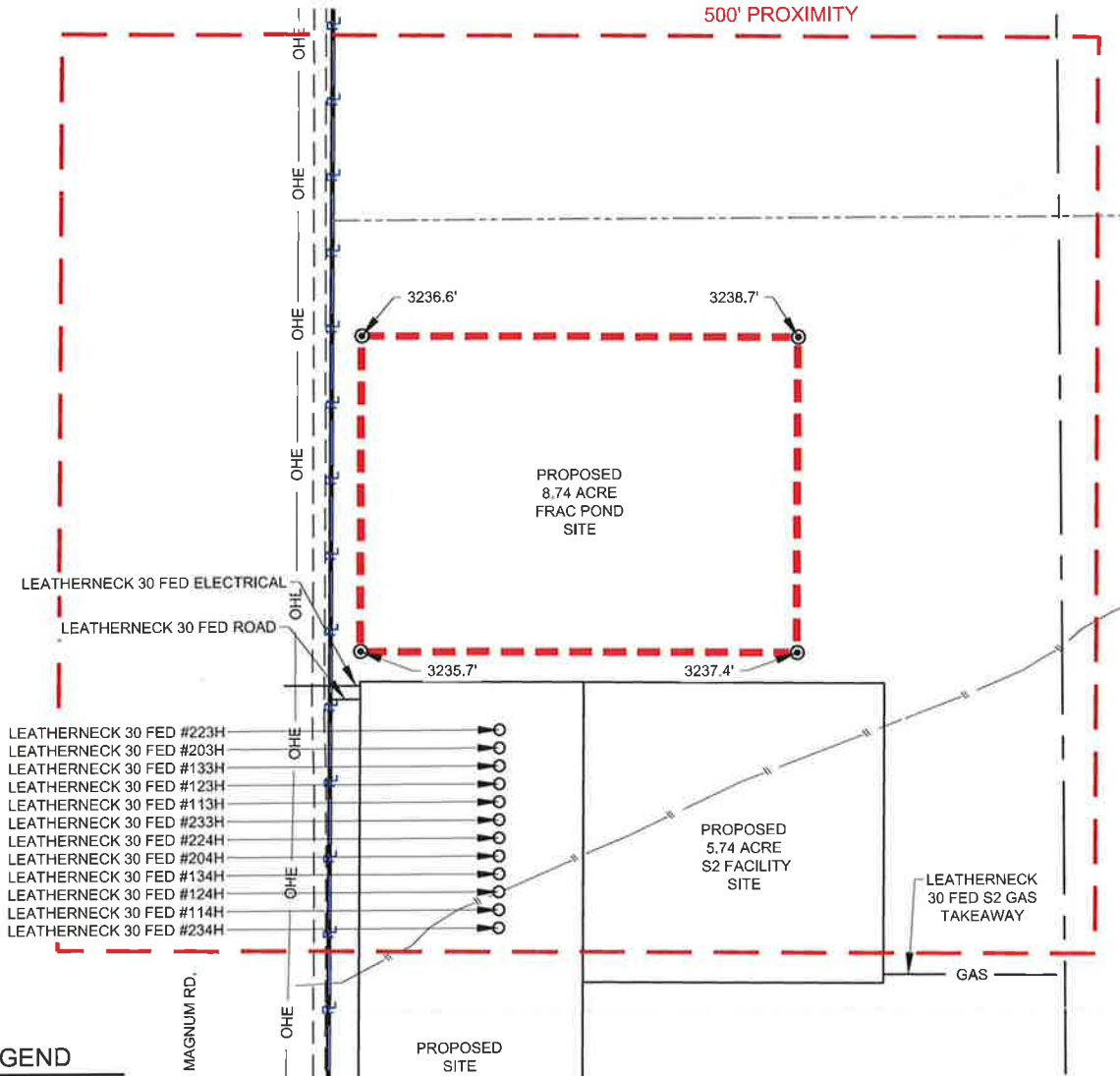
1. ORIGINAL DOCUMENT SIZE: 8.5" x 11"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY MATADOR PRODUCTION COMPANY, ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY.
4. P.O.B. = POINT OF BEGINNING
5. ADJOINER INFORMATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.

SCALE: 1" = 300'

0' 150' 300'

SECTION 30, TOWNSHIP 20-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

500' PROXIMITY



LEGEND

- PROPOSED SITE
- 500' PROXIMITY
- TRACT BORDER
- PROPOSED ROAD
- RANGE LINE
- X FENCE LINE
- EXISTING PIPELINE
- OVERHEAD ELECTRIC
- ROAD WAY
- ⊙ IRON ROD SET



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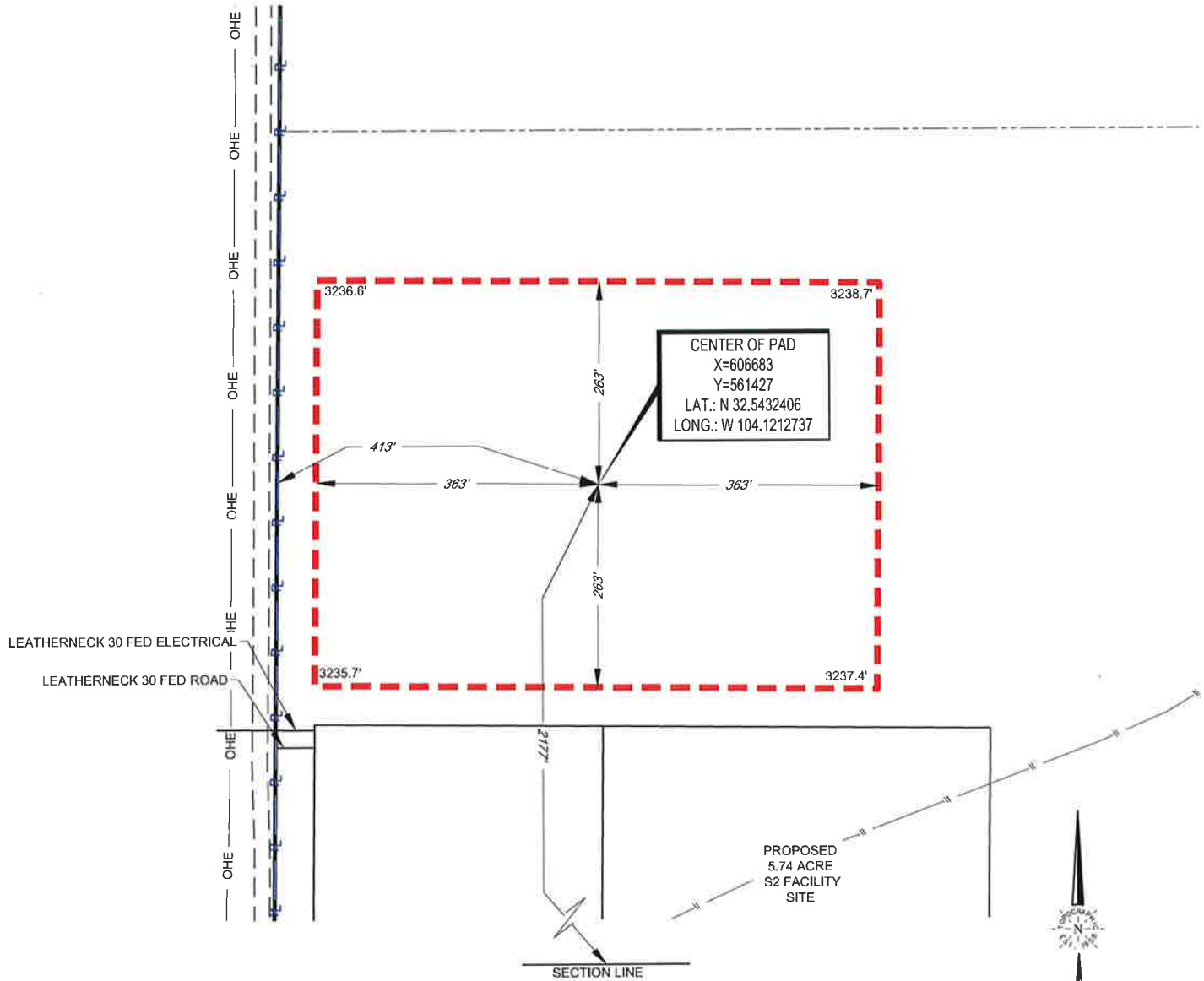
Michael Blake Brown, P.S. No. 18329
JULY 23, 2018

LEATHERNECK FRAC POND SITE	REVISION:		NOTES:
	INT	DATE	
DATE: 07/23/18			1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET. 3. CERTIFICATION IS MADE ONLY TO THE LOCATION OF THIS EASEMENT, IN RELATION TO THE EVIDENCE FOUND DURING A FIELD SURVEY, MADE ON THE GROUND, UNDER MY SUPERVISION, AND USING DOCUMENTATION PROVIDED BY MATADOR PRODUCTION COMPANY, ONLY UTILITIES/EASEMENTS THAT WERE VISIBLE ON THE DATE OF THIS SURVEY, WITHIN/ADJOINING THIS EASEMENT, HAVE BEEN LOCATED AS SHOWN HEREON OF WHICH I HAVE KNOWLEDGE. THIS CERTIFICATION IS LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE, AND MADE FOR THIS TRANSACTION ONLY. 4. ADJOINER INFORMATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FILE:BO_LEATHERNECK_FRAC_POND_SITE			
DRAWN BY: EAH			
SHEET: 2 OF 3			



SECTION 30, TOWNSHIP 20-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 200'



LEGEND

- RANGE LINE
- SECTION LINE
- - - PROPOSED SITE
- TRACT BORDER
- EXISTING PIPELINE
- OHE — OVERHEAD ELECTRIC
- == ROAD WAY

CENTER OF PAD IS 2177' FSL & 413' FWL

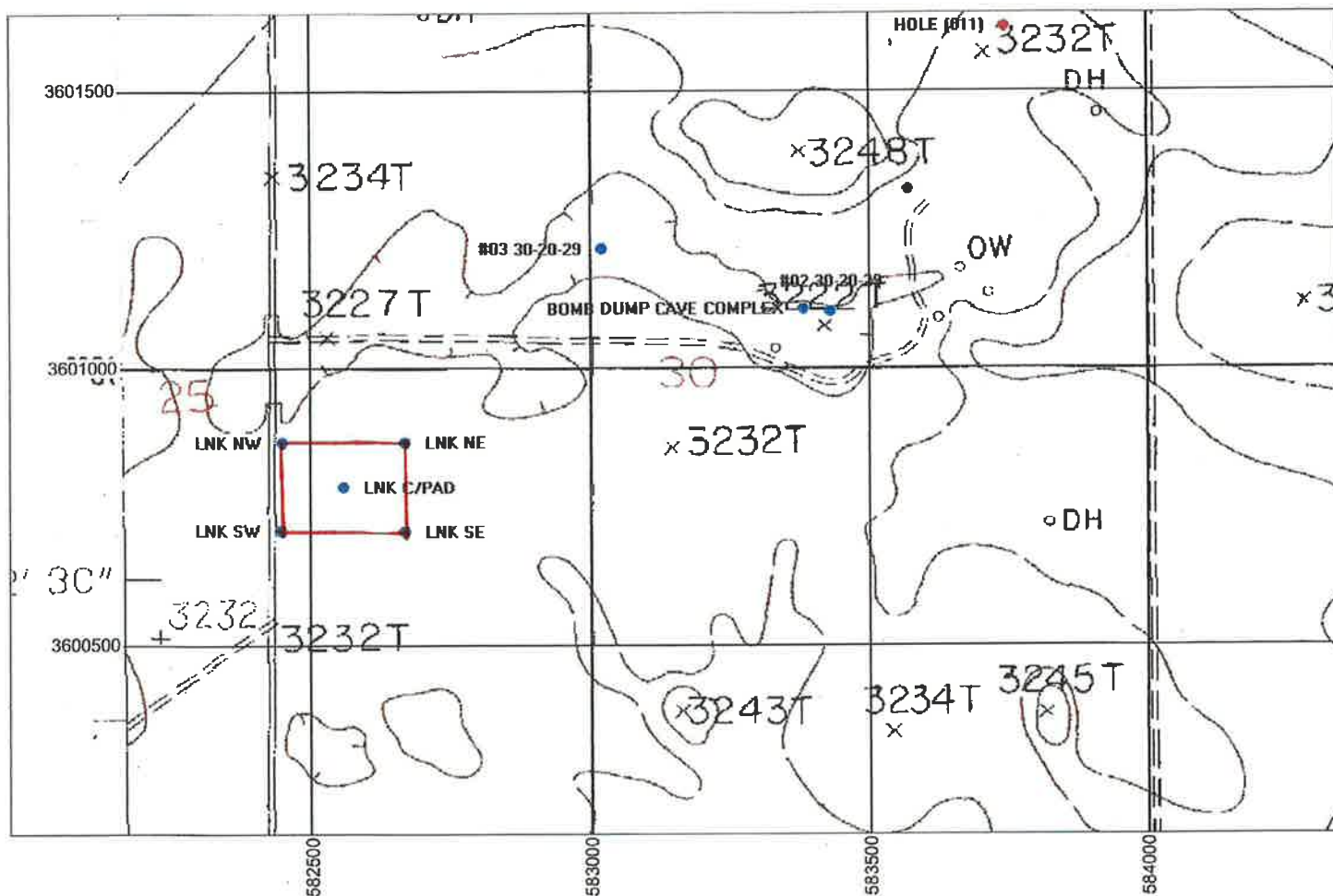
SCALE: 1" = 200'
0' 100' 200'



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WWW.TOPOGRAPHIC.COM

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID BASED
UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER
MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY,
AND DATA PROVIDED BY MATADOR PRODUCTION COMPANY. THIS CERTIFICATION IS MADE AND
LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS
NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.



Appendix D

FEMA Floodplain Information

LEGEND

To obtain more detailed information on usage within ethnic groups, Food Employees (FEs) were randomly selected from the telephone list and interviewed by trained Food Employees (FES) who were also randomly selected from the telephone list. The FES were trained to ask the FE questions about the use of the FFEs, and to record the responses. The FES were also trained to ask the FE questions about the use of the FFEs, and to record the responses. The FES were also trained to ask the FE questions about the use of the FFEs, and to record the responses.

Explanations take in the FROD Insurance Company report for the unexpected earnings shown in the Summary of Substantial Events are those that should be used for compensation and/or management purposes when they are higher than the relevant amount on the FROD.

Carlson seems not to Special Flood Hazard Areas may be protected by flood control structures. Refer to Question 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

Food elevations on this map are referenced to the North American Vertical Datum of 1988. These food elevations must be compared to structures and ground elevations referenced to the same vertical datum. For information regarding elevation

NOIS Information Services
NOJAA 66/NOCS 12
National Cooperative Survey
899AC 3 89202

Basic map information known on this FIRMA was provided in digital format by the Eddy County Geographical Information Systems and Mapping Addressing Department. Contact: Sherry H. [505] 773-2242 or visit its website at <http://www.egis.mn.gov/>.

and European OMA lobby in the Food Insurance Study report (which equates authoritative hydrologic data) may reflect stream channel deflection (via) differ from what is shown on the map.

represent the signal of many factors, ultimately and indirectly attributable, and a listing of *Campylobacter* when containing bacteria found elsewhere might serve to aid and summarize as well as a listing of the points on which each organism is based.

If you have questions about this page or questions concerning the National Forest Institute Program, please contact Jefferya Wade (407) 336-3271 or use the eMail address of jeff@nfi.us



SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

2016E AF	Some Food Exports Decreasing
2016E AM	Food drops of 1 to 3 per cent (mostly meats & poultry); Some Food Exports decreasing
2016E AO	Some Exports of 1 to 2 from (cattle, sheep, New for chicken, turkey); Imports (beef, lamb, sheep, poultry)

22466 AM
Aspen is the guaranteed firm 1% annual climate bond based by a historic bond protection system under consideration; no three fixed Davidson distressed

FLOODPLAIN AREAS IN ZONE AE

OTHER AREAS

OTHERWISE PROTECTED AREAS (OPAs)

[illegible]

Crusader line
 Thicket type
 Geographic coordinates referred to the North American Datum of 1983 (NAD 83). Where indicated

0A2514X
 ■ M15
 9784 (part)
 River Hills
 MAP 35PCONTIGES
 Enter to Map 35PCONTIGES on Map India

ENTER THE DATE OF REMITTANCE TO THIS PANEL.

To determine if Food Insurance is included in this opportunity, contact your insurance agent or call the National Food Insurance Program at 1-800-639-6603.

Figure 1 shows a schematic representation of a DNA probe. The probe is a linear fragment of 1,200 bp. It contains a 100 bp region labeled '16S rRNA' and a 100 bp region labeled '16S rRNA'.

FIRM

NEW MEXICO
AND INCORPORATED AREAS[illegible]

LOGO

3501 SC0850D
EFFECTIVE DATE
MAY 4 2008

6	
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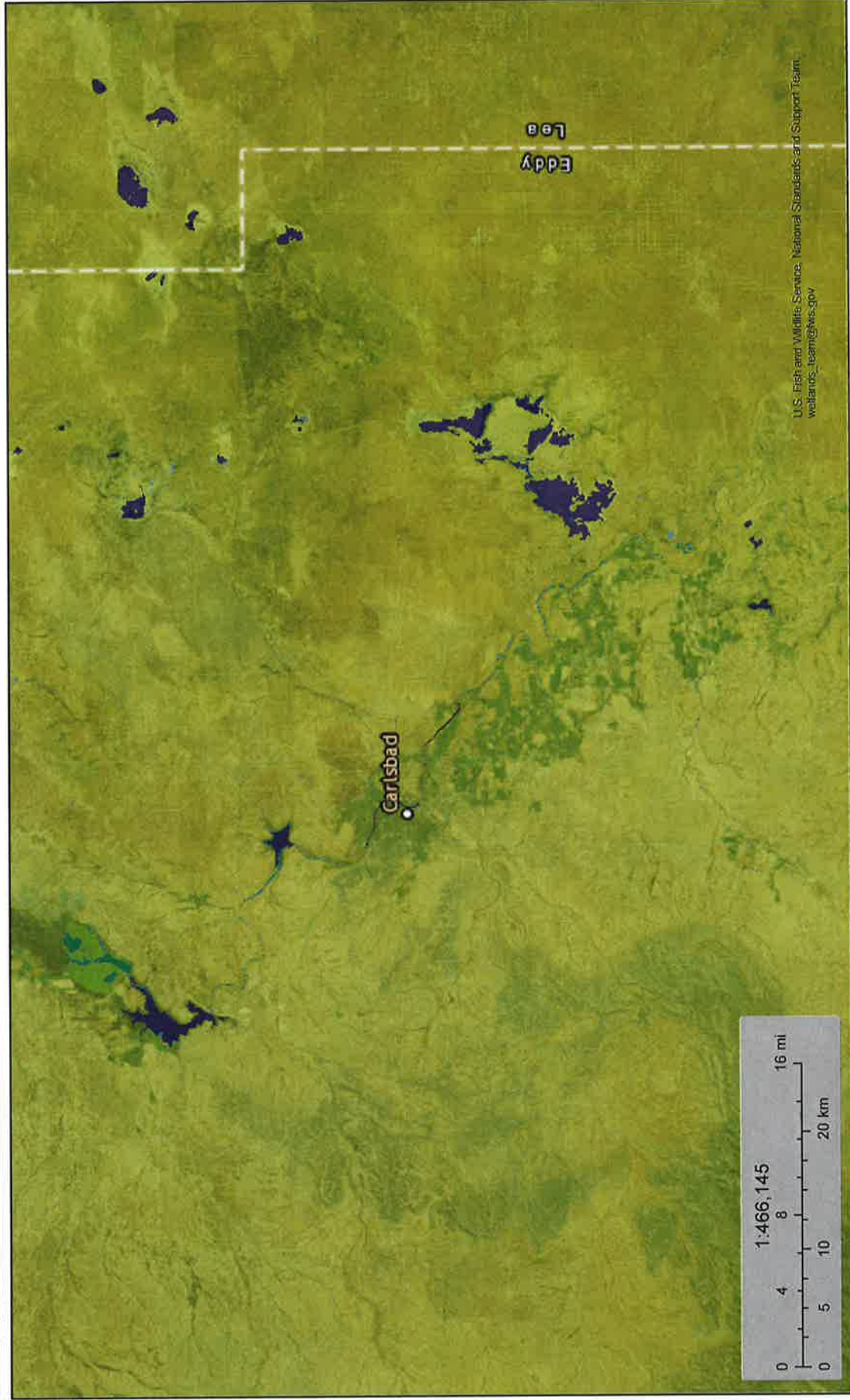
Appendix E
Wetlands & Critical Habitat Map (US FWS)



U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands Eddy County New Mexico



August 21, 2018

- | | | | | | |
|--|--------------------------------|--|-----------------------------------|--|----------|
| | Estuarine and Marine Deepwater | | Freshwater Forested/Shrub Wetland | | Other |
| | Estuarine and Marine Wetland | | Freshwater Pond | | Riverine |
| | Freshwater Emergent Wetland | | Lake | | |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands Near Proposed Leatherneck Rec



August 21, 2018

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

**Design Plan, Operating and Maintenance Plan, &
Closure Plan**

Design and Construction Plan:

Project Overview

The following specifications will be met during the construction of the recycling containment:

- The recycling containment will be constructed to ensure the confinement of produced water, to prevent releases and to prevent overtopping due to wave action or rainfall.
- The foundation will be properly constructed and interior slopes will consist of a firm unyielding base that will be smooth and free of rocks, debris or and sharp edges that may penetrate the liner.
- 8 ounce geotextile will be laid on the base of the containment to add another layer of protection for the liner from any sharp edges and to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity.
- A levee will be constructed with an inside and outside grade of three horizontal feet to one vertical foot (3H:1V). The top of the levee shall be wide enough to install an anchor trench and provide adequate room for inspection and maintenance. The anchor trench will be at least 18 inches deep.
- The recycling containment will be constructed with a 60 mil HDPE *conductive* primary liner and a 40 mil HDPE secondary liner with a leak detection system appropriate to the site's conditions. Liner compatibility shall meet or exceed the EPA SW-846 method 9090A or subsequent relevant publications.
- The edges of both liners will be anchored with a 24 inch deep (needs to be at least 18 inches deep) compacted earth filled trench.
- Liner seems will be minimized and shall be oriented up and down (not across) the slope of the levee. Factory welded seams will be used anywhere possible and no horizontal seams will be within five feet of the slope's toe.
- All field seams will be tested and logged to ensure the seams are thermally sealed. Prior to field seaming, the operator shall overlap liners four to six inches. The number of field seams and corners and irregularly shaped areas will be minimized. Qualified personnel will conduct field welding and testing.
- The conductive primary liner will be spark tested to ensure no cuts are present.
- The liner will be protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines will not penetrate the liner.

- The recycling containment will be constructed with a leak detection system between the primary and secondary liner. The leak detection system will consist of 200-mil geonet and will be sloped to facilitate the earliest possible leak detection.
- The containment will be designed to prevent run-on of surface water. Diversion ditches will be used where necessary.
- Above-ground storage tank will be double-lined using (2) 40-mil LLDPE string reinforced liners. This tank will be installed according to notes in the engineering drawing and according to manufacturer specifications.
- Above-ground storage tank will be placed on 200-geonet, 8 oz. geotextile and will exist within a secondary containment

Stockpiling of Topsoil

Topsoil will be stockpiled beside the recycling containment and will be used as final layer at the time of the enclosure of the containment.

Signs

Matador Resources Company will provide easily read sign(s) no less than 12 inch by 24 inch with lettering not less than two inches in height in a conspicuous place around the perimeter of the fence that will include:

- The operator's name
- The location of the site by quarter-quarter, section, township and range
- Emergency telephone numbers

Fencing

An 8-foot tall game fence will be provided around the perimeter of the containment to deter an unauthorized human or wildlife access. Gates will be used for authorized personnel only and will be kept locked at all times. The operator maintains that this will provide equal or better protection to wildlife than the minimum four-foot, four stranded barbed wire fence required by NMOCD.

Netting and Wildlife Plan

The fence indicated above will be effective in excluding any terrestrial wildlife. In lieu of a physical net over the recycling containment and over tanks at the recycling facility, the operator proposes instead utilizing a previously approved audible avian deterrent system. This system has proved effective in deterring migratory birds on other recycling facilities operated by Matador in both New Mexico and Texas. The audible system is manufactured by **Bird-X**. Manufacturer's specifications are attached to the registration.

Operating and Maintenance Plan:

The recycling facility and containment will be operated as such to protect public health and the environment and maintained in a manner that prevents contamination of fresh water. The recycling facility and lined containment will be used to facilitate recycling and reclamation of produced water from surrounding oil and gas wells for the purpose of reuse in drilling, completion, producing or plugging operations in oil and gas wells. This facility or containment will not be used for the purpose of disposal of produced water or oilfield waste of any kind. The operation plan consists of the following:

- Weekly inspections of the recycling facility and recycling containment including leak detection testing while the containment is holding fluid. A log of these inspections will be filed and held by the operator for review by the division upon request.
- Produced water from nearby producing oil and gas wells will enter the facility to be treated via gathering lines or trucks. Produced water will be treated for removal of hydrocarbons at the facility before entering the recycling containment.
- The operator shall remove any visible layer of oil from the surface of the recycling containment should such appear.
- The operator will maintain a minimum of three feet of freeboard in the recycling containment.
- Records will be kept by the operator and delivered on a monthly basis to the state in the form of a C-148 notification documenting the total volume of produced water received for recycling, and the total volume of water leaving the facility for use in oil and gas operations.
- In the case of discovery that the containment's primary liner has been compromised above the fluid's surface, the operator shall repair the damage within 48 hours of discovery or else seek an extension of time from the division district office.
- In the case of discovery that the containment's primary liner has been compromised below the fluid's surface, the operator shall remove all fluid above the damage or leak within 48 hours of discovery, notify the division district office, and repair the damage to the liner.
- Above ground storage tank will be inspected weekly along with the recycling containment, including leak detection testing within the secondary containment. If a leak is discovered in the above-ground storage tank, operator will follow the same protocol as if a leak was discovered in the recycling containments liner.
- The containment berm shall be operated and regularly inspected to prevent the collection of surface water run-on.
- The recycling containment will be deemed to have ceased operations if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use. The operator will either report cessation of operations to the appropriate division district office or request an extension for cessation of operations.

Closure Plan

- Once operator has declared cessation of operations, all fluid shall be removed from the site within 60 days. The containment will be closed within six months from the date of cessation.
- All fluids, contents and synthetic liners will be transferred to a division approved facility.
- The soil under the containment will be tested for contamination with a five-point composite sample, including any and all stained or wet soils. The sample will be analyzed for constituents in accordance with Table 1 of NMOCD 19.15.34.14.
- The operator will submit a closure report on form C-147, including required attachments to document all closure activities.
- After closure, the operator will reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area.
- Surface reclamation obligations imposed by the BLM or NM State Trust Land on lands managed by those agencies will supersede these requirements, provided that these other requirements provide equal or greater protection of fresh water, human health, and the environment.

Financial Assurance Requirements

The operator has an existing financial assurance in place with NMOCD as required by 19.15.8 NMAC. Use of recycling facility and containment will be used solely for well owned or operated by Matador Production Company.

Variance Request

- Bird Deterrents- In lieu of a physical net over the recycling containment and over tanks at the recycling facility, the operator proposes instead utilizing a previously approved audible avian deterrent system. This system has proved effective in deterring migratory birds on other recycling facilities operated by Matador in both New Mexico and Texas. The audible system is manufactured by **Bird-X**. Manufacturers specifications are attached to the registration.

Equipment and Materials Manufacturers Specifications



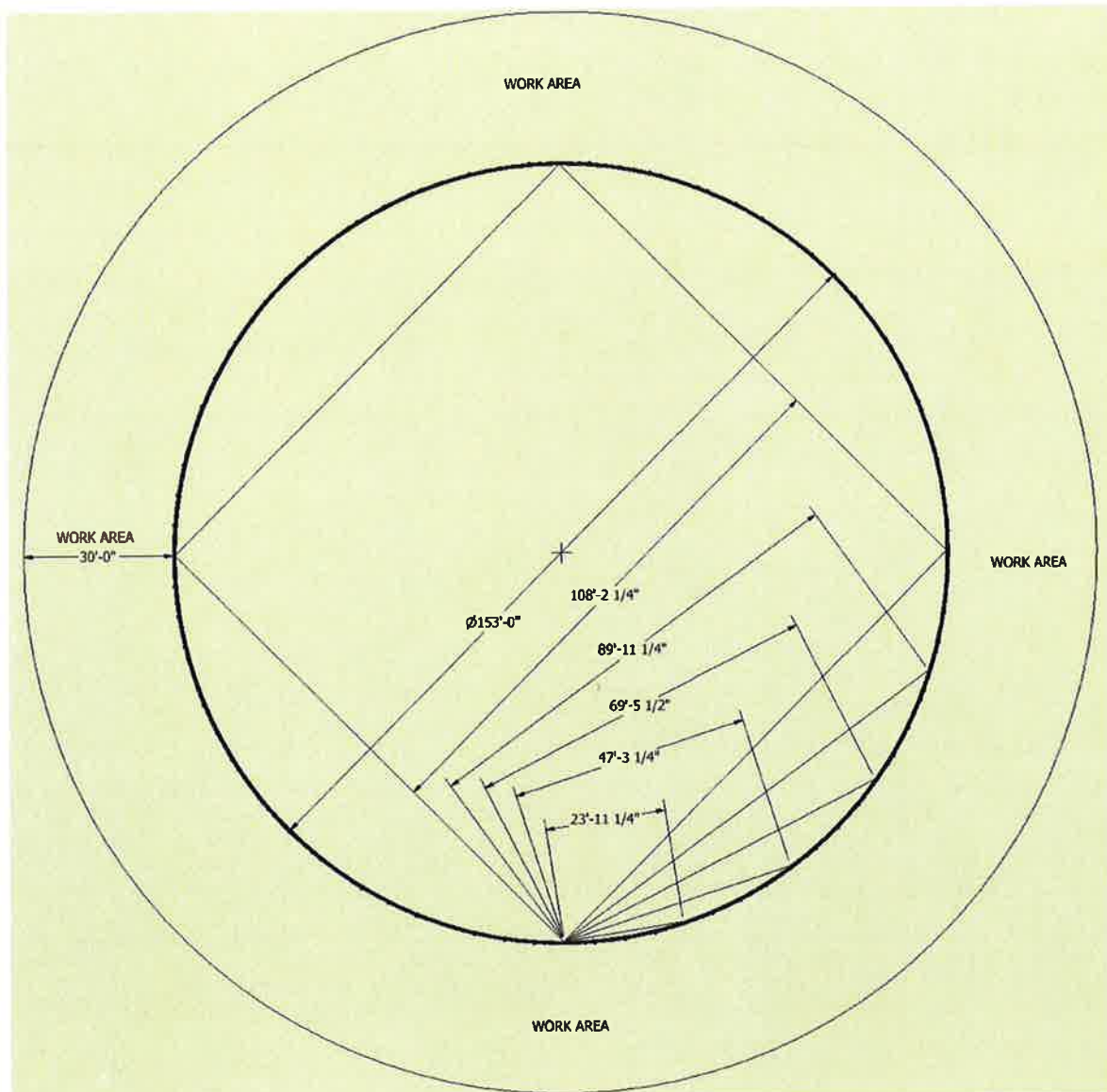
40,000BBL Water Corral Installation Sheet

Corral Site Requirements:

- 213ft Diameter site per 40,000bbl Water Corral
- Over all site must be level to +/- .5in
- Corral ring must be level to +/- .25in
- Soil report must meet ASTM D-698A, 90% or greater

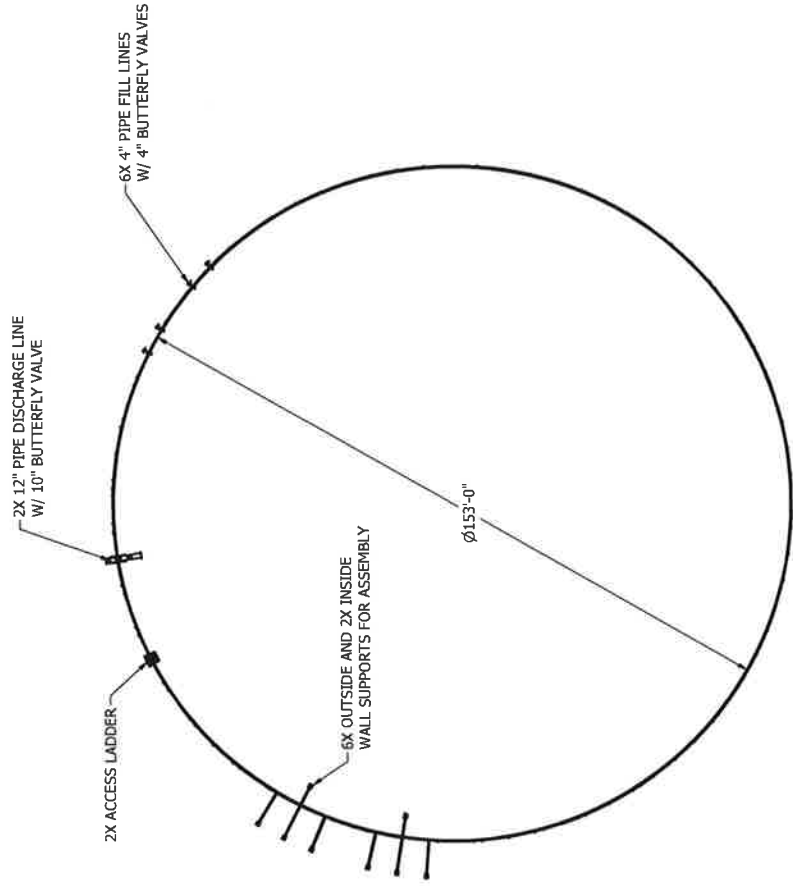
Corral Setup:

- Mark your 153ft diameter circle from center pin
- Mark your 0°(Start point), 90°, 180°, and 270°
- Check your cord lengths periodically (inside corner to inside corner), adjust next panel if needed
- Ensure last panel can fit (pulling together is easier than pushing apart)
- 12" x 12" Sand radius ring is required for inside corral



NOTES:

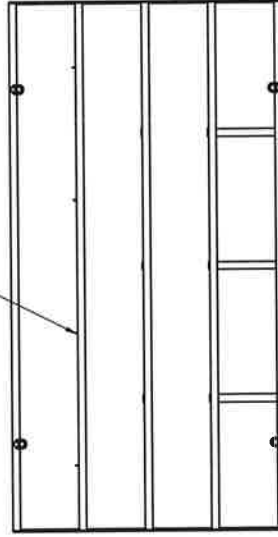
1. REQUIRES A 30FT WORK AREA AROUND CORRAL



PROTECTIVE RUBBER STRIP
COVERING END SEAMS



D-RING TIE-DOWNS



PANEL SECTION
SCALE 1 / 50

THIS DRAWING IS PROPERTY OF JWF INDUSTRIES IT MAY NOT BE COPIED OR DISTRIBUTED IN WHOLE OR PART. WITHOUT PRIOR PERMISSION OF JWF INDUSTRIES.		INTERNAL DIMENSIONS AND TOLERANCES ARE UNLESS OTHERWISE SPECIFIED IN THE NOTES OR DETAILS. FINISHES: 1. 16G-40 2. 2X 12" 16G-40 3. 2X 4" 16G-40 4. 2X 4" 16G-40 5. 2X 4" 16G-40 6. 2X 4" 16G-40 7. 2X 4" 16G-40 8. 2X 4" 16G-40 9. 2X 4" 16G-40 10. 2X 4" 16G-40		DATE: 6/4/2012 CHECKED BY: [Signature] DATE: [Blank] APPROVED: [Signature] DATE: [Blank]		DRAWN BY: [Signature] DATE: 6/4/2012		ETC Environmental Tech & Control 2500 N. 10th St. Suite 100 Phoenix, AZ 85016 www.etcinc.com	
40,000 BBL MOBILE WATER CORRAL, BOLT-UP DESIGN		SCALE: 1" = 10'-0"		PROJECT NO.: MWC-A-002		REV: 1		REV: 1	
THICKNESS: 1/2"		WEIGHT: 2		LOCATION: 15 Engineering Square, Suite 100, Phoenix, AZ 85016		PROJECT: MWC-A-002		PROJECT: MWC-A-002	

Date : 3/06/2014
Document ID : 14006G
Revision : 0
Project : Evaluation of existing design
Tank #(s) : 40,000 bbl Corral
Diameter : 153'- 1/2"
Shell height : 12' - 4 "
Roof type : Open Top
Client : ETC
Location : Pittsburgh, Pa
PO# :



Standard Properties

1. Gross Tank Geometry

$$D := 153 \cdot \text{ft} + 0.5 \cdot \text{in}$$

Tank diameter

$$H_s := 12 \cdot \text{ft} + 4 \cdot \text{in}$$

Shell height

2. Product Variables

$$DLL := 12 \cdot \text{ft} + 4 \cdot \text{in}$$

Design liquid level

$$V_{\text{nom}} := \frac{\pi}{4} \cdot D^2 \cdot H_s$$

$$V_{\text{nom}} = 40408 \cdot \text{bbl}$$

Nominal volume

$$PSG := 1.2$$

Maximum product specific gravity [assumed for heavy brine]

3. Design Parameters

$$T_{\text{max}} := 200 \cdot \text{F}$$

Maximum design temperature

$$T_{\text{min}} := 5 \cdot \text{F}$$

Minimum design temperature

$$P_{\text{int}} := 0 \cdot \text{psi}$$

Design internal pressure

$$P_{\text{ext}} := 0 \cdot \text{psi}$$

Design external pressure (vacuum)

4. Environmental Variables

A. Temperature Variables

$DMT := 5 \cdot F$

Design metal temperature

B. Wind Variables

$V_{wind} := 90 \cdot \text{mph}$

Design wind speed [3-second gust]

$I_{wind} := 1.0$

Wind importance factor

Exposure category (Default = C)

$K_{zt} := 1.0$

Topographic factor (1.0 minimum)

Check windbuckling in corroded condition?

Can windgirders for tanks with a diameter greater than 200 feet be designed using $D = 200 \text{ ft}$?



5. Shell Design

A. Shell Parameters

$$JE_s := 1.00$$

Shell joint efficiency

☒ Yes

☐ No

Does the client allow shell design using the variable-design-point method for tanks less than 200 feet in diameter?

$$h_s := \left(\frac{6}{6} \right) \cdot \text{ft} + \left(\frac{0}{4} \right) \cdot \text{in}$$

Height of each shell course.

$$t_s := \left(\frac{0.25}{0.25} \right) \cdot \text{in}$$

Actual thickness of each shell course

$$CA_s := \left(\frac{0}{0} \right) \cdot \text{in}$$

Corrosion allowance on the shell

Shell Material 1

Shell Material 2

Shell Material 3

A36

None

None

SR1

SR2

SR3

SR4

SR5

SR6

SR7

SR8

☒ Matl 1

☒ Matl 1

☒ Matl 1

☒ Matl 1

☒ Matl 1

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☒ Shell Material Properties

Shell material

Group number

Design stress

Hydrotest stress

Appendix M factor

$$SM = \left(\frac{"A36"}{"A36"} \right)$$

$$GRP = \left(\frac{1}{1} \right)$$

$$SD = \left(\frac{23200}{23200} \right) \text{psi}$$

$$ST = \left(\frac{24900}{24900} \right) \text{psi}$$

$$RF = \left(\frac{1.000}{1.000} \right)$$

B. Shell Thickness Check (API 650)

☒ Shell Thickness

$$t_{smin} = \left(\frac{0.3125}{0.3125} \right) \cdot \text{in} \quad \text{Minimum required steel plate thickness required by API 650}$$

$$\frac{t_{smin}}{t_s} = \left(\frac{125.00}{125.00} \right) \cdot \%$$

5. Shell Design

C. Shell Wind Buckling Check

☑ Shell Buckling

$$\frac{H_{tr} - h_{twg}}{H_1} = 69.06\%$$

Wind buckling check.
If value exceed 100%, intermediate windgirders are required.

D. Splice Bolt Check

$n_{bolt} := 15$	Bolts per splice connection
$d_b := 1.25 \cdot \text{in}$	Diameter of bolts
$P_{des} := 150 \cdot \text{kip}$	Design strength in tension for A490 bolt
$\Phi_{pry} := 2.0$	Increase in bolt force due to prying action [conservative estimate]
$P_{head} := \gamma_w \cdot \text{PSG} \cdot \text{DLL} = 923.82 \cdot \text{psf}$	Head pressure at base of shell
$P_{ave} := \frac{1}{2} \cdot P_{head} = 461.91 \cdot \text{psf}$	Average pressure on shell
$P_{fb} := \frac{1}{2} \cdot P_{ave} \cdot \text{DLL} \cdot D = 435.93 \cdot \text{kip}$	Force in each splice plate from circumferential hydrostatic forces
$P_b := \frac{P_{fb}}{n_{bolt}} = 29.06 \cdot \text{kip}$	Average pure tensile force in bolt

E. Panel Information

$n_{pl} := 20$	Panels per ring
$w_{tb} := 4 \cdot \text{in}$	Square tubing width
$t_{tb} := 0.25 \cdot \text{in}$	Tubing thickness
$n_{tb} := 5$	Number of tubes per panel
$F_{ytb} := 46 \cdot \text{ksi}$	Yield strength of tubing [A500 Grade B]
$F_{Ultb} := 58 \cdot \text{ksi}$	Ultimate strength of tubing [A500 Grade B]

12.

F. Safety Factor - Bolts

$$SF_{ba} := \frac{P_{des}}{\Phi_{pry} P_b} = 2.6$$

Safety factor for bolt in pure tension compared to allowable tensile strength for the bolts

G. Safety Factor - Panels

$$SF_{pa} := \frac{F_{A_{comp}}}{\sigma_{hoop}} = 3.2$$

Safety factor for hoop stress in panel compared to composite allowable stress of plate and tubing

$$SF_{py} := \frac{F_{Y_{comp}}}{\sigma_{hoop}} = 5.0$$

Safety factor for hoop stress in panel compared to composite yield stress of plate and tubing

$$SF_{pu} := \frac{F_{U_{comp}}}{\sigma_{hoop}} = 7.4$$

Safety factor for hoop stress in panel compared to composite ultimate stress of plate and tubing

PROPERTY	TEST METHOD	FREQUENCY ⁽¹⁾	UNIT Imperial	1096676
SPECIFICATIONS				
Thickness (Nominal $\pm 10\%$) (11)	ASTM D-5199	Every roll	mils	60,0
Resin Density	ASTM D-1505	Certified	g/cc	> 0.932
Melt Index - 190/2.16 (max.)	ASTM D-1238	Certified	g/10 min	0,0
Sheet Density (8)	ASTM D-792	1/Batch	g/cc	≥ 0.940
Carbon Black Content (9)	ASTM D-4218	Every 2 rolls	%	2.0 - 3.0
Carbon Black Dispersion	ASTM D-5596	Every 10 rolls	Category	Cat. 1 & Cat. 2
OIT - standard (avg.)	ASTM D-3895	Per formulation	min	100
Tensile Properties (min. avg) (2)	ASTM D-6693	Every 5 rolls		
Strength at Yield			ppi	126
Elongation at Yield			%	12
Strength at Break			ppi	228
Elongation at Break			%	700
Tear Resistance (min. avg.)	ASTM D-1004	Every 10 rolls	lbf	38
Puncture Resistance (min. avg.)	ASTM D-4833	Every 10 rolls	lbf	108
Dimensional Stability	ASTM D-1204	Certified	%	± 2
Stress Crack Resistance (SP-NCTL)	ASTM D-5397	1/Batch	hr	500
Oven Aging - % retained after 90 days	ASTM D-5721	Per formulation		
HP OIT (min. avg.)	ASTM D-5885		%	80
UV Res. - % retained after 1600 hr	ASTM D-7238	Per formulation		
HP-OIT (min. avg.)	ASTM D-5885		%	50
Volume Resistivity (max.)	ASTM D-4496	Every 10 rolls	Ohm•m	10
SUPPLY SPECIFICATIONS (Roll dimensions may vary $\pm 1\%$)				
Roll Dimension - Width			ft	24.6
Roll Dimension - Length			ft	459
Area (Surface/Roll)			sf	11 291
Application (10)		-	-	Conductive

PROPERTY	TEST METHOD	FREQUENCY ⁽¹⁾	UNIT Imperial	1000986
SPECIFICATIONS				
Thickness (Nominal $\pm 10\%$) (11)	ASTM D-5199	Every roll	mils	40,0
Resin Density	ASTM D-1505	Certified	g/cc	> 0.932
Melt Index - 190/2.16 (max.)	ASTM D-1238	Certified	g/10 min	0,0
Sheet Density (8)	ASTM D-792	1/Batch	g/cc	≥ 0.940
Carbon Black Content (9)	ASTM D-4218	Every 2 rolls	%	2.0 - 3.0
Carbon Black Dispersion	ASTM D-5596	Every 10 rolls	Category	Cat. 1 & Cat. 2
OIT - standard (avg.)	ASTM D-3895	Per formulation	min	100
Tensile Properties (min. avg) (2)	ASTM D-6693	Every 5 rolls		
Strength at Yield			ppi	85.7
Elongation at Yield			%	12
Strength at Break			ppi	154.2
Elongation at Break			%	700
Tear Resistance (min. avg.)	ASTM D-1004	Every 10 rolls	lbf	24
Puncture Resistance (min. avg.)	ASTM D-4833	Every 10 rolls	lbf	72
Dimensional Stability	ASTM D-1204	Certified	%	± 2
Stress Crack Resistance (SP-NCTL)	ASTM D-5397	1/Batch	hr	500
Oven Aging - % retained after 90 days	ASTM D-5721	Per formulation		
HP OIT (min. avg.)	ASTM D-5885		%	80
UV Res. - % retained after 1600 hr (10)	GRI-GM-11	Per formulation		
HP-OIT (min. avg.) (11)	ASTM D-5885		%	50
SUPPLY SPECIFICATIONS (Roll dimensions may vary $\pm 1\%$)				
Roll Dimension - Width	-		ft	0,9
Roll Dimension - Length	-		ft	780
Area (Surface/Roll)	-		sf	17 394

NOTES

1. Testing frequency based on standard roll dimensions and one batch is approximately 180,000 lbs (or one railcar).
2. Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.
8. Correlation table is available for ASTM D792 vs ASTM D1505. Both methods give the same results.
9. Correlation table is available for ASTM D1603 vs ASTM D4218. Both methods give the same results.
10. Condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. Condensation at 60°C.
11. The minimum average thickness is $\pm 10\%$ of the nominal value.

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

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

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**SKAPS TRANSNET™ (TN)
HDPE GEONET 220**

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

Property	Test Method	Unit	Required Value	Qualifier
Geonet				
Thickness	ASTM D 5199	mil.	220±20	Range
Carbon Black	ASTM D 4218	%	2 to 3	Range
Tensile Strength	ASTM D 7179	lb/in	45	Minimum
Melt Flow	ASTM D 1238 ³	g/10 min.	1	Maximum
Density	ASTM D 1505	g/cm ³	0.94	Minimum
Transmissivity ¹	ASTM D 4716	m ² /sec.	2x10 ⁻³	MARV ²

Notes:

1. Transmissivity measured using water at 21 ± 2°C (70 ± 4°F) with a gradient of 0.1 and a confining pressure of 10000 psf between stainless steel plates after 15 minutes. Values may vary between individual labs.
2. MARV is statistically defined as mean minus two standard deviations and it is the value which is exceeded by 97.5% of all the test data.
3. Condition 190/2.16

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

PROPERTY	TEST METHOD	FREQUENCY ⁽¹⁾	UNIT Imperial	1020228
SPECIFICATIONS				
Thickness (Nominal ±10%) (11)	ASTM D-5199	Every roll	mils	40,0
Thickness (min. avg.)	ASTM D-5199	Every roll	mils	36.0
Resin Density	ASTM D-1505	Certified	g/cc	< 0.926
Melt Index - 190/2.16 (max.)	ASTM D-1238	Certified	g/10 min	0,0
Sheet Density (8)	ASTM D-792	1/Batch	g/cc	≤ 0.939
Carbon Black Content (9)	ASTM D-4218	Every 2 rolls	%	2.0 - 3.0
Carbon Black Dispersion	ASTM D-5596	Every 10 rolls	Category	Cat. 1 & Cat. 2
OIT - standard (avg.)	ASTM D-3895	Per formulation	min	100
Tensile Properties (min. avg) (2)	ASTM D-6693	Every 5 rolls		
Strength at Break			ppi	152
Elongation at Break			%	800
2% Modulus (max.)	ASTM D-5323	Per formulation	ppi	2 400
Tear Resistance (min. avg.)	ASTM D-1004	Every 10 rolls	lbf	20
Puncture Resistance (min. avg.)	ASTM D-4833	Every 10 rolls	lbf	56
Dimensional Stability	ASTM D-1204	Certified	%	± 2
Multi-Axial Tensile (min.)	ASTM D-5617	Per formulation	%	30
Oven Aging - % retained after 90 days	ASTM D-5721	Per formulation		
STD OIT (min. avg.)	ASTM D-3895		%	35
HP OIT (min. avg.)	ASTM D-5885		%	60
UV Res. - % retained after 1600 hr	ASTM D-7238	Per formulation		
HP-OIT (min. avg.)	ASTM D-5885		%	35
SUPPLY SPECIFICATIONS (Roll dimensions may vary ±1%)				
Roll Dimension - Width			ft	0,9
Roll Dimension - Length			ft	780
Area (Surface/Roll)			sf	17 394



Sales Office:
Engineered Synthetic Products, Inc.
Phone (205)981-1900
Fax (205)981-1901
www.espgeosynthetics.com

Geotextile Product Description Sheet

Mustang-10 Nonwoven Geotextile

Mustang-10 is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. Mustang-10 resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. Mustang-10 conforms to the physical property values listed below:

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Grab Tensile	ASTM D 4632	lbs	225
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs	90
CBR Puncture Resistance	ASTM D 6241	lbs	600
Permittivity*	ASTM D 4491	sec ⁻¹	1.26
Water Flow*	ASTM D 4491	gpm/ft ²	100
AOS*	ASTM D 4751	US Sieve (mm)	80 (.180)
UV Resistance	ASTM D 4355	%/hrs	70/500

* At the time of manufacturing. Handling, storage, and shipping may change these properties.

PACKAGING	
Roll Dimensions (W x L) – ft	15 x 1200
Square Yards Per Roll	2000
Estimated Roll Weight - lbs	1065

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

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