AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.

App Number: pCS1826341898

3RF - 28

ENDURING RESOURCES, LLC

9/20/2018

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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 April 3, 2017

Recycling Facility and/or Recycling Containment

Type of Facility: ☒ Recycling Facility ☒ Recycling Containment*

Type of action: ☒ Permit ☒ Registration ☐ Modification ☐ Extension ☐ Closure ☐ Other (explain) _____

*** At the time C-147 is submitted to the division for a Recycling Containment, a copy shall be provided to the surface owner.**

Be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.

Operator: **Enduring Resources, LLC** (For multiple operators attach page with information) OGRID #: **372286**

Address: **332 Road 3100, Aztec, New Mexico 97410**

Facility or well name (include API# if associated with a well): **NEU 2207-16B Water Recycle Facility**

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

U/L or Qtr/Qtr **NW/4 NE/4** Section **16** Township **22N** Range **7W** County: **Sandoval**

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

2.

☒ **Recycling Facility:** *Conditions Attached.

Location of recycling facility (if applicable): Latitude **36.144262** Longitude **-107.576376** NAD83

Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging *

The re-use of produced water may NOT be used until fresh water zones are cased and cemented

☐ Other, ***requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.***

NMOCD
AUG 20 2018
DISTRICT III

☒ Fluid Storage

☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____

☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____

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

☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.

☒ **Recycling Containment:**

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

Center of Recycling Containment (if applicable): Latitude **36.144262** Longitude **-107.576376** NAD83

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

☒ Lined ☐ Liner type: Thickness **45** mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other _____

☒ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: **309,800** bbl Dimensions: L **360** x W **360** x D **20**

☐ Recycling Containment Closure Completion Date: _____

47

4.

Bonding:

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

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

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

5.

Fencing:

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

☒ Alternate. Please specify **8' Tall Chain Link Fencing**

6.

Signs:

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

☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

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

Check the below box only if a variance is requested:

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

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

8.

Siting Criteria for Recycling Containment

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

General siting

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

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

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

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

Name (Print): **James McDaniel** Title: **HSE Supervisor**

Signature: Date: **8/20/2018**

e-mail address: **jmcdaniel@eduringresources.com** Telephone: **505-636-9731**

11.
OCD Representative Signature: **Approval Date:** 9/20/18

Title: Environmental Spec. **OCD Permit Number:** 3RF-28

☐ OCD Conditions

☒ Additional OCD Conditions on Attachment

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Thursday, September 20, 2018 12:09 PM
To: James McDaniel
Cc: Billings, Bradford, EMNRD; Fields, Vanessa, EMNRD; Andrea Felix; Powell, Brandon, EMNRD
Subject: Enduring NEU 2207-16B Water Recycling Facility and Containment assigned 3RF-28

Mr. McDaniel

OCD has received the Recycling facility and Containment for Enduring NEU 2207-16B Water Recycling Facility submitted on September 11, 2018. After subsequent Enduring submissions and OCD review the registration has been approved with the following conditions of approval:

- Enduring will construct a sump as describe in the Design plan (But not in the signed Engineering documents) and will meet all the requirements of 19.15.34.12 NMAC
- Enduring will submit an as built engineering diagram of the completed recycling containment within 90 days of construction completion.

The NEU 2207-16B Water Recycling Facility has been assigned as Permit/Registration Number 3RF-28. Please take note of the Permit/Registration number, as this will be what Enduring uses on form C-148 to account for produce water usage. You may review your permit at OCD Online by searching for 3RF-28. As a Reminder Since Enduring indicated that the facility is covered under bonding Pursuant to 19.15.8 NMAC, This containment use is limited to **ONLY** the wells owned or operated by Enduring.

The application has been sent up for scanning and should appear in the online data base soon. If you have any questions please give me a call.

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

Mr. Cory Smith
Oil Conservation Division
1000 Rio Brazos Rd.
Aztec, New Mexico 87410
Email: cory.smith@state.nm.us
Phone (505) 334-6178 Ext 115

Re: Variance Request for 19.15.34 NMAC

Mr. Smith,

Please accept this letter as a variance request as outlined in 19.15.34.16 NMAC. Enduring Resources, LLC (Enduring) is proposing to install a six foot chain link fence surrounding the recycling containment in lieu of the fencing requirements listed in 19.15.34.12.D NMAC. We believe this will provide better protection than the requirements listed in 19.15.34.12.D NMAC.

Enduring Resources, LLC (Enduring) is proposing to mitigate migratory birds pursuant to the attached *Migratory Bird Mitigation Plan* as required in 19.15.34.12.E. We believe this will provide equal or better protection than the requirements listed in 19.15.34.12.E NMAC.

Respectfully Submitted,

James McDaniel, CHMM #15676
HSE Supervisor
Enduring Resources, LLC

Enduring Resources, LLC Recycling Facility and /or Recycling Containment

Documents provided to Surface Owner- Certification

NEU 2207-16B Water Recycle Facility

Enduring Resources, LLC is certifying that a copy of the submitted C-147 filed on Monday August 20, 2018 to the NMOCD District III office has been provided to the New Mexico State Land Office as required.

New Mexico State Land Office project # is BL2613

8-20-2018

Andrea Felix, Regulatory Manager

Andrea Felix

From: Winscott, John <jwinscott@slo.state.nm.us>
To: Andrea Felix
Sent: Monday, August 20, 2018 8:19 AM
Subject: Read: BL2613: Copy of C-147 submitted to NMOCD

Your message

To:
Subject: BL2613: Copy of C-147 submitted to NMOCD
Sent: Monday, August 20, 2018 8:20:44 AM (UTC-07:00) Mountain Time (US & Canada)

was read on Monday, August 20, 2018 8:18:44 AM (UTC-07:00) Mountain Time (US & Canada).

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

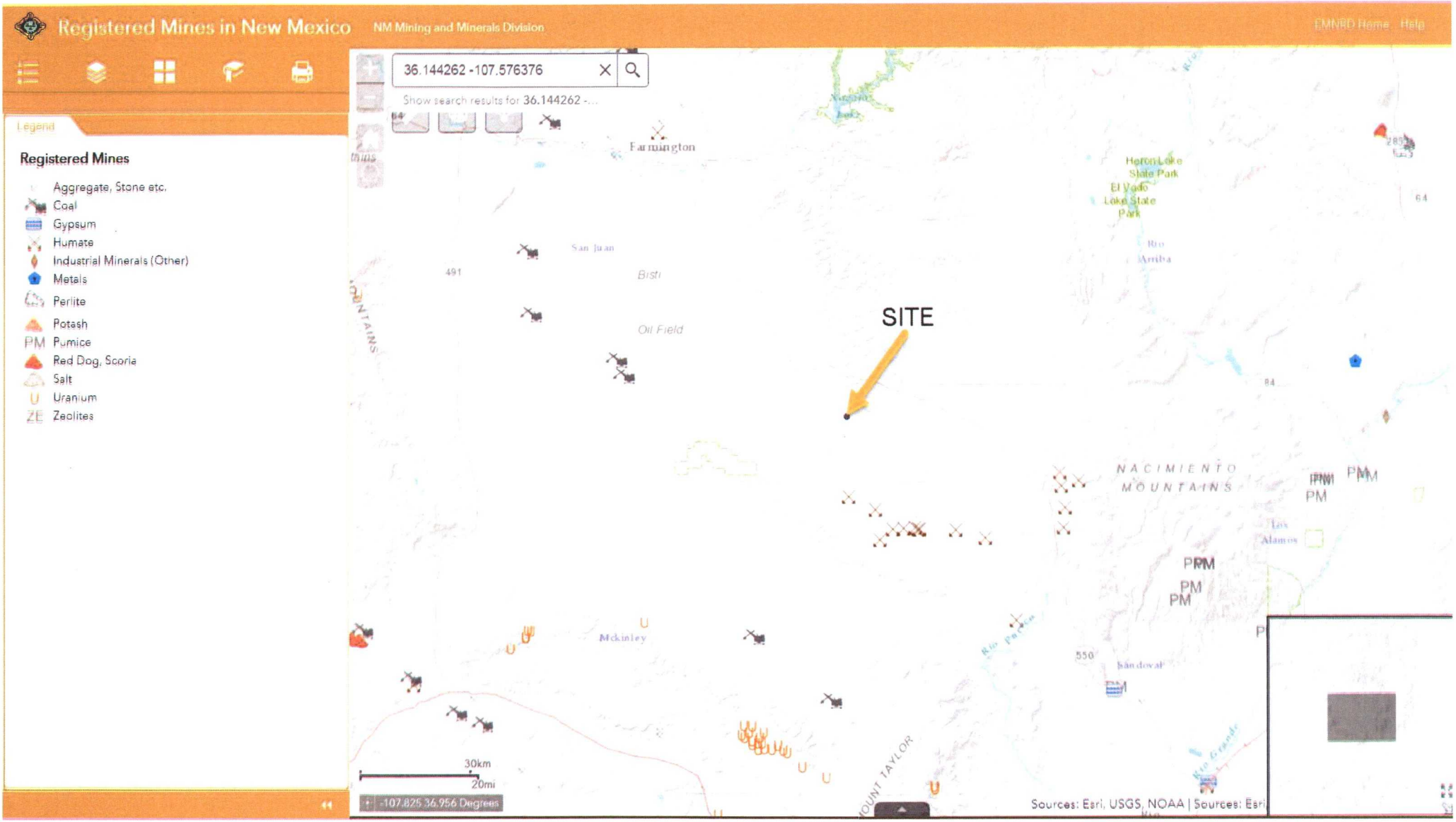
(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

PLSS Search:

Section(s): 16 **Township:** 22N **Range:** 07W


N Escavada Unit 317H
N Escavada Unit 318H
NEU 2207-16B
1000 Feet


Registered Mines in New Mexico
NM Mining and Minerals Division
EMNRD Home
Help
36.144262 -107.576376
Show search results for 36.144262 -...
Legend
Registered Mines
Aggregate, Stone etc.
Coal
Gypsum
Humate
Industrial Minerals (Other)
Metals
Perlite
Potash
Pumice
Red Dog, Scoria
Salt
Uranium
Zeolites
SITE
Farmington
San Juan
Bisti
Oil Field
Heron Lake State Park
El Vado Lake State Park
Rio Arriba
NACIMIENTO MOUNTAINS
Los Alamos
McKinley
Sandoval
Rio Puerco
Rio Grande
30km
20mi
-107.825 36.956 Degrees
Sources: Esri, USGS, NOAA | Sources: Esri


Cathodic Well: Water over 340'
N Escavada Unit 329H
N Escavada Unit 316H
N Escavada Unit 315H
N Escavada Unit 330H
Elevation:
6,953'
5,900 Feet
N Escavada Unit 318H
N Escavada Unit 317H
NE Corner (NEW POND)
NW Corner (NEW POND)
SE Corner (NEW POND)
SW Corner (NEW POND)
Elevation:
6,917'

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/9/2018 at 7:55:44 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.


N Escavada Unit 318H
N Escavada Unit 317H
NE Corner (NEW POND)
NW Corner (NEW POND)
SE Corner (NEW POND)
SW Corner (NEW POND)
1,020 Feet

Ground Bed Drilling Log

Company: WPX Energy | Well: North Escavada Unit #329H | Date: 10-12-2016

Location: Sec10 T22N R7W | State: New Mexico | Rig: Stacy #1

Ground Bed Depth: 340' | Water Depth: Ø | Diameter: 10"

Fuel: 88 gal. | Latitude: 36.146522 | Longitude: -107.561754

DEPTH	FORMATION	OTHER
0-60	Sand Stone, Shale, Sand w/ Shale w/ Sand	PVC
60-100	Sand Stone, Shale, Sand w/ Shale w/ Sand	
100-140	Sand Stone, Shale, Sand w/ Shale w/ Sand	
140-190	Sand Stone, Shale, Sand w/ Shale w/ Sand	
190-250	Sand Stone, Shale, Sand w/ Shale w/ Sand	
250-300	Sand Stone, Shale, Sand w/ Shale w/ Sand	
300-340	Sand Stone, Shale, Sand w/ Shale w/ Sand	
	Sand Stone, Shale, Sand w/ Shale w/ Sand	
	Sand Stone, Shale, Sand w/ Shale w/ Sand	
	Sand Stone, Shale, Sand w/ Shale w/ Sand	

GROUNDWATER DEPTH LOG

Company: WPX Energy			Location: North Escavada Unit #329H Lat/Long: 36.146522/107.561754 Elevation:
Profile type: Gamewell Sander			
Casing Installation Method:			Push
Required Test Depths 30', 55', & 105' unless otherwise requested			
Date	Time	Depth	Comments
10-12-16	10 am	30'	drilled 30'
	11 am	30'	tested no water
	11:30	55'	drilled to 55'
	12:30	55'	tested No water
	1:45	105'	drilled to 105'
	2:45	105'	tested no water set 60' casing
10-13-16	8:30am	105'	No water
	11:45	340'	finished anode bed


National Wetlands Inventory
surface waters and wetlands
ABOUT
GET DATA
PRINT
FIND LOCATION
BASEMAPS
MAP LAYERS
Wetlands
Riparian
Riparian Mapping Areas
Data Source
Source Type
Image Scale
Image Year
Areas of Interest
FWS Managed Lands
Historic Wetland Data
Measure
LEGEND
Wetlands
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
Riparian
Forested/Shrub
Herbaceous
Riparian Mapping Areas
Riparian Mapping Areas
1:2,257
36.146 | -107.578
Microsoft | U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov |
esri

Design & Construction Plan

NEU 2207-16B Water Recycle Facility

Enduring Resources, LLC
332 Road 3100
Aztec, New Mexico 87410

Prepared by:
James McDaniel
HSE Supervisor

Introduction
This Design and Construction Plan is designed to meet the requirements of NMAC 19.15.34.13, which outlines the requirements for design and construction criteria for a produced water recycling containment. Enduring Resources, LLC (Enduring) will construct this recycling containment in accordance with the following design and construction plan.

1. **The operator shall design and construct a recycling containment to ensure the confinement of produced water, to prevent releases and to prevent overtopping due to wave action or rainfall.**
   The recycling containment has been designed the containment to meet the above criteria, ensuring the confinement of produced water, the prevention of releases, and the prevention of overtopping due to wave action or rainfall.

2.
   a. **A recycling containment shall have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.**
      The recycling containment has been designed, and will be constructed, to have a properly constructed foundation, 95% compaction, and an unyielding base, free of rocks debris and sharp edges.

   b. **Geotextile is required under the liner when needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity. The operator shall construct the containment in a levee with an inside grade no steeper than two horizontal feet to one vertical foot (2H:1V). The levee shall have an outside grade no steeper than three horizontal feet to one vertical foot (3H:1V). The top of the levee shall be wide enough to install an anchor trench and provide adequate room for inspection and maintenance.**
      Geotextile will be placed under the liner the secondary liner in order to reduce stress-strain on the liner. The containment levee has been designed to have an inside grade no steeper than 2H:1V, and an outside grade no steeper than 3H:1V.

3.
   a. **Each recycling containment shall incorporate, at a minimum, a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.**
      The recycling containment is designed to have a 45 mil, string reinforced LLDPE liner as the primary liner, and a 45 mil, string reinforced LLDPE liner as the secondary liner.
   b. **The edges of all liners shall be anchored in the bottom of a compacted earth-filled trench. The anchor trench shall be at least 18 inches deep.**
      The edges of the liners will be constructed in such a way as to be anchored in the bottom of a compacted earthen trench, which will be at least 18 inches deep.

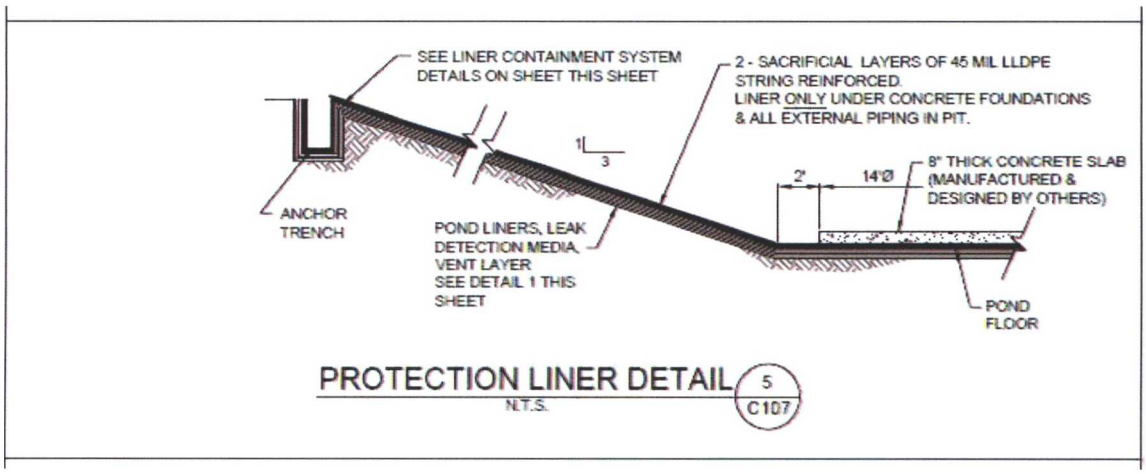
4.
   a. **All primary (upper) liners in a recycling containment shall be geomembrane liners composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salts and acidic and alkaline solutions. All primary liners shall be 30-mil flexible PVC, 45-mil LLDPE string reinforced or 60-mil HDPE liners.**
      The primary liner will be a 45-mil, LLDPE, string reinforced liner that is composed of material that is resistant to ultraviolet light, petroleum hydrocarbons, salt solutions, acidic

solutions and alkaline solutions. Liner compatibility meets the conductivity requirement of 1 x 10^{-9} cm/sec.

b. **Secondary liners shall be 30-mil LLDPE string reinforced or equivalent with a hydraulic conductivity no greater than 1 x 10-9 cm/sec. Liner compatibility shall meet or exceed the EPA SW-846 method 9090A or subsequent relevant publications.** The secondary liner will be a 45-mil, LLDPE, string reinforced liner that is composed of material that is resistant to ultraviolet light, petroleum hydrocarbons, salt solutions, acidic solutions and alkaline solutions. Liner compatibility meets the conductivity requirement of 1 x 10^{-9} cm/sec.

5. **The operator of a recycling containment shall minimize liner seams and orient them up and down, not across, a slope of the levee. Factory welded seams shall be used where possible. The operator shall ensure field seams in geosynthetic material are thermally seamed. Prior to field seaming, the operator shall overlap liners four to six inches. The operator shall minimize the number of field seams and corners and irregularly shaped areas. There shall be no horizontal seams within five feet of the slope's toe. Qualified personnel shall perform field welding and testing.**
Liner material will be factory welded by the manufacturer by qualified personnel. The liner material will overlap a minimum of 4 inches. No horizontal seam will be placed within 5 feet of the slopes toe. All welding and testing will be completed by qualified personnel.

6. **At a point of discharge into or suction from the recycling containment, the operator shall insure that the liner is protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines shall not penetrate the liner.**
External discharge or suction lines will not penetrate the liner. The liner will be protected from excessive hydrostatic force or mechanical damage, and the point of discharge and suction from the containment is specifically designed to eliminate damage from suction or discharge in and out of the containment. The suction area will be protected by two additional layers of 45-mil string reinforced liners, and will have pumps set on top of 8" concrete pads in the bottom of the pond. The inlet pipe area will be protected by two additional layers of 45-mil string reinforced liner, and the outlet will discharge onto an 8" concrete pad in the bottom of the pond.



7. **The operator of a recycling containment shall place a leak detection system between the upper and lower geomembrane liners that shall consist of 200-mil geonet or two feet of compacted soil with a saturated hydraulic conductivity of 1 x 10-5 cm/sec or greater to facilitate drainage. The leak detection system shall consist of a properly designed drainage**

and collection and removal system placed above the lower geomembrane liner in depressions and sloped to facilitate the earliest possible leak detection.
The containment has been designed with a leak detection system made up of a conductive geocomposite material, at least 200 mm thick. The pond is comprised of a 45 mil liner base, with a 200 mm geocomposite material for leak detection, and overlaid with an additional 45 mil liner. The bottom of the pond will be sloped to a sump which will have a 2" HDPE pipe inserted between the liners, as seen on the attached *Leak Detection System Details* page. The pipe will be checked during the weekly inspection for the presence of water using a bailer. In the event water is detected in the leak detection sump, the electric-conductivity grid will be utilized to determine the location of the leak.

8. **The operator of a recycling containment shall design the containment to prevent run-on of surface water. The containment shall be surrounded by a berm, ditch or other diversion to prevent run-on of surface water.**
The containment will be surrounded by a berm to prevent the run-on of surface water.

9. **Prior to constructing containment, the operator shall strip and stockpile the topsoil for use as the final cover or fill at the time of closure.**
Approximately 6" of topsoil will be stripped and stockpiled for final cover at the time of closure. The topsoil will be stored at an adjacent staging area, represented on the *Figure 4*, and on the attached *Aerial Photograph.*

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

11. **The operator shall fence or enclose a recycling containment in a manner that deters unauthorized wildlife and human access and shall maintain the fences in good repair. The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite. Recycling containments shall be fenced with a four foot fence that has at least four strands of barbed wire evenly spaced in the interval between one foot and four feet above ground level.**
The containment will be surrounded with a six foot, chain link fence topped with barbed wire. All gates leading in and out of the containment will be closed and locked when personnel are not on-site. The fencing will be kept in good repair, and shall be inspected as part of the weekly inspection performed at the containment facility.

12. **The operator shall ensure that a recycling containment is screened, netted or otherwise protective of wildlife, including migratory birds. The operator shall on a monthly basis inspect for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.**
Enduring Resources will install a bird deterrent system pursuant to the attached *Migratory Bird Mitigation Plan.* The containment will be inspected weekly for dead migratory birds, and will report and found accordingly.

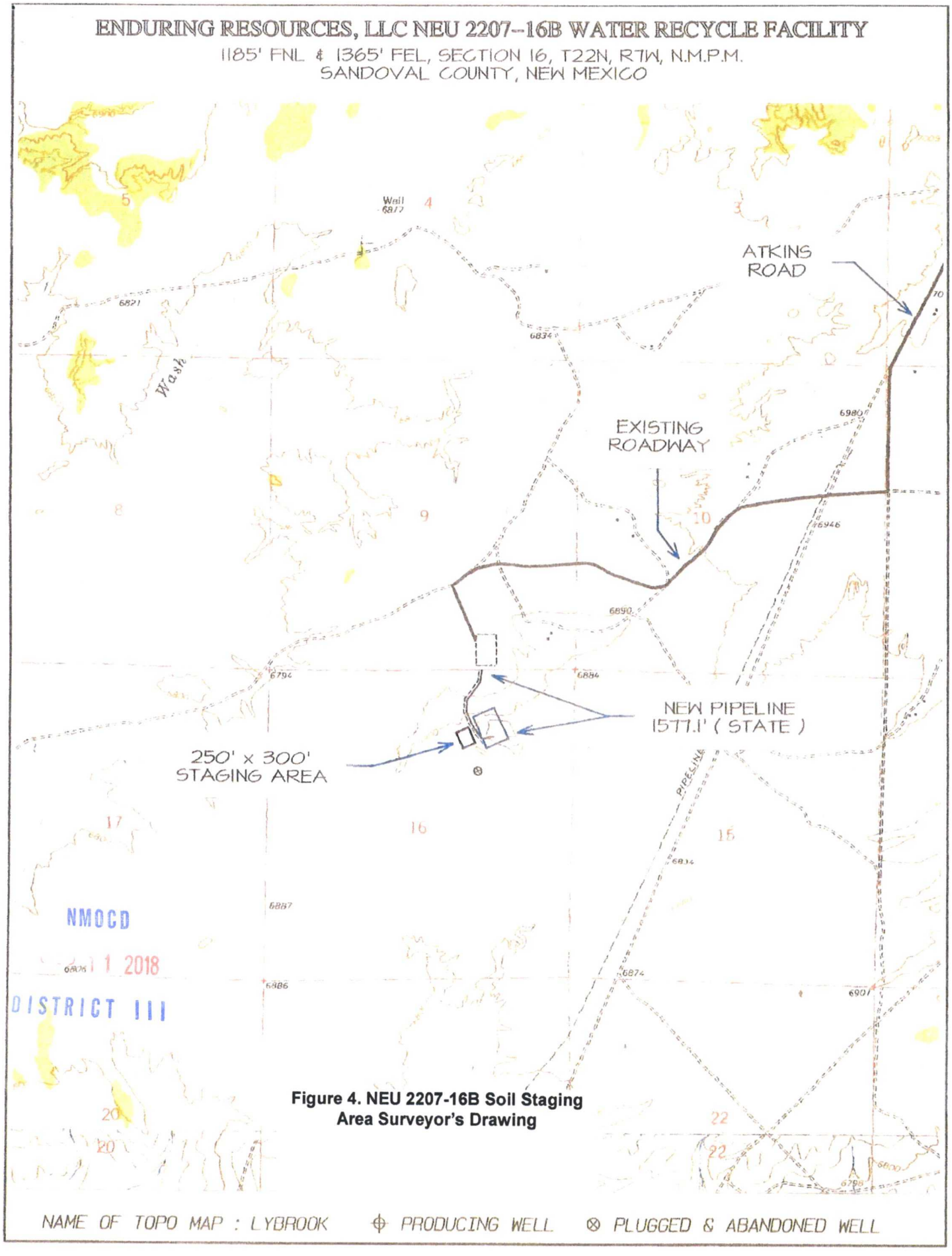
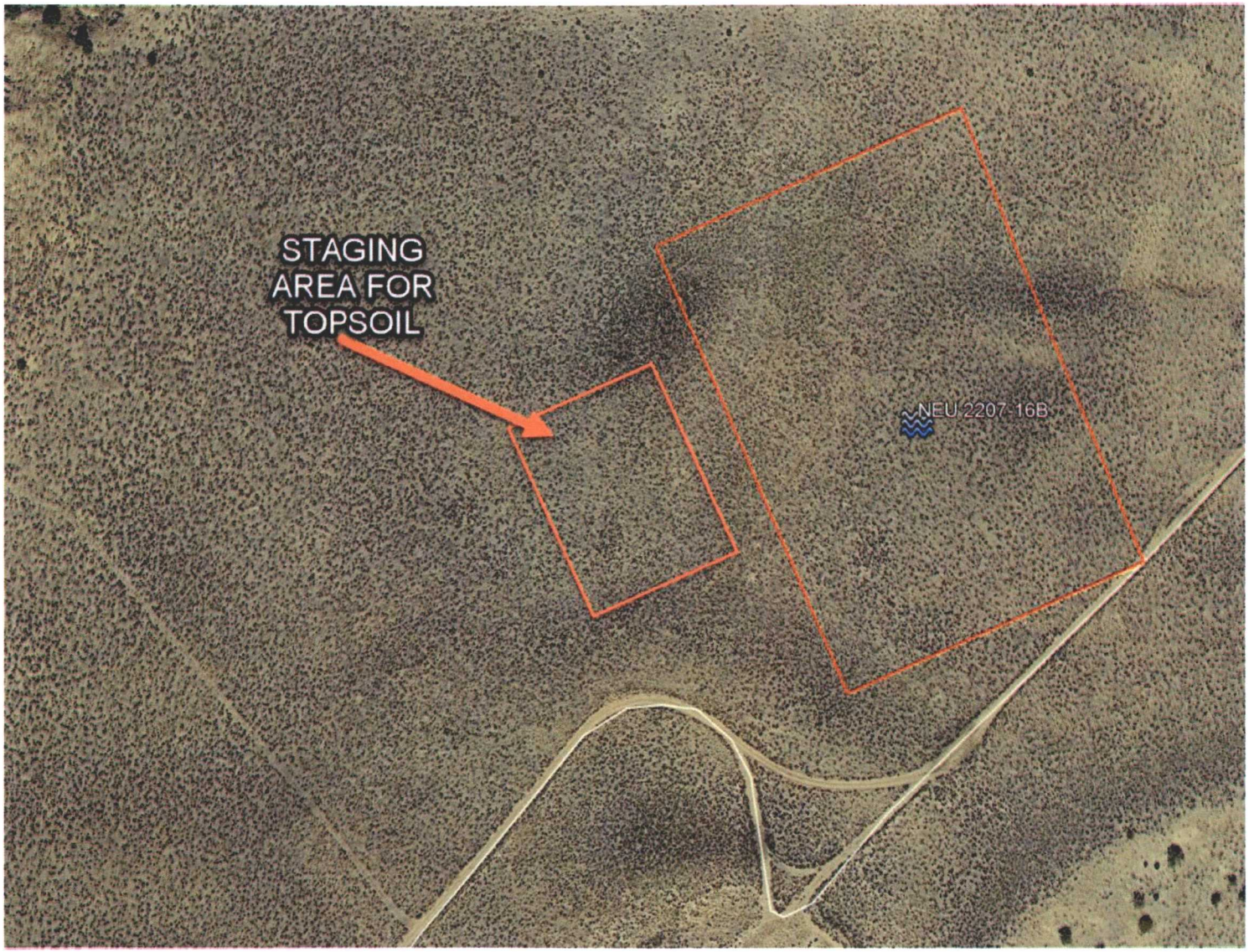
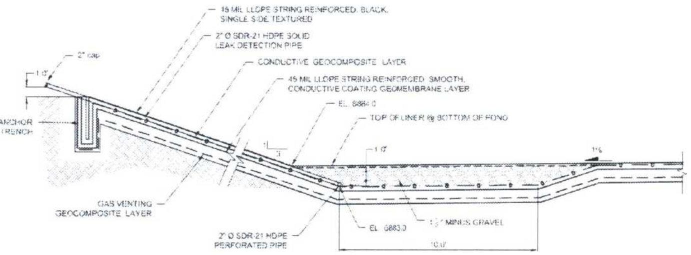


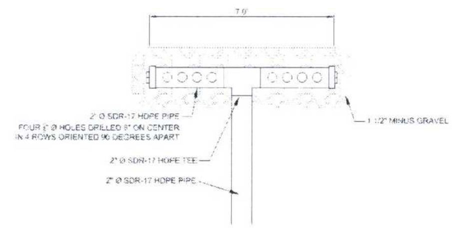
Figure 4. NEU 2207-16B Soil Staging Area Surveyor's Drawing





PRODUCED WATER PIT LEAK DETECTION (1 / C106)

N.T.S.



LEAK DETECTION SYSTEM PIPE DETAIL (2 / C106)

N.T.S.

Rev #	Date	Description	By	Chk'd

SOUDER, MILLER & ASSOCIATES

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3000 West Fourteenth Avenue

Lakewood, CO 80214

www.soudermiller.com

ENDURING RESOURCES — SANDOVAL COUNTY, NM

ENDURING RESOURCES NEU 2207-16B WATER RECYCLE FACILITY

LEAK DETECTION SYSTEM DETAILS

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HCM	GJF	HCM

Date: August 2018

Scale: Horiz. N/A; Vert. N/A

Project No: 9127383

Sheet: C107

Souder, Miller & Associates • 8000 W. 14th Avenue • Lakewood, CO 80214
(303) 239-9011 • fax (303) 239-0745

Memorandum

TO: Enduring Resources – Eric Stevens, P.E.

FROM: Souder Miller & Associates – Heather McDaniel, P.E.

DATE: August 29, 2018

RE: Recommended Recycling Containment Liner System

After review of New Mexico Oil Conservation District's (NMOCD) Title 19 Natural Resources and Wildlife Chapter 15 Oil and Gas, Part 34 Produced Water, Drilling Fluids, and Liquid Oil Field Waste, SMA is recommending the following liner system for full briny water containment at NEU 2207-16B in Sandoval County, New Mexico. The liner system is described below in order of installation.

- **Per NMOCD 19.15.34.12.2: "a recycling containment shall have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear."** The final subgrade shall be scarified to a minimum depth of 12 inches, moisture conditioned to within 2% +/- Optimum Moisture and compacted to 95% of maximum dry density as determined by a Standard Proctor (ASTM 698).
- Install manufacturer recommended DrainTube gas ventilation geocomposite grid produced by Afitex Texel. This layer is intended to vent in situ gases that have potential to create "whales" in the produced water pit that would decrease storage capacity. The product consists of a drainage layer and a filter layer comprised of short synthetic staple fibers of 100% polypropylene needle-punched together with perforated corrugated polypropylene pipes regularly spaced, up to 4 pipes per meter, inside. The pipes have two perforations per corrugation at 180° and alternating at 90°.
  https://www.draintube.net/docs/en/download/technical_data_sheets/draintube_300p_st_series_fos.pdf
- **Per NMOCD 19.15.34.12.4: "Secondary containment liner shall be 30-mil LLDPE string reinforced or equivalent."** The secondary containment liner will be 45-mil LLDPE string reinforced with a single sided conductive coating for initial leak detection and shall cover the bottom and sides of the pit including the minimum three (3) feet of freeboard per **NMOCD 19.15.17.11.G.9**. Integrity of the secondary liner shall be tested using the Conductive-Backed Geomembrane Spark Testing Method (ASTM D7240).
- Install manufacturer recommended Geoconduct 250 geocomposite with a conductive grid between non-woven needle-punched geotextiles produced by Afitex Texel. The product consists of two geotextile layers comprised of short synthetic fibers of 100% polypropylene or polyester which are needle punched together with a structural conductive grid. The conductive grid comprises two conductive inox cables forming a 50 mm x 50 mm network. Geoconduct is compatible with geoelectrical leak location surveys.
  https://www.draintube.net/docs/en/download/technical_data_sheets/geoconduct_250_fos.pdf

- **Per NMOCD 19.15.34.12.4: "The primary liners in a recycling containment shall be geomembrane liners composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salt and acidic and alkaline solutions. All primary liners shall be 30-mil flexible PVC, 45-mil LLDPE string reinforced or 60-mil HDPE liners."** The primary containment liner shall be 45-mil LLDPE string reinforced with a single sided texture to increase traction for emergency escape from the pit and shall cover the bottom and sides of the pit including the minimum three (3) feet of freeboard per **NMOCD 19.15.17.11.G.9**. Integrity of the primary liner shall be tested using the Dipole Method – Water Covered Geomembrane (ASTM D7007).
- **Per NMOCD 19.15.34.12.2**: the liner system shall be anchored as designed in a 2 FT x 2.5 FT anchor trench and topped with 6 inches of road base.
- Owner has also agreed to an annually scheduled leak detection survey of the primary liner utilizing the Dipole Method – Water Covered Geomembrane (ASTM D7007). http://www.linersurvey.net/wp-content/uploads/2013/01/LINER-INTEGRITY-SURVEY-GUIDE.pdf

ENDURING RESOURCES
16B RECYCLING CONTAINMENT PIT PROJECT
CONSTRUCTION PLANS

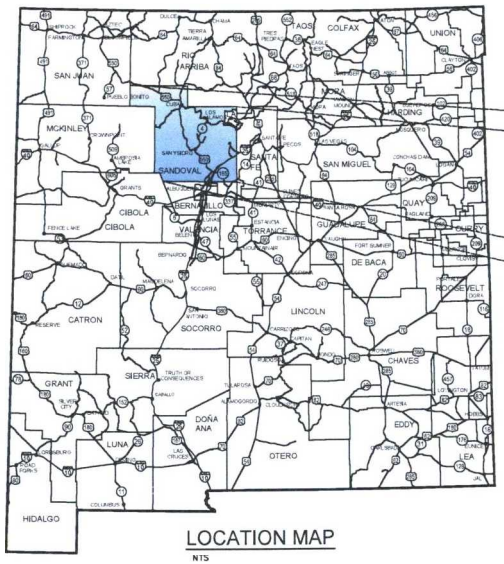
SITE CONTROL

CENTER OF PRODUCED WATER PIT Lat 36°8'39"N Long 107°34'35"W

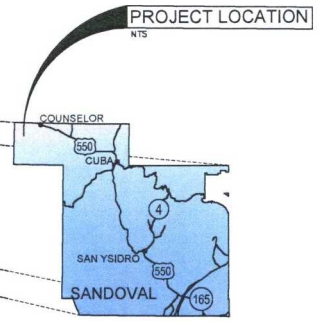
SECTION 16, TOWNSHIP 22 NORTH, RANGE 7 WEST, NEW MEXICO PRINCIPAL MERIDIAN, SANDOVAL COUNTY, NEW MEXICO

SANDOVAL COUNTY, NEW MEXICO
August 2018

PROJECT DESCRIPTION:
NORTH ESCAVADA RECYCLING PIT



LOCATION MAP
NTS



VICINITY MAP
NTS

SHEET LIST TABLE

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G100	COVER
G101	GENERAL NOTES AND LEGEND
C101	SITE MAP
C102	SITE GRADING AND DRAINAGE PLAN
C103	SITE PROFILE
C104	SITE CROSS-SECTIONS
C105	LINER BALLAST TUBES AND PIT GEOCOMPOSITE VENTILATION GRID LAYOUT
C106	GEOCOMPOSITE DETAILS
C107	LINER AND BALLAST TUBE DETAILS
C108	PIT ACCESS ROAD AND DRAINAGE DETAILS
C109	CHAIN LINK SECURITY FENCE DETAILS
C110	EROSION CONTROL PLAN
C111	SITE EROSION AND SEDIMENTATION CONTROL DETAILS

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION ON BEHALF OF SOUDER, MILLER & ASSOCIATES.

Heather D. McDaniel 8-17-2018

HEATHER D. MCDANIEL, P.E. NM #22047 DATE
PROJECT MANAGER

Rev #	Date	Description	By	Ck'd

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Cortez, Grand Junction, Lakewood, CO - Buffalo, AZ - El Paso, TX

GENERAL NOTES:

1. SIGNED AND SEALED CONSTRUCTION DRAWINGS ARE PREPARED BASED ON EXISTING SITE CONDITIONS AND REGULATIONS PER THE SEALED DATE ON THE PLANS. DUE TO POSSIBLE CHANGES TO THE SITE, CODES, REGULATIONS, UNDERGROUND UTILITIES, ETC. BETWEEN THE SEALED DATE ON THE PLANS AND DATE OF CONSTRUCTION COMMENCEMENT, THE DESIGN AND RECOMMENDATIONS PROVIDED ARE LIMITED TO THE SEALED DATE ON THE PLANS. IF CHANGES TO ANY SITE CONDITIONS AND/OR REGULATIONS OCCUR BEFORE THE PROJECT CONSTRUCTION DATE, THE OWNER SHALL NOTIFY ENGINEER OF SUCH CHANGES AND OBTAIN THE ENGINEER'S OPINION AS TO THE COMPLETENESS OF THE PLANS AND SPECIFICATIONS. ANY SUCH CHANGE IN FIELD CONDITIONS AND/OR REGULATIONS MAY REQUIRE ADDITIONAL DESIGN SERVICES AND COMMENSURATE FEE INCREASE TO ACCOMMODATE SUCH CHANGES.

2. CLARIFICATIONS AND/OR REQUESTS REGARDING PROJECT INTENT AND MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER PRIOR OR DURING CONSTRUCTION IN A FORMAL WRITTEN REQUEST FOR INFORMATION (RFI). THE ENGINEER SHALL NOT BE HELD LIABLE IF RECOMMENDATION(S) ARE ALTERED BY OTHERS.

3. SITE CONDITIONS, EACH SUBCONTRACTOR DOING WORK ON THE PROJECT SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SAFETY OF ALL PERSONS AND PROPERTY WITHIN THEIR WORK AREAS, DAY AND NIGHT, DURING BOTH WORKING AND NONWORKING HOURS; AND, SHALL PROVIDE ALL BARRICADES, SHORING, FLAG MEN, SIGNS, LIGHTING AND OTHER DEVICES REQUIRED THEREOF.

4. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REPAIR AND/OR REPLACEMENT OF ANY DAMAGE DETERMINED TO BE CAUSED BY THE CONSTRUCTION OF THIS PROJECT TO ROADS, FENCES, DRAINAGE'S, DRAINAGE STRUCTURES, UTILITIES, INCLUDING CONDUIT, WIRING, EQUIPMENT, AND FIBER-OPTICS. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ALL DESTROYED OR DAMAGED SURFACE IMPROVEMENTS WITH IMPROVEMENTS EQUAL TO THOSE REMOVED.

5. STOCKPILING OF TOP SOIL: CONTRACTOR SHALL SEGREGATE AND STOCKPILE ALL TOPSOIL OUTSIDE OF THE CONSTRUCTION AREA WITH APPROPRIATE SEDIMENT CONTROL. TOP SOIL SHALL BE REDISTRIBUTED ON THE OUTSIDE OF CONSTRUCTED BERMS, AND EITHER SEEDED, AND MULCHED OR PROTECTED WITH EROSION CONTROL BLANKETS. REFER TO CONSTRUCTION PLANS FOR DETAILS.

6. ALL EXISTING TRAFFIC SIGNS, MILEPOST MARKERS AND DELINEATORS WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED OR OFFSET BY THE CONTRACTOR AS DIRECTED BY THE OWNER'S DESIGNEE. INFORMATION SIGNS ARE TO BE OFFSET, AND ALL OTHERS ARE TO BE REMOVED. THIS WORK WILL BE INCLUDED IN THE UNIT BID PRICE FOR REMOVAL OF STRUCTURES AND OBSTRUCTIONS.

7. THE CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS TO ALL ADJACENT PROPERTIES BY PROVIDING EASY RIDING CONNECTIONS TO TURNOUTS AND DRIVEWAYS AS DETERMINED ACCEPTABLE BY THE OWNER'S REPRESENTATIVE OR DESIGNEE. THIS WORK WILL BE CONSIDERED INCIDENTAL TO COMPLETION OF THE PROJECT AND NO MEASUREMENT OF PAYMENT WILL BE MADE THEREFORE.

8. THE CONTRACTOR IS HEREBY ADVISED THAT UTILITY RELOCATION BY UTILITY COMPANIES WILL BE DONE CONCURRENTLY WITH CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE FOR UTILITY WORK IN CONJUNCTION WITH CONSTRUCTION OPERATIONS AND SHALL COORDINATE THE SCHEDULING OF WORK WITH THE RESPECTIVE UTILITY COMPANIES IN ORDER TO AVOID DELAYS DUE TO UTILITY WORK. THE CONTRACTOR SHALL PROVIDE FOR THESE CONTINGENCIES WHEN BIDDING THE PROJECT. NO CLAIM FOR DELAYS DUE TO UTILITY WORK WILL BE ALLOWED.

9. THERE IS NO CONSTRUCTION CLEAR ZONE FOR THIS PROJECT. THE CONTRACTOR SHALL NOT STORE EQUIPMENT OR MATERIAL OUTSIDE OF THE PROJECT BOUNDARIES ON THIS PROJECT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFORE.

10. EMERGENCY ACCESS SHALL REMAIN OPEN AT ALL TIMES.

11. THE CONTRACTOR WILL REMOVE AND PROTECT ROAD NAME SIGNS DURING CONSTRUCTION AND REPLACE AS SOON AS POSSIBLE AFTER CONSTRUCTION.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING AND CLEAN UP OF SPILLS ASSOCIATED WITH PROJECT CONSTRUCTION AND SHALL REPORT AND RESPOND TO SPILLS OF HAZARDOUS MATERIAL SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS, TOXIC AND CORROSIVE SUBSTANCES, AND OTHER MATERIALS WHICH MAY BE A THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPORTING PAST SPILLS ENCOUNTERED DURING CONSTRUCTION AND OF CURRENT SPILLS NOT ASSOCIATED WITH CONSTRUCTION. REPORTS SHALL BE MADE IMMEDIATELY TO THE ENVIRONMENTAL EMERGENCY SPILL REPORTING LINE AT 1-866-428-6535 AND TO THE OWNER'S REPRESENTATIVE OR DESIGNEE. ANY UNREPORTED SPILLS IDENTIFIED AFTER CONSTRUCTION AND ASSOCIATED WITH PROJECT CONSTRUCTION SHALL BE CLEANED UP BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT. THE CONTRACTOR SHALL BEAR THE FULL COST OF CLEANUP OF SUCH UNREPORTED SPILLS.

13. FINAL PAYMENT OF CONCRETE AND REINFORCING BARS SHALL BE BASED ON PLAN QUANTITIES. IF THE DESIGN IS REVISED DURING CONSTRUCTION OR IF A QUANTITY CHANGE IS REQUIRED DUE TO ERRORS ON THE PLANS, THE PAYMENT SHALL BE BASED ON COMPUTED FIELD QUANTITIES MEASURED TO NEAT LINES.

14. EXISTING FENCE, SIGNS AND OTHER ITEMS OF PRIVATE PROPERTY FOUND TO BE WITHIN THE RIGHT-OF-WAY ARE TO BE REMOVED AND REPLACED AT THE EDGE OF RIGHT-OF-WAY BY THE CONTRACTOR. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE PROJECT AND NO MEASUREMENT OF PAYMENT WILL BE MADE THEREFORE.

15. THROUGHOUT THE LIFE OF THE PROJECT THE CONTRACTOR SHALL KEEP LOCAL OPERATORS AND LANDOWNERS INFORMED IN TIMELY FASHION AS DETERMINED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE, OF ANY LANE CLOSURES WHICH WILL RESTRICT THE NORMAL FLOW OF TRAFFIC. THERE WILL BE NO DIRECT PAYMENT FOR THIS WORK.

16. THE CONTRACTOR SHALL MAINTAIN UP TO DATE SETS OF AS-BUILT PLANS FOR THE PROJECT. THESE PLANS SHALL BE KEPT CURRENT, WITHIN FIFTEEN (15) DAYS, AT ALL TIMES AND SHALL BE SUBJECT TO REVIEW BY THE OWNER'S REPRESENTATIVE OR DESIGNEE THROUGHOUT THE PROJECT AND WILL BE REVIEWED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE FOR ACCURACY AND COMPLETENESS AT LEAST ONCE EVERY 15 DAYS. THE FINAL AS-BUILT PLANS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE OR DESIGNEE PRIOR TO FINAL PAYMENT.

17. ALL WORK IN THE VICINITY OF LIVE STREAMS, WATER IMPOUNDMENTS, WETLANDS OR IRRIGATION SUPPLIES SHALL BE AFFECTED IN SUCH A MANNER AS TO MINIMIZE VEGETATION REMOVAL, SOIL DISTURBANCE AND EROSION. CROSSINGS OF LIVE STREAMS WITH HEAVY EQUIPMENT SHALL BE MINIMIZED, AS DETERMINED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE. EQUIPMENT REFUELING, MAINTENANCE AND CEMENT DUMPING IN THE VICINITY OF WATER COURSES IS STRICTLY PROHIBITED AND SHALL BE PERFORMED IN PROPER CONTAINMENT AREAS.

18. TOPOGRAPHY SHOWN ON THESE PLANS IS ACCORDING TO FIELD LOCATION BY NCE SURVEYS, INC. JAMES C. EDWARDS P.L.S. #15269, DATED MAY 23, 2018 AND JULY 25, 2018.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMOVALS REQUIRED TO COMPLETE THE PROJECT. ADDITIONAL REMOVALS NOT SHOWN ON THE PLANS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE OR DESIGNEE. THIS WORK WILL BE CONSIDERED AS INCLUDED IN THE CONTRACT PRICE FOR REMOVAL OF STRUCTURES AND OBSTRUCTIONS AND THE CONTRACTOR WILL NOT RECEIVE ADDITIONAL COMPENSATION FOR UNLISTED REMOVALS.

20. UNSUITABLE CONSTRUCTION MATERIALS AND DEBRIS FROM CLEARING AND GRUBBING ARE TO BE PLACED IN AN ENVIRONMENTALLY SUITABLE DISPOSAL SITE.

21. UTILITY LOCATIONS SHOWN WITHIN THE PROJECT BOUNDARY ARE BASED UPON THE BEST AVAILABLE EVIDENCE, BUT THE POSITIONS ARE NOT WARRANTED TO BE ACCURATE. CONTACT UTILITY PROVIDERS BEFORE STARTING ANY EXCAVATION WORK. SHOULD CONFLICTING INFORMATION OR INTERFERENCE PROBLEMS APPEAR IN THE CONSTRUCTION DRAWINGS THE CONTRACTOR SHALL BRING THAT INFORMATION TO THE ATTENTION OF THE ENGINEER IMMEDIATELY PRIOR TO INSTALLATION. FAILURE TO DO SO SHALL NOT BE A BASIS OF EXTRA PAYMENT TO THE CONTRACTOR.

22. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES BEFORE COMMENCING WORK AND SHALL BE RESPONSIBLE FOR COMPLYING WITH NEW MEXICO ONE-CALL PROCEDURES. ANY DAMAGE TO EXISTING UTILITIES MUST BE IMMEDIATELY REPORTED TO THE APPROPRIATE UTILITY COMPANY.

23. NEW MEXICO 811 LOCATES SHALL BE FIELD VERIFIED BY THE CONTRACTOR THROUGH POTHOLING AND COORDINATION WITH UTILITY OWNER.

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE RESPECTIVE UTILITY COMPANIES PRIOR TO GRADING OR TRENCHING.

25. THE CONTRACTOR SHALL REVIEW AND FOLLOW THE RECOMMENDATIONS PROVIDED IN THE "GEOTECHNICAL ENGINEERING REPORT STUDY N ESCAVADA UNIT FRACKING WATER POND" SANDOVAL COUNTY, NEW MEXICO, PREPARED BY GEOMAT INC., DATED JUNE 21, 2018 AND REVISED AUGUST 9, 2018 FOR MOISTURE CONTENT, MAXIMUM COMPACTED LIFT DEPTHS, AND MINIMUM COMPACTION REQUIREMENTS FOR THE PROJECT.

26. THE CONTRACTOR SHALL CONFORM TO ALL REQUIREMENTS SET FORTH BY THE TECHNICAL SPECIFICATIONS LOCATED IN THE PROJECT MANUAL.

27. TRENCHES DEEPER THAN 5' IN DEPTH MUST BE SHORED, SLOPED, OR SHIELDED PER OSHA REGULATIONS.

28. EARTHWORK ESTIMATES ARE BASED ON COMPACTED AND IN-PLACE MATERIAL. CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE REQUIRED MATERIAL AND HAUL ASSETS TO EMPLACE AND REMOVE THE CORRECT VOLUMES USING LOOSE SOIL CORRECTION FACTORS. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFORE.

29. PLACE AND COMPACT FILL IN HORIZONTAL LIFTS, USING EQUIPMENT AND PROCEDURES THAT WILL PRODUCE RECOMMENDED MOISTURE CONTENTS AND DENSITIES THROUGHOUT THE LIFT.

UN-COMPACTED FILL LIFTS SHOULD NOT EXCEED 10 INCHES LOOSE THICKNESS.

MATERIALS SHOULD BE COMPACTED TO THE FOLLOWING:

MINIMUM PERCENT

MATERIAL	(ASTM D698)
LINER SUBGRADE	PER LINER MANUFACTURER'S RECOMMENDATIONS
SUBGRADE SOILS BENEATH FILL AREAS	95
ON SITE OR IMPORTED SOIL FILLS:	
BENEATH FOOTINGS AND SLABS ON GRADE	95
AGGREGATE BASE BENEATH SLABS AND PAVEMENTS	95
MISCELLANEOUS BACKFILL	90

ON-SITE AND IMPORTED SOILS SHOULD BE COMPACTED AT MOISTURE CONTENTS NEAR OPTIMUM.
EMBANKMENT FILLS SHOULD BE COMPACTED TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 AT NEAR OPTIMUM MOISTURE CONTENT IN LIFTS NOT EXCEEDING 10-INCHES IN LOOSE THICKNESS.

30. BACKFILL MATERIALS TO BE PLACED UNDER CONCRETE SLABS SHALL BE A GRANULAR SOIL. EXPANSIVE TYPE SOILS ARE PROHIBITED AS BACKFILL MATERIALS.

31. THE EARTHWORK HAUL ON THIS PROJECT WILL BE CONSIDERED AS INCLUDED IN THE CONTRACT PRICE FOR UNCLASSIFIED EXCAVATION AND BORROW AS APPLICABLE, AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE THEREFORE.

32. THE PROJECT WILL HAVE ALTERATION, VERIFICATION, AND SUBGRADE DENSITY TESTS COMPLETED BY A GEOTECHNICAL ENGINEERING COMPANY TO VERIFY COMPACTION. PROOF ROLLING WILL BE COMPLETED ALONG THE PROJECT SUBGRADE AND ANY SOFT SPOTS WILL BE REMOVED AND RECONSTRUCTED BEFORE THE CONTRACTOR BEGINS WORK.

33. NOTWITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE CONTRACTOR IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY SUCH PROPERTY FROM SETTLING, CRACKING, EROSION, SILTING, SCOUR OR OTHER DAMAGE, WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THE PLAN.

34. SPECIAL CONDITION: IF ANY ARCHEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE OF THIS GRADING OPERATION, SUCH OPERATION WILL CEASE IMMEDIATELY, AND THE PERMITTEE WILL NOTIFY THE OWNER'S REPRESENTATIVE.

35. ALL PROJECT LIMITS AND CONSTRUCTION AREAS SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND/OR GRADING.

36. DURING ROUGH GRADING OPERATIONS AND PRIOR TO THE CONSTRUCTION OF ANY PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHALL BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO CONTIGUOUS PROPERTIES.

37. NO OBSTRUCTION OF FLOOD PLAINS OR NATURAL WATER COURSES WILL BE PERMITTED.

38. ALL EXISTING DRAINAGE COURSES ON THE PROJECT SITE MUST CONTINUE TO FUNCTION DURING STORM CONDITIONS. PROTECTIVE MEASURERS AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT CONTIGUOUS PROPERTIES DURING GRADING OPERATIONS.

39. THE FINISHED GRADE SHALL BE SLOPED AWAY FROM ALL EXTERIOR BUILDING WALLS AND FACILITIES TO PROMOTE POSITIVE DRAINAGE AWAY FROM FOUNDATIONS.

40. SANDOVAL COUNTY SHALL BE NOTIFIED 72 HOURS PRIOR TO COMMENCING ANY WORK IN THE PUBLIC RIGHT OF WAY.

41. ROADWAY SECTION REPLACEMENT SHALL MEET CURRENT SANDOVAL COUNTY AND UNITED STATES BUREAU OF LAND MANAGEMENT GOLD BOOK STANDARDS FOR DEPTH OR MATCH EXISTING DEPTH, WHICHEVER IS THICKER.

42. RECORD DRAWINGS OR WORK COMPLETED SHALL BE SUBMITTED TO ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE INSTALLATIONS.

43. IN THE EVENT A SERVICE OUTAGE IS REQUIRED, CONTRACTOR WILL NOTIFY ALL AFFECTED PARTIES WHEN AND HOW LONG THEY WILL BE WITHOUT SERVICE.

44. STORM WATER POLLUTION PREVENTION PLANS SHALL BE MANAGED BY THE OWNER. STORM WATER EROSION AND SEDIMENTATION CONTROL SHALL BE IMPLEMENTED BY CONTRACTOR AND DOCUMENTED BY THE OWNER TO PROTECT PROPERTIES AND PUBLIC FACILITIES FROM THE ADVERSE EFFECTS OF EROSION AND SEDIMENTATION AS A RESULT OF CONSTRUCTION ACTIVITIES.

45. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED AND SHALL BE KEPT IN PLACE UNTIL EROSION AND SEDIMENTATION POTENTIAL IS MITIGATED. REMOVAL OF SILT AND SEDIMENT IS REQUIRED ONCE SILT AND SEDIMENT HAS REACHED HALF THE HEIGHT OF THE SILT FENCE. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE CHECKED AND MAINTAINED PER THE OWNERS PERMIT.

46. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.

47. THE CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH OTHER DRAWINGS FOR INDIVIDUAL ITEMS. DISCREPANCIES UNCOVERED, IF ANY, SHALL BE REPORTED BEFORE PROCEEDING WITH THE WORK SO THAT PROPER ADJUSTMENT CAN BE MADE.

48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE PROJECT DURING CONSTRUCTION. ALL STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.

49. THE OWNER WILL PROVIDE CONSTRUCTION OBSERVERS AND MATERIAL TESTERS TO OBSERVE AND TEST ALL CONTROLLED EARTHWORK. THE CONSTRUCTION OBSERVERS AND MATERIAL TESTERS SHALL PROVIDE CONTINUOUS ON-SITE OBSERVATION AND TESTING DURING CONSTRUCTION OF CONTROLLED EARTHWORK. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION OBSERVERS AND MATERIAL TESTERS AT LEAST TWO WORKING DAYS IN ADVANCE OF ANY FIELD OPERATIONS OF THE CONTROLLED EARTHWORK.

50. CONTRACTOR SHALL COMPLY WITH ANY AND ALL CONDITIONS OF APPROVALS ISSUED BY THE REGULATORY AGENCIES AS DETERMINED BY OWNER.

51. ENGINEER HAS NO CONTROL OVER COST OF LABOR, MATERIALS, EQUIPMENT OR SERVICES FURNISHED BY OTHERS, COMPETITIVE BIDDING OR MARKET CONDITIONS.

FACILITY/PIT OWNER

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AZTEC, NEW MEXICO, 87410
(505) 386-8887

CIVIL ENGINEER

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ABBREVIATIONS

CMP.	CORRUGATED METAL	O.C.	ON CENTER
CU. FT.	CUBIC FEET	SQ. FT.	SQUARE FEET
CU. YD.	CUBIC YARDS	STA.	STATION
DIA.	DIAMETER (Ø)	TOE	TOE OF BANK
ELEV.	ELEVATION	TOP	TOP OF BANK
EX.	EXISTING	TYP.	TYPICAL
FT	FEET	W/	WITH
FG	FINISH GRADE		
HORIZ.	HORIZONTAL		
LF	LINEAR FEET		
LLDPE	LINEAR LOW-DENSITY POLYETHYLENE		
MAX.	MAXIMUM		
ME	MATCH EXISTING		
MCC	MECHANICAL CONTROL CENTER		
MIL or MM	MILLIMETER		
MIN.	MINIMUM		
N.T.S.	NOT TO SCALE		

LEGEND

- EXISTING INDEX CONTOURS
- EXISTING INTERMEDIATE CONTOURS
- PROPOSED INDEX CONTOURS
- PROPOSED INTERMEDIATE CONTOURS
- PROPOSED DRAINAGE PIPE
- PROPOSED CHAIN LINK FENCE
- PROPOSED MAN WAY PEDESTRIAN GATE

Rev #	Date	Description	By	Chkd

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SANDOVAL COUNTY, NM

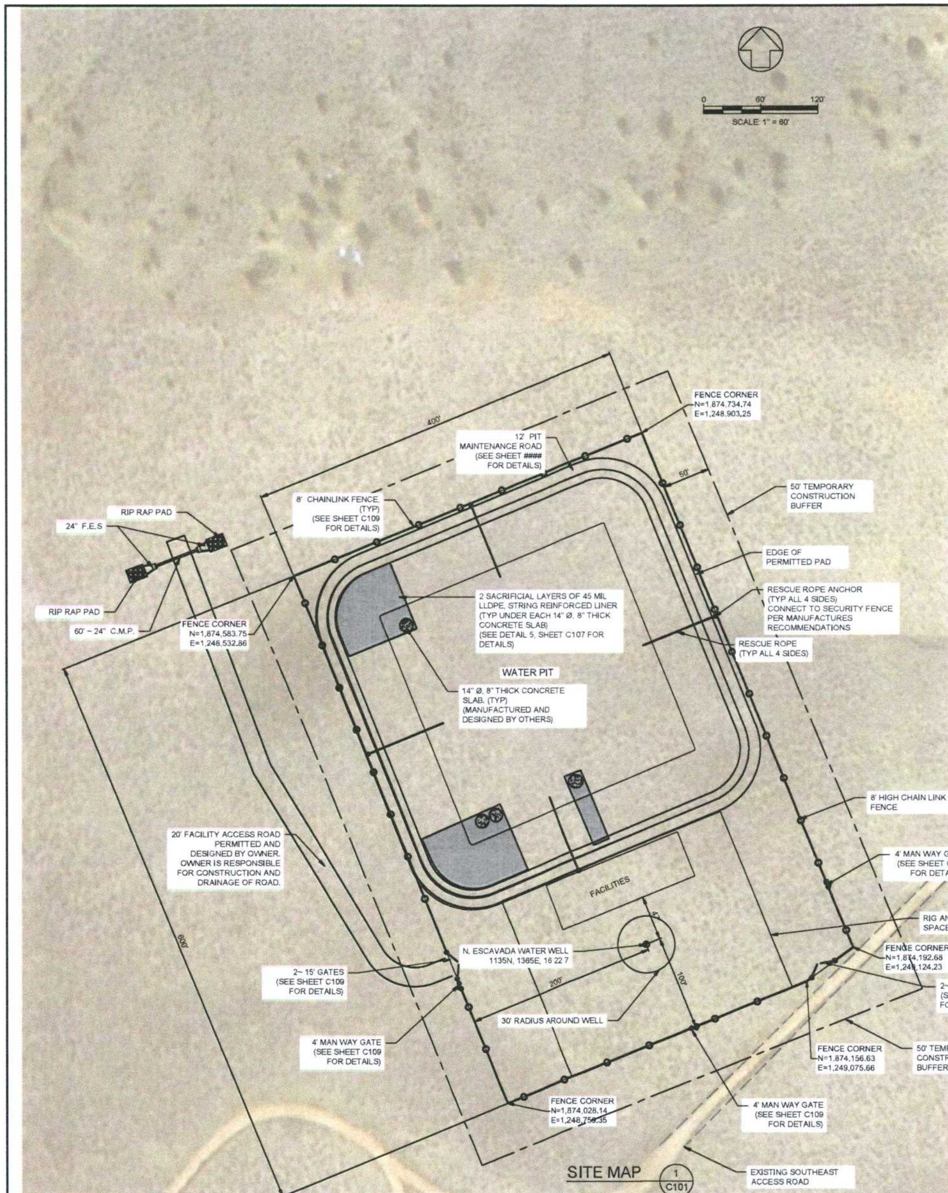
ENDURING RESOURCES

ENDURING RESOURCES NEU 2207-16B
WATER RECYCLE FACILITY
GENERAL NOTES AND LEGEND

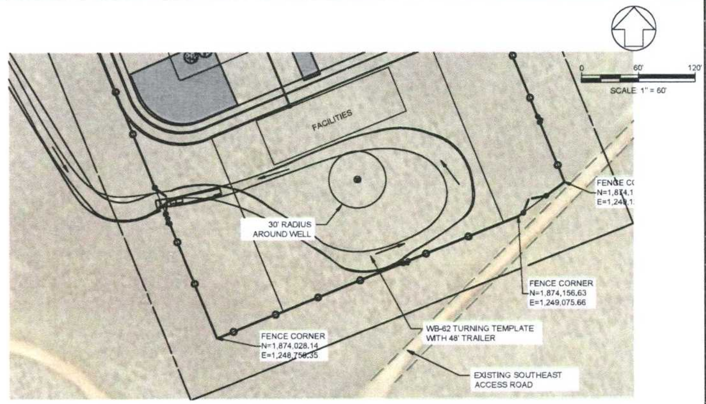
THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	DRN	HDM

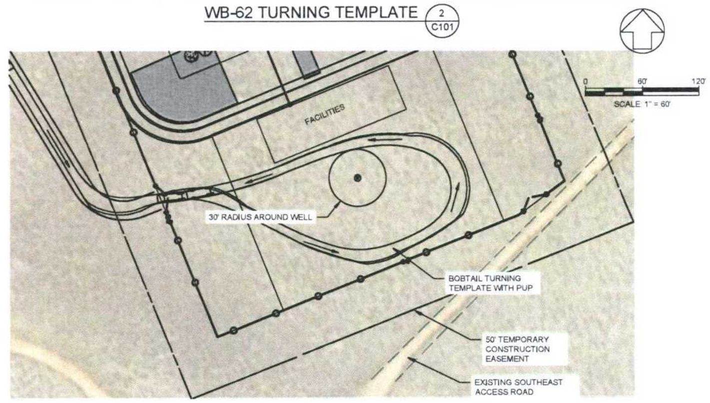
Date: August 2018
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: G101



SITE MAP (1 / C101)



WB-62 TURNING TEMPLATE (2 / C101)



BOBTAIL AND PUP TURNING TEMPLATE (3 / C101)

PROPOSED POND INFORMATION

TOP OF BERM ELEVATION (3' FREEBOARD):	6907.00FT
WATER SURFACE ELEVATION:	6904.00 FT
WATER SURFACE AREA (ELEVATION 6904.00):	123,309 SQ. FT. (2.83 ACRES)
POND STORAGE VOLUME:	64,423 CU. YD. (309,804 BBLS)

Rev #	Date	Description	By	Chk'd

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ENDURING RESOURCES — SANDOVAL COUNTY, NM

ENDURING RESOURCES NEU 2207-16B WATER RECYCLE FACILITY SITE MAP

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	GRN	HDM

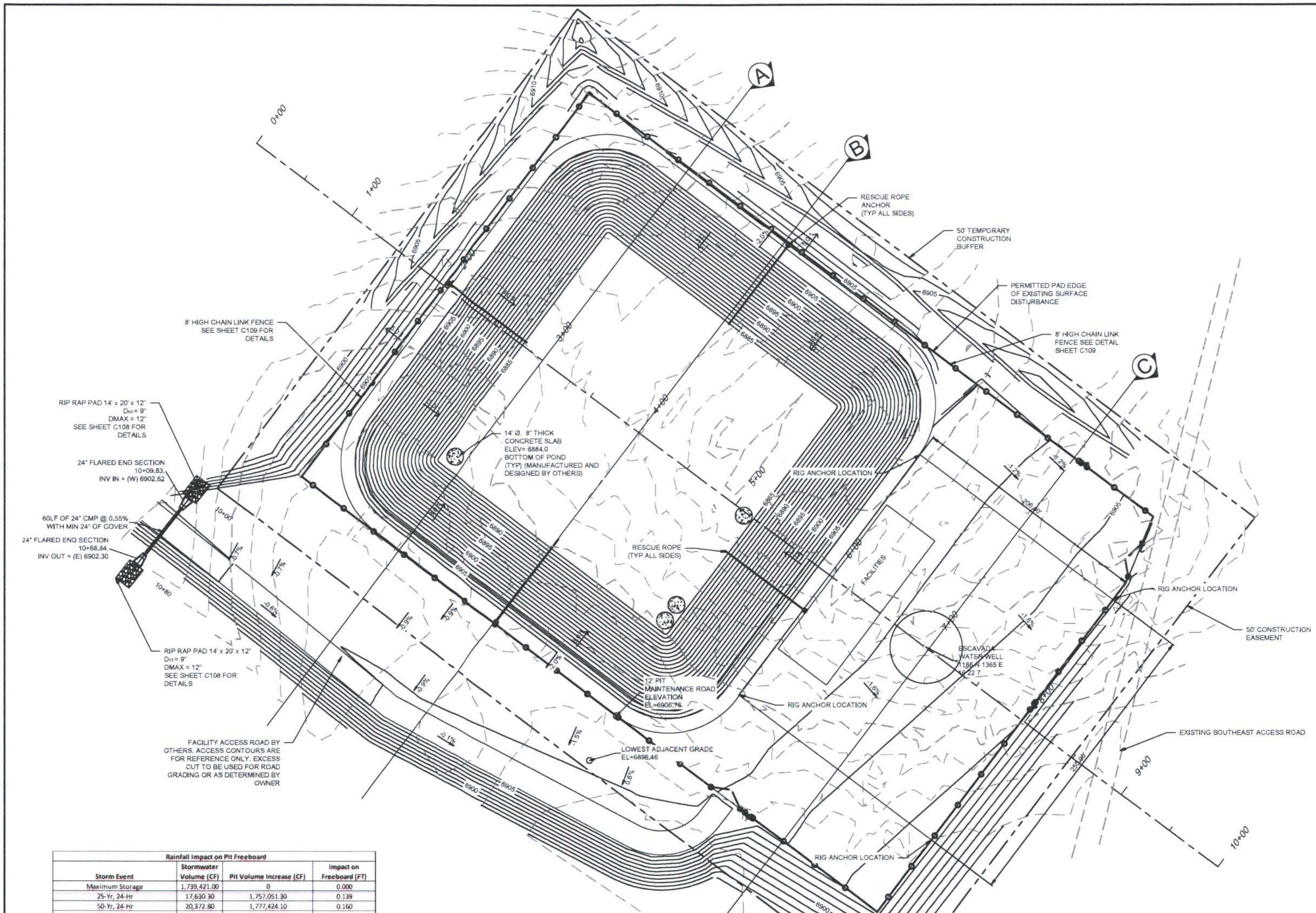
Date: August 2018

Scale: Horiz: 1" = 60' Vert: N/A

Project No. 9127383

Sheet: C101

P:\5-Enduring Resources - 16B Pond Design (5127383)\CAD\Civil\1. NEU_N ESCAVADA\5127283 NEU_SITE MAP.dwg, 8/17/2018 2:35:02 PM GJF



Rainfall Impact on Pit Freeboard

Storm Event	Stormwater Volume (CF)	Pit Volume Increase (CF)	Impact on Freeboard (FT)
Maximum Storage	1,739,421.00	0	0.000
25-Yr, 24-Hr	17,630.30	1,757,051.30	0.139
50-Yr, 24-Hr	20,372.80	1,777,424.10	0.160
100-Yr, 24-Hr	23,376.50	1,800,800.60	0.184

On-Site Drainage	Area (ACRES)	NRCS Soil Types	Percent Imperviousness	Methodology for Analysis	Time of Concentration (MINUTES)	2-Year, 24-Hour Flow Rate (CFS)	5-Year, 24-Hour Flow Rate (CFS)	10-Year, 24-Hour Flow Rate (CFS)	25-Year, 24-Hour Flow Rate (CFS)	50-Year, 24-Hour Flow Rate (CFS)	100-Year, 24-Hour Flow Rate (CFS)	NOTE
Pre-Development Area	6.2	C	2	Rational Method	31.15	0.07	0.44	1.52	4.24	5.98	8.24	Historical
Post-Development Pad Area	2.4	C	50	Rational Method	14.99	1.42	2.21	3.00	4.45	5.50	6.67	Post Development

PROPOSED SITE EARTHWORK:

APPROXIMATE CUT:	56,889 CU. YD.
APPROXIMATE FILL:	41,705 CU. YD.
APPROXIMATE NET CUT:	15,184 CU. YD.
TOPSOIL REMOVAL (0.50' DEPTH)	4,436 CU. YD

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ENDURING RESOURCES — SANDOVAL COUNTY, NM

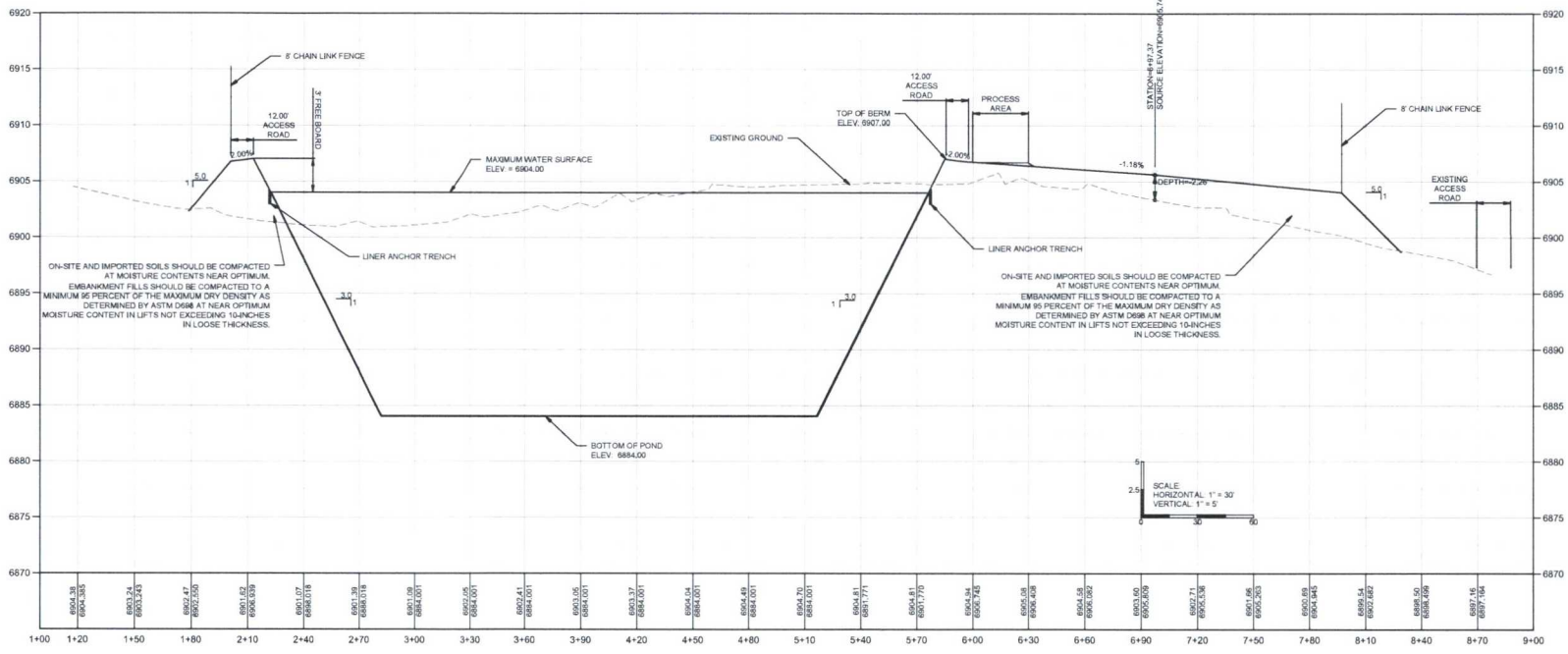
ENDURING RESOURCES NEU 2207-16B WATER RECYCLE FACILITY
SITE GRADING AND DRAINAGE PLAN

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	GJF	HDM

Date: August 2018
Scale: Horiz: 1" = 40' Vert: N/A
Project No: 9127383
Sheet: C102

P:\5-Enduring Resources - 16B Pond Design (5127383)\CAD\Civil\1. NEU_N ESCAVADA\5127283 NEU_Grading & Drainage.dwg, 8/17/2018 2:35:14 PM GJF



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ENDURING RESOURCES

SANDOVAL COUNTY, NM

ENDURING RESOURCES NEU 2207-16B WATER RECYCLE FACILITY SITE PROFILE

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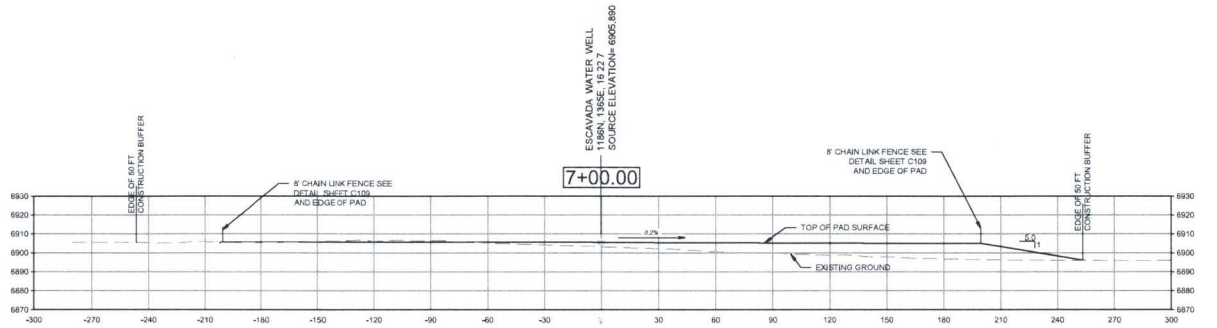
Date: August 2018

Scale: Horiz. 1" = 30' Vert. 1" = 5'

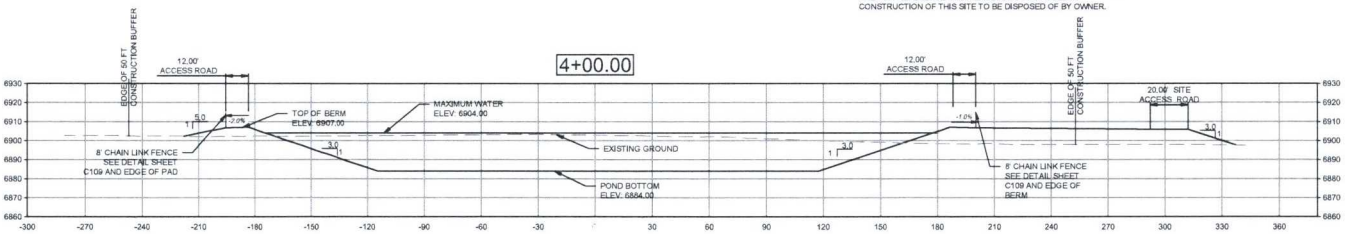
Project No: 9127383

Sheet: C103

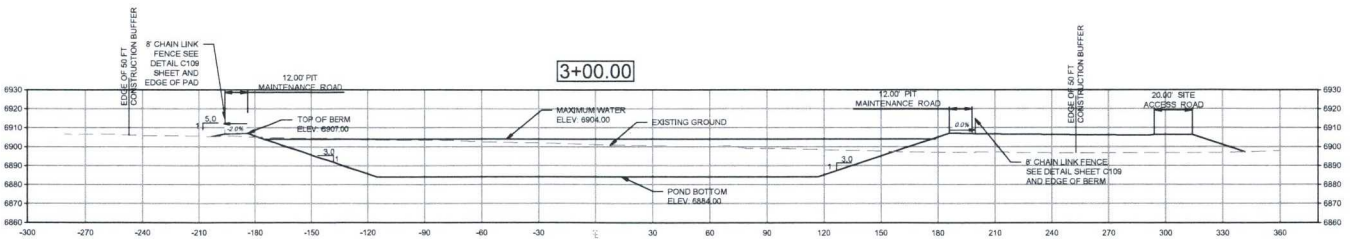


SECTION C
STA. 7+00

NOTE:
1. ON-SITE AND IMPORTED SOILS SHOULD BE COMPACTED AT MOISTURE CONTENTS NEAR OPTIMUM. EMBANKMENT FILLS SHOULD BE COMPACTED TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 AT NEAR OPTIMUM MOISTURE CONTENT IN LIFTS NOT EXCEEDING 10-INCHES IN LOOSE THICKNESS.
2. 20' FACILITY ACCESS ROAD BY OTHERS. ACCESS ROAD CONTOURS ARE FOR REFERENCE ONLY. EXCESS CUT NOT USED IN CONSTRUCTION OF THIS SITE TO BE DISPOSED OF BY OWNER.



SECTION B
STA. 4+00



SECTION A
STA. 3+00

SCALE:
HORIZONTAL: 1" = 30'
VERTICAL: 1" = 30'

SCALE:
HORIZONTAL: 1" = 30'
VERTICAL: 1" = 30'

SCALE:
HORIZONTAL: 1" = 30'
VERTICAL: 1" = 30'

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ENDURING RESOURCES

ENDURING RESOURCES NEU 2207-16B
WATER RECYCLE FACILITY
SITE CROSS-SECTIONS

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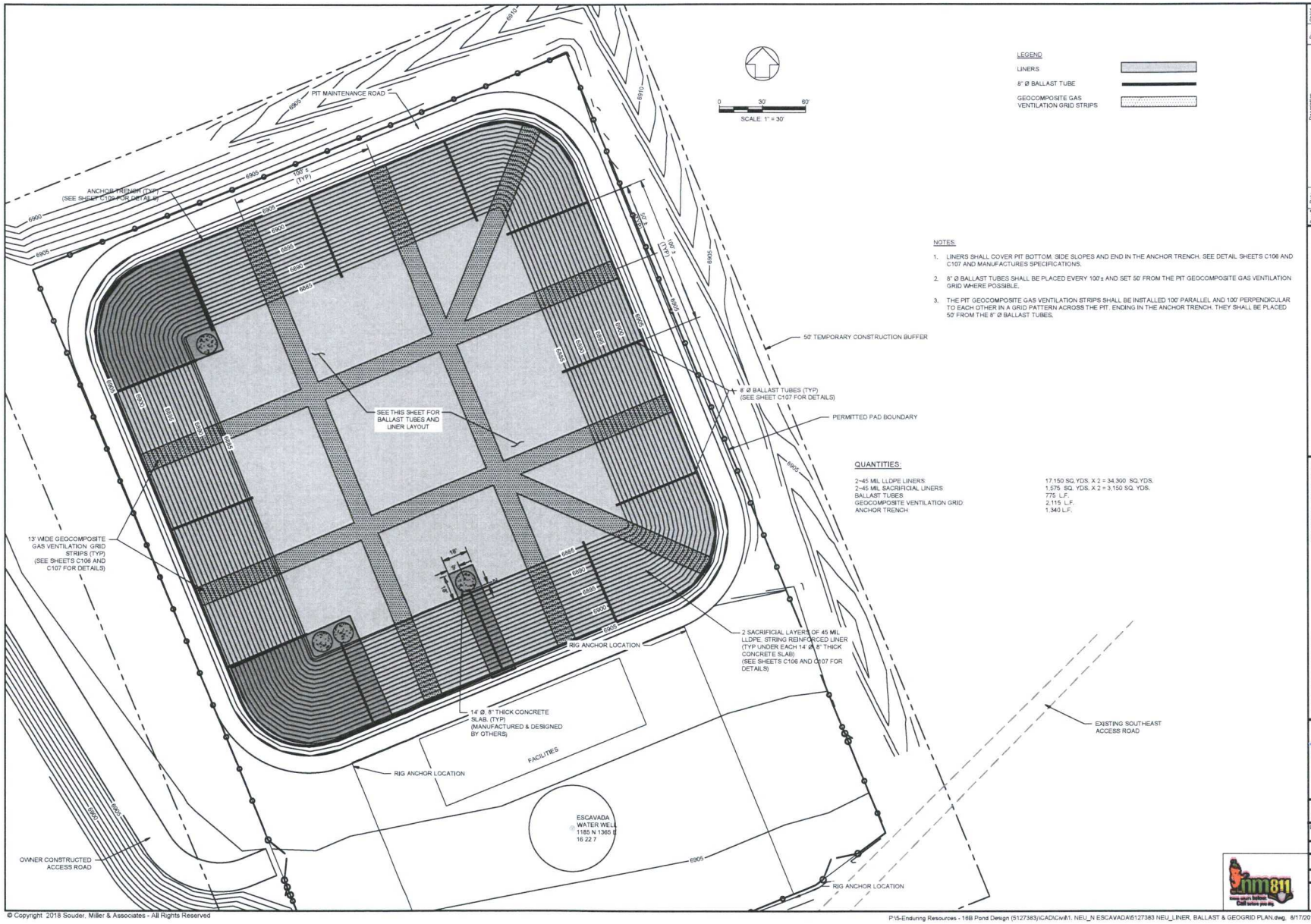
Date: August 2018
Scale: Horiz: 1" = 30'
Vert: 1" = 5'
Project No: 9127383
Sheet: C104



NOTES:

1. LINERS SHALL COVER PIT BOTTOM, SIDE SLOPES AND END IN THE ANCHOR TRENCH. SEE DETAIL SHEETS C106 AND C107 AND MANUFACTURES SPECIFICATIONS.
2. 8" Ø BALLAST TUBES SHALL BE PLACED EVERY 100'± AND SET 50' FROM THE PIT GEOCOMPOSITE GAS VENTILATION GRID WHERE POSSIBLE.
3. THE PIT GEOCOMPOSITE GAS VENTILATION STRIPS SHALL BE INSTALLED 100' PARALLEL AND 100' PERPENDICULAR TO EACH OTHER IN A GRID PATTERN ACROSS THE PIT, ENDING IN THE ANCHOR TRENCH. THEY SHALL BE PLACED 50' FROM THE 8" Ø BALLAST TUBES.

QUANTITIES:

2~45 MIL LLDPE LINERS:	17,150 SQ.YDS. X 2 = 34,300 SQ.YDS.
2~45 MIL SACRIFICIAL LINERS:	1,575 SQ. YDS. X 2 = 3,150 SQ. YDS.
BALLAST TUBES:	775 L.F.
GEOCOMPOSITE VENTILATION GRID:	2,115 L.F.
ANCHOR TRENCH:	1,340 L.F.

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ENDURING RESOURCES

ENDURING RESOURCES NEU 2207-16B
WATER RECYCLE FACILITY
LINER BALLAST TUBES AND PIT
GEOCOMPOSITE VENTILATION GRID LAYOUT

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Date: August 2018
Scale: Horiz:
Vert:
Project No: 9127383
Sheet: C105

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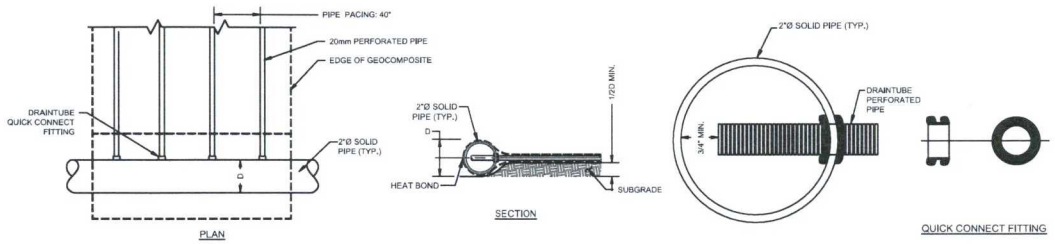
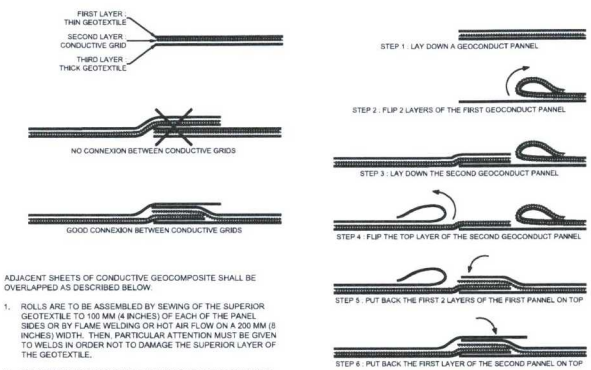


BERM VENT SIMPLE CONNECTION TO PIPE

N.T.S. (1 / C106)

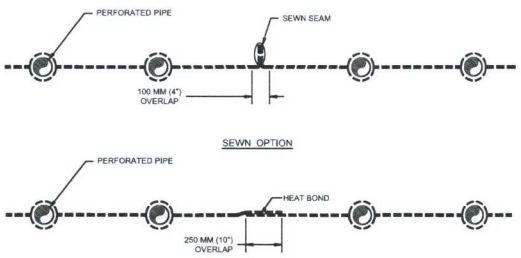


ADJACENT SHEETS OF CONDUCTIVE GEOCOMPOSITE SHALL BE OVERLAPPED AS DESCRIBED BELOW.

1. ROLLS ARE TO BE ASSEMBLED BY SEWING OF THE SUPERIOR GEOTEXTILE TO 100 MM (4 INCHES) OF EACH OF THE PANEL SIDES OR BY FLAME WELDING OR HOT AIR FLOW ON A 200 MM (8 INCHES) WIDTH. THEN, PARTICULAR ATTENTION MUST BE GIVEN TO WELDS IN ORDER NOT TO DAMAGE THE SUPERIOR LAYER OF THE GEOTEXTILE.
2. THE SUPERIOR GEOTEXTILE LAYERS OF THE ADJACENT ROLLS SHALL BE ROLLED BACK 250 MM (10 INCHES). GEOCONDUCT CONDUCTIVE GEOCOMPOSITE SHALL BE OVERLAPPED SUCH AS THE CONDUCTIVE GRIDS MUST BE IN DIRECT CONTACT ON A MINIMUM OF 200 MM (8 INCHES).

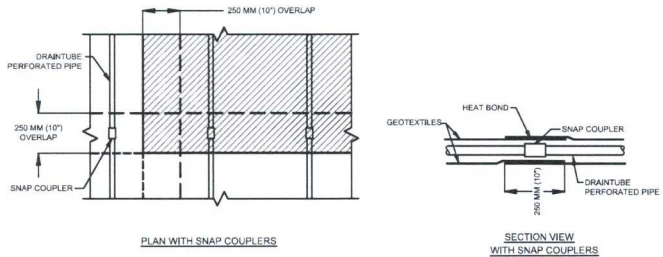
CONDUCTIVE GEOCOMPOSITE DETAILS

N.T.S. (2 / C106)



GAS VENTING GEOCOMPOSITE PANEL JOINING OPTIONS FOR SIDE

N.T.S. (3 / C106)



GAS VENTING GEOCOMPOSITE PANEL JOINING OPTIONS FOR END

N.T.S. (4 / C106)

NOTE:
DETAILS SHOWN ON THIS PAGE ARE PER MANUFACTURE (AFILTEX-TEXEL)

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ENDURING RESOURCES NEU 2207-16B WATER RECYCLE FACILITY GEOCOMPOSITE DETAILS

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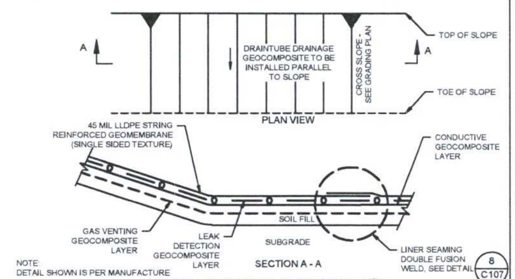
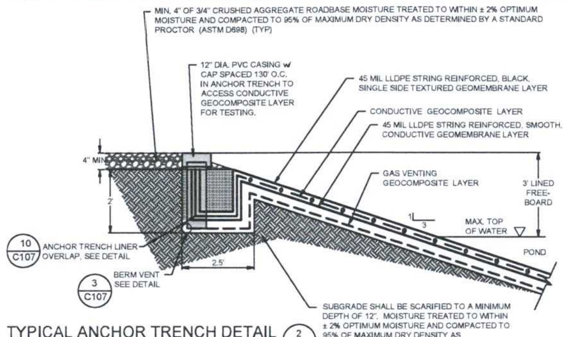
Sheet: C106

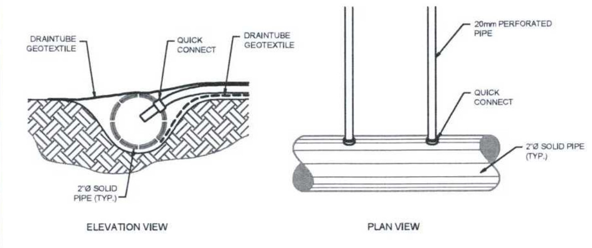


NOTE:
DETAIL SHOWN IS PER MANUFACTURE

LINER TO LINER SECTION (1 / C107)
N.T.S.

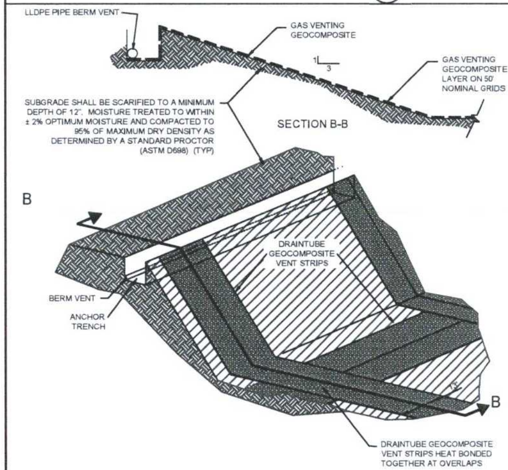


TYPICAL ANCHOR TRENCH DETAIL (2 / C107)
N.T.S.

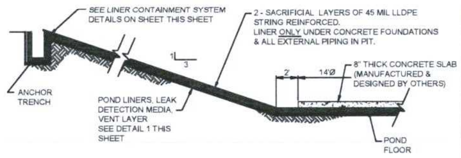


NOTE:
DETAIL SHOWN IS PER MANUFACTURE

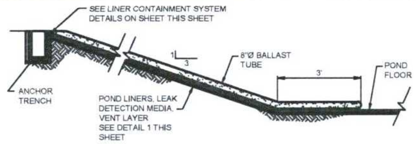
BERM VENT DETAIL (3 / C107)
N.T.S.



GEOCOMPOSITE GAS VENTILATION LAYER DETAIL (4 / C107)
N.T.S.

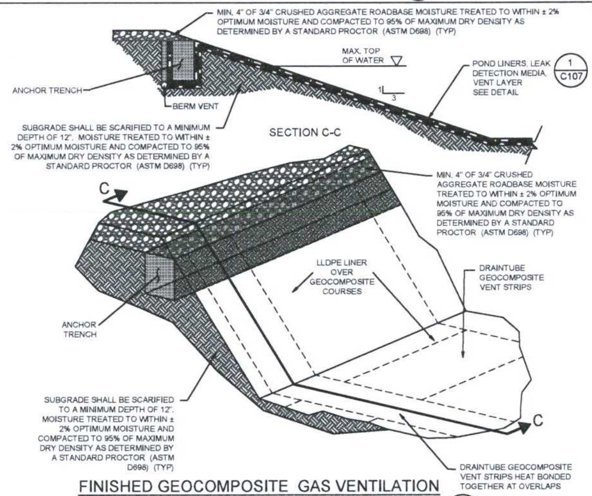


PROTECTION LINER DETAIL (5 / C107)
N.T.S.

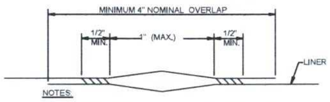


NOTES:
1. BALLAST TUBES TO BE 45-MIL LLDPE OR APPROVED EQUAL.
2. FILL 8"Ø BALLAST TUBES WITH SAND, ANCHOR IN LINER TRENCH AND EXTEND SEVERAL FEET ONTO POND FLOOR AS NOTED.

BALLAST TUBE DETAILS (6 / C107)
N.T.S.

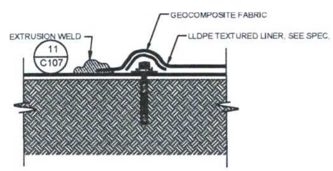


FINISHED GEOCOMPOSITE GAS VENTILATION LAYER WITH GEOMEMBRANE LINER SYSTEM AND BERM VENT DETAIL (7 / C107)
N.T.S.



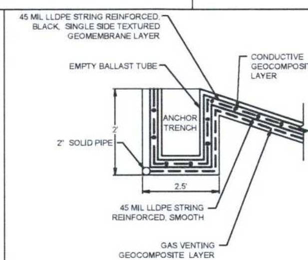
NOTES:
1. LINER SHEETS SHALL BE TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING.
2. DOUBLE FUSION WELDING SHALL BE THE PRIMARY SEAMING TECHNIQUE USED.
3. GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE SHOULD BE TAKEN TO INSURE THAT VERY LITTLE MATERIAL IS TAKEN WHEN GRINDING.
4. AIR PRESSURE OR VACUUM TESTING SHALL BE THE NON-DESTRUCTIVE SEAM TEST METHODS FOR DOUBLE FUSION WELDS.
5. SUBGRADE PREPARATION, SELECT FILL (IF REQUIRED) SHALL BE PER LINER MANUFACTURES REQUIREMENTS.
6. DETAIL SHOWN IS PER MANUFACTURE

LINER SEAMING DOUBLE FUSION WELD DETAIL (8 / C107)
N.T.S.



EXTRUSION WELD AT ANCHOR DETAIL (9 / C107)
N.T.S.

NOTE:
DETAIL SHOWN IS PER MANUFACTURE



ANCHOR TRENCH LINER OVERLAP DETAIL (10 / C107)
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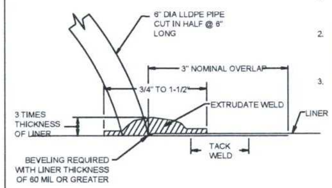

NOTES:
1. LINER SHEETS TACK WELDED TOGETHER AT OVERLAP TO FORM TEMPORARY BOND PRIOR TO WELDING.
2. GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE SHOULD BE TAKEN IN NOT REMOVING TOO MUCH MATERIAL WHEN GRINDING.
3. VACUUM TESTING IS THE NON-DESTRUCTIVE SEAM TEST METHOD FOR EXTRUSION WELDS.

EXTRUSION WELD DETAIL (11 / C107)
N.T.S.

NOTE:
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LINER AND BALLAST TUBE DETAILS

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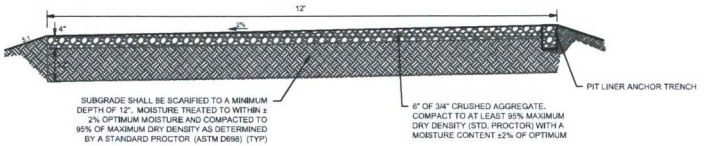
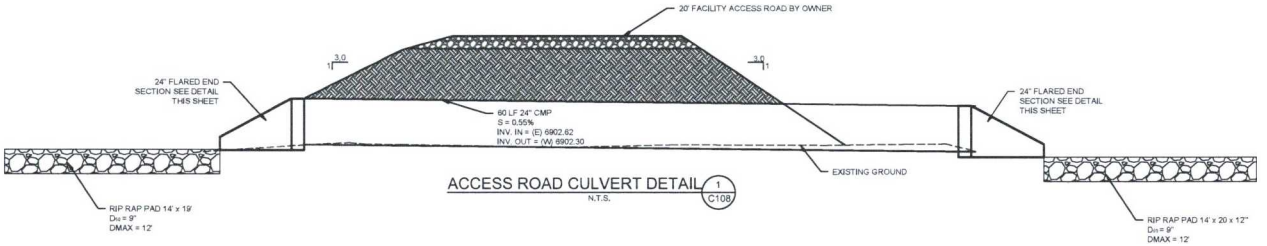
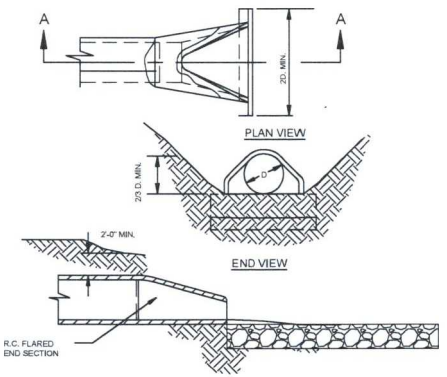


PRODUCED WATER PIT ACCESS ROAD SECTION (1 / C108)
N.T.S.



ACCESS ROAD CULVERT DETAIL (1 / C108)
N.T.S.



CULVERT END SECTION DETAIL (2 / C108)
N.T.S.

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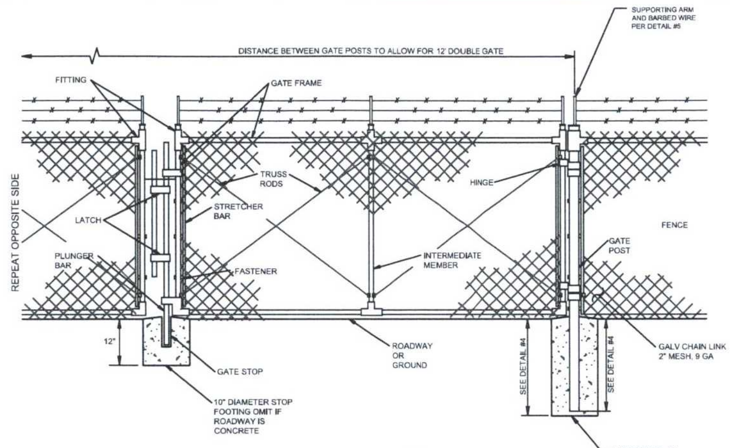
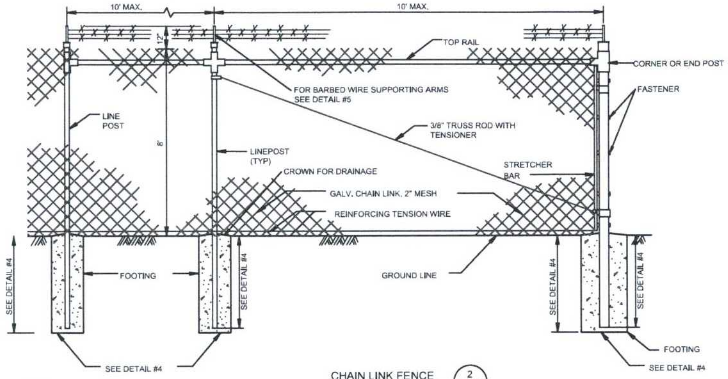
Scale: Horiz: N/A
Vert: N/A

Project No: 9127383

Sheet: C108

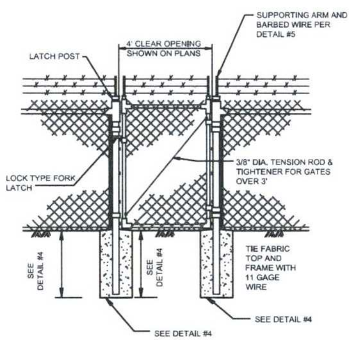


CHAIN LINK GATE (1 / C109)
N.T.S.



NOTE:
AT BROW CROSSING, EMBED ON 6" CENTERS, 4 - 1/2"X24" GALVANIZED RODS WITH 2" HOOKED END INTO BROW DITCH CONCRETE. EXPOSED END OF ROD SHALL BE WOVEN INTO FENCE FABRIC.

CHAIN LINK FENCE (2 / C109)
N.T.S.



PEDESTRIAN GATE (3 / C109)
N.T.S.

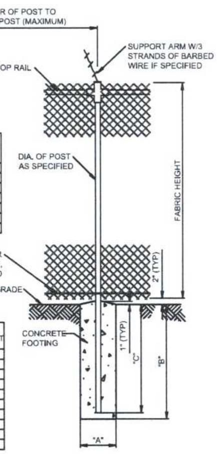
GATE POST

GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
3' TO 6'	2.785"	3' TO 5'	12"	38"	36"
		6' TO 9'	14"	42"	40"
		10' TO 12'	16"	46"	44"
7' TO 12'	4.000"	3' TO 5'	14"	38"	36"
		6' TO 9'	16"	42"	40"
		10' TO 12'	18"	46"	44"
13'	6.625"	8'-0"	16"	42"	40"

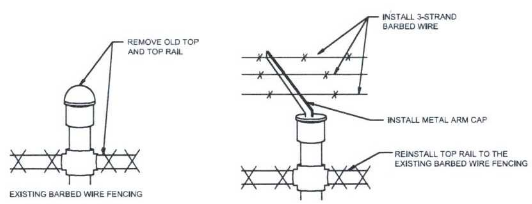
LINE AND TERMINAL POSTS

FABRIC HEIGHT	TYPE POST	"A" DIAM	"B" DEPTH	"C" POST EMBEDMENT
3'-0" TO 4'-0"	LINE	6"	26"	24"
	TERMINAL	10"	32"	30"
5'-0"	LINE	8"	32"	30"
	TERMINAL	10"	32"	30"
6'-0" TO 9'-0"	LINE	12"	38"	36"
	TERMINAL	12"	38"	36"
10'-0" TO 12'-0"	LINE	18"	38"	36"
	TERMINAL	18"	38"	36"
13'-0" TO 18'-0"	LINE	24"	42"	40"
	TERMINAL	24"	42"	40"

NOTE: TERMINAL POSTS INCLUDE END, CORNER, AND PULL POSTS SEE SPECIFICATIONS



CHAIN LINK FENCE FOUNDATION (4 / C109)
N.T.S.



NOTE:
ADD SUPPORTING ARM AND BARBED WIRE TO NEW AND EXISTING CHAINLINK FENCE POSTS AND GATES

SUPPORTING ARM & BARBED WIRE (5 / C109)
N.T.S.

WARNING SIGN (6 / C109)
N.T.S.

WARNING SIGN (7 / C109)
N.T.S.

Rev #	Date	Description	By	Chk'd

SOUDER, MILLER & ASSOCIATES
Engineering • Environmental • Surveying
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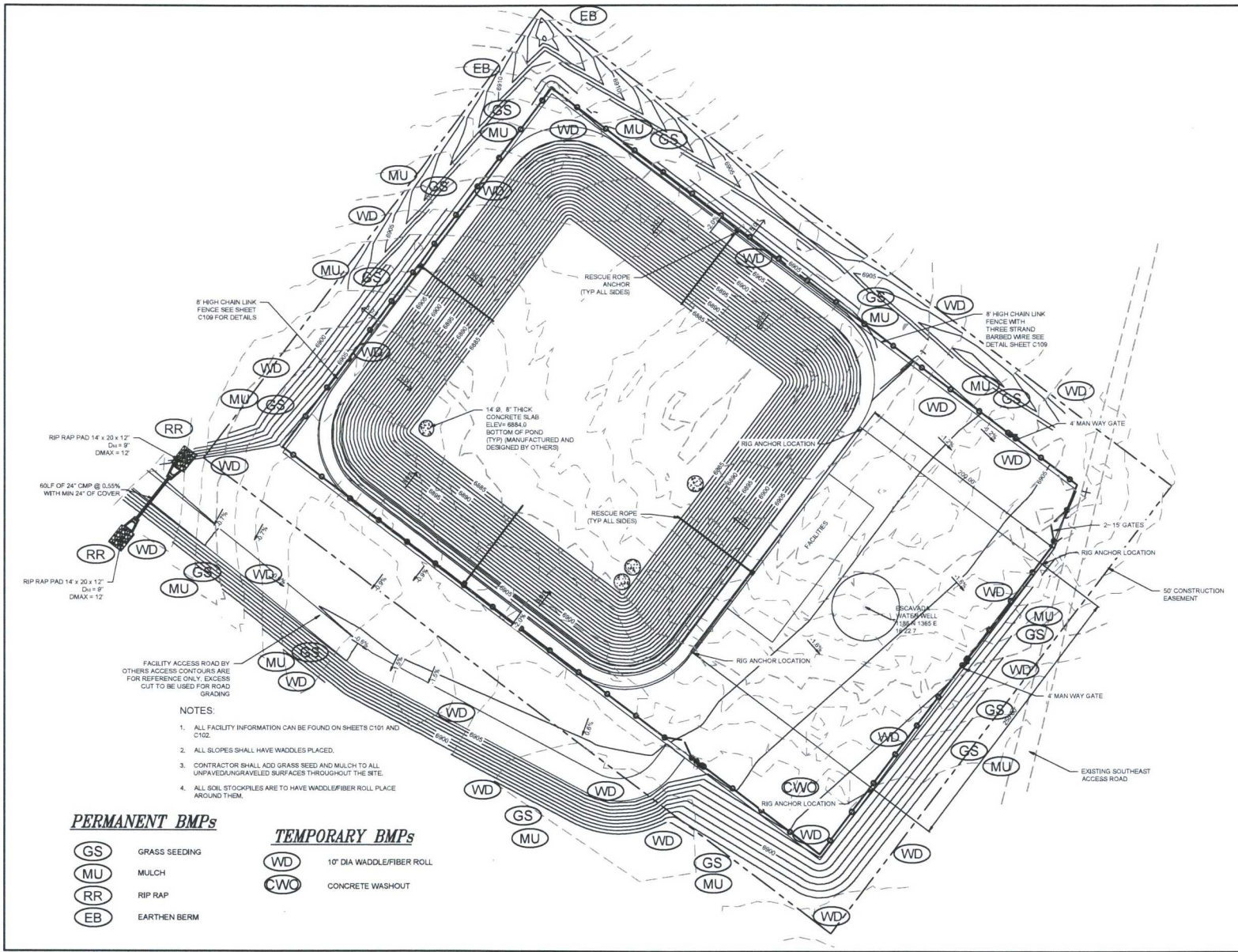
ENDURING RESOURCES — SANDOVAL COUNTY, NM

ENDURING RESOURCES NEU 2207-16B
WATER RECYCLE FACILITY
CHAIN LINK SECURITY FENCE DETAILS

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	DBN	HDM

Date: August 2018
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: C109



NOTES:

1. ALL FACILITY INFORMATION CAN BE FOUND ON SHEETS C101 AND C102.
2. ALL SLOPES SHALL HAVE WADDLES PLACED.
3. CONTRACTOR SHALL ADD GRASS SEED AND MULCH TO ALL UNPAVED/UNGRAVELED SURFACES THROUGHOUT THE SITE.
4. ALL SOIL STOCKPILES ARE TO HAVE WADDLE/FIBER ROLL PLACE AROUND THEM.

PERMANENT BMPs

GS	GRASS SEEDING
MU	MULCH
RR	RIP RAP
EB	EARTHEN BERM

TEMPORARY BMPs

WD	10" DIA WADDLE/FIBER ROLL
CWO	CONCRETE WASHOUT

P:\5-Enduring Resources - 16B Pond Design (5127383)\CAD\Civil\1. NEU_N ESCAVADA\5127283 NEU_EROSION CONTROL.dwg, 8/17/2018 2:37:15 PM GJF

No.	Date	Description	By	Chkd

SOUDER, MILLER & ASSOCIATES
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ENDURING RESOURCES

SANDOVAL COUNTY, NM

ENDURING RESOURCES NEU 2207-16B WATER RECYCLE FACILITY EROSION CONTROL PLAN

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED.

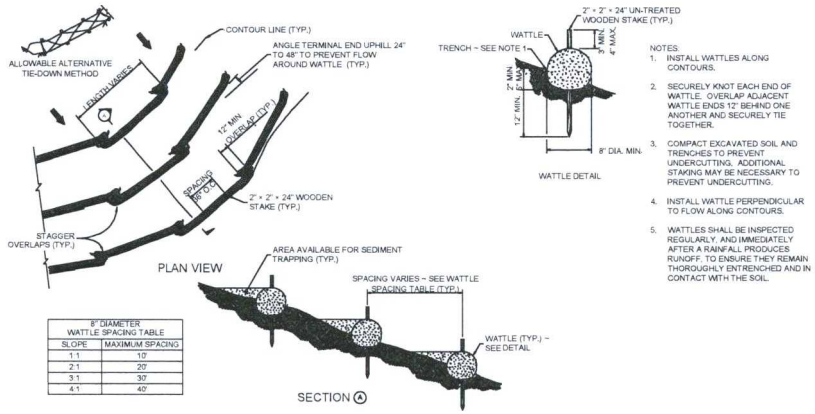
Designed	Drawn	Checked
HDM	GJF	HDM

Date: August 2018

Scale: Horiz. 1" = 40'
Vert. N/A

Project No. 9127383

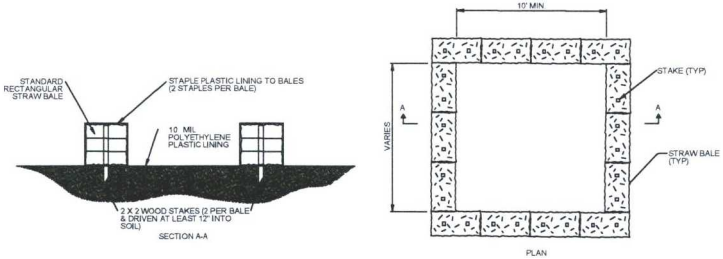
Sheet: C110



8" DIAMETER WATTLE SPACING TABLE	
SLOPE	MAXIMUM SPACING
1:1	10'
2:1	20'
3:1	30'
4:1	40'

NOTES:
1. INSTALL WATTLES ALONG CONTOURS.
2. SECURELY KNOT EACH END OF WATTLE. OVERLAP ADJACENT WATTLE ENDS 12" BEHIND ONE ANOTHER AND SECURELY TIE TOGETHER.
3. COMPACT EXCAVATED SOIL AND TRENCHES TO PREVENT UNDERCUTTING. ADDITIONAL STAKING MAY BE NECESSARY TO PREVENT UNDERCUTTING.
4. INSTALL WATTLE PERPENDICULAR TO FLOW ALONG CONTOURS.
5. WATTLES SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RAINFALL PRODUCES RUNOFF, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.

WADDLE INSTALLATION ON SLOPES (WD)
N.T.S.



CONCRETE TRUCK WASH OUT FACILITY (CTW)
N.T.S.

GENERAL NOTES

1. SEE SHEET C110 FOR SITE SPECIFIC APPLICATION OF EROSION CONTROL.
2. EROSION CONTROL SHALL BE IMPLEMENTED TO PROTECT PROPERTIES AND PUBLIC FACILITIES FROM THE ADVERSE EFFECTS OF EROSION AND SEDIMENTATION AS A RESULT OF CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL SET, LOCATE, AND MAINTAIN EROSION CONTROL MEASURES PER THE EROSION CONTROL PLAN, AND THE OWNER'S ASSET STORMWATER POLLUTION PROTECTION PLAN. (SWPPP)
4. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AND SHALL BE KEPT IN PLACE UNTIL EROSION AND SEDIMENTATION POTENTIAL IS MITIGATED. REMOVAL OF SILT AND SEDIMENT IS REQUIRED PER SWPPP.
5. EROSION CONTROL DEVICES SHALL BE CHECKED AFTER EVERY STORM. REPAIRS OR REPLACEMENT TO THE EROSION CONTROL MEASURES SHALL BE MADE AS REQUIRED BY THE OWNERS PERMIT TO MAINTAIN PROPER PROTECTION.
6. SWPPP SHALL BE MODIFIED TO CONTROL EROSION AND SEDIMENT. TRANSPORT BY USING ANY MEANS SHOWN ON THIS PLAN OR IMPLEMENTING OTHER CONTROL MEASURES.
7. PERMANENT BEST MANAGEMENT PRACTICES (BMP'S) (I.E. SEEDED, MULCH) MUST BE IMPLEMENTED WITHIN 14 DAYS OF LAST CONSTRUCTION ACTIVITY IN THE AREA, AS REQUIRED PER THE SWPPP.
8. THE CONTRACTOR/OWNER SHALL UPDATE OR MODIFY THIS PLAN AS NEEDED TO COMPLY WITH THE APPLICABLE POLLUTANT DISCHARGE ELIMINATION SYSTEM REQUIREMENTS.
9. CONTRACTOR SHALL BE REQUIRED TO HAUL EXCESS CONCRETE AND WASHOUT OFF-SITE TO AN APPROVED/PERMITTED DISPOSAL SITE.
10. CONTRACTOR SHALL SPREAD STOCKPILED TOPSOIL BEFORE PLACING GRASS SEED AT CUT AND FILL LOCATIONS USING OWNER APPROVED MIX.
11. CONTRACTOR SHALL PLACE MULCH IN CONJUNCTION WITH GRASS SEEDING.

NOTE:
1. SEE SHEETS C110 FOR SITE SPECIFIC APPLICATION OF EROSION CONTROL.

TEMPORARY BMPs

WD	10" DIA WADDLE/FIBER ROLL
CWO	CONCRETE WASHOUT

PERMANENT BMPs

GS	GRASS SEEDING
MU	MULCH
RR	RIP RAP
EB	EARTHEN BERM

Rev #	Date	By	Chkd	Description

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ENDURING RESOURCES
SANDOVAL COUNTY, NM
ENDURING RESOURCES NEU 2207-16B
WATER RECYCLE FACILITY
SITE EROSION AND SEDIMENTATION CONTROL DETAILS

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed	Drawn	Checked
HDM	GJF	HDM

Date: August 2018
Scale: Horiz: N/A Vert: N/A
Project No: 9127383
Sheet: C111

Operations and Maintenance Plan

NEU 2207-16B Water Recycle Facility

Enduring Resources, LLC
332 Road 3100
Aztec, New Mexico 87410

Prepared by:
James McDaniel
HSE Supervisor

Introduction

This Operations and Maintenance (O&M) plan is designed to meet the requirements of NMAC 19.15.34.13, which outlines the requirements for O&M of a produced water recycling containment. Enduring Resources, LLC (Enduring) will operate this recycling containment in accordance with the following O&M plan.

Operations and Maintenance Plan

1. Enduring will inspect the recycling containment and associated leak detection systems weekly while the containment is holding fluids. An inspection log will be maintained by Enduring, and will be available for review upon request by the division.
2. Enduring will remove and visible oil from the surface of the recycling containment upon discovery.
3. Enduring will maintain a minimum of three (3) feet of freeboard in the containment at all times.
4. Oil absorbent booms will be stored on-site in the event oil is discovered in the recycling containment. The booms will be deployed for the removal of oil if it is discovered.
5. The injection and withdrawal of fluids from the containment shall be accomplished through a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
6. If a leak is discovered in the containments primary liner above the liquid level in the containment, Enduring will repair the primary liner within 48 hours, or request an extension on repair within the 48-hour time limit.
7. If a leak is discovered in the containments primary liner below the liquid level in the containment, Enduring will notify the division office of the leak, remove all fluids above the leak level, and repair the primary liner within 48 hours, or request an extension on repair within the 48-hour time limit.
8. The recycling containment will be operated in such a way to prevent the collection of surface water.
9. The recycling containment will not be used for the storage or discharge of hazardous waste.
10. Enduring will consider the recycling containment to have ceased operations if less than 20% of the total fluid volume is used every six (6) months following the first withdrawal of produced water for use. Enduring will report cessation of operations to the appropriate division district office. If additional time is needed for closure, Enduring will request an extension from the appropriate division district office prior to the expiration of the initial six (6) month time period.

Closure Plan

NEU 2207 16B Water Recycle Facility

Enduring Resources, LLC
332 Road 3100
Aztec, New Mexico 87410

Prepared by:
James McDaniel
HSE Supervisor

Introduction

This closure plan is designed to meet the requirements of NMAC 19.15.34.14, which outlines the requirements for closure of a produced water recycling containment. Enduring Resources, LLC (Enduring) will perform the following actions upon final closure of this produced eater recycling containment.

Closure Plan

1. Upon cessation of operations (Defined as the use of less than 20% of the pond's total fluid capacity), Enduring will remove all fluids within 60 days of the official date of cessation.
2. Enduring will close the produced water containment within six (6) months from the official date of cessation. If Enduring will require more than 6 months to complete closure activities, an extension request will be filed prior to the six (6) month time limit for closure.
3. Closure activities will consist of the following:
    a. Removal of all containment contents
    b. Removal of liners and associated leak detection equipment for disposal at a division approved facility.
    c. Removal of all equipment associated with the continued operation of the recycling containment.
    d. A 5-point composite soil sample will be collected in the containment area under the location of the liner, and the sample will be analyzed for the constituents listed in *Table I.*
    e. Additional grab samples of any obvious wet or stained areas will be collected and analyzed for the constituents listed in *Table I*, in addition to the 5-point composite sample.
    f. If the closure sample(s) collected return results equal to or less than the values listed in *Table I*, backfill activities will begin.
    g. If the closure sample(s) collected return results above the values listed in Table I, Enduring will report the elevated sample values to the NMOCD, and additional delineation may be required at that time.
4. The surface area of the former containment area will be backfilled with non-waste containing earthen material to a safe and stable condition that blends with the surrounding undisturbed areas. 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.
5. The area will be reclaimed and reseeded pursuant to the requirements listed in 19.15.34.14.
    a. Once Enduring has closed the recycling containment, we will reclaim the containment's location to a safe and stable condition that blends with the surrounding undisturbed area and matches the existing grade. Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to prevent ponding and erosion. The disturbed area shall then be reseeded in the first favorable growing season following closure of a recycling containment. Enduring will restore the impacted surface area to the condition that existed prior to the construction of the recycling containment.
    b. Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.
    c. The re-vegetation and reclamation obligations imposed by federal, state trust land or tribal agencies on lands managed by those agencies shall supersede these provisions and govern the obligations of any operator subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.

6. Within 60 days of final closure completion, Enduring will submit a closure report on form C-147, including required attachments, to document all closure activities including sampling results and the details on any backfilling, capping or covering, where applicable. The closure report will certify that all information in the report and attachments is correct and that Enduring has complied with all applicable closure requirements and conditions specified in division rules or directives.
7. Enduring will notify the NMOCD when the site has been reseeded and has achieved final revegetation.

Table I
Closure Criteria for Recycling Containments

Depth below bottom of containment to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
51 feet - 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

* Or other test methods approved by the division.
** Numerical limits or natural background level, whichever is greater.
[19.15.34.14 NMAC - N, 3/31/15]

Enduring Resources, LLC's
Recycling Containment
Migratory Bird Mitigation Plan

Enduring Resources, LLC (Enduring) is proposing this Migratory Bird Mitigation Plan (Mitigation Plan) in compliance with the New Mexico Oil Conservation Division (NMOCD) Rule 19.15.34.12.E Enduring shall ensure that the recycling containment is protective of wildlife by implementing the following proposed Mitigation Plan. Enduring employees will inspect the containment weekly for and, within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring. This Mitigation Plan will utilize a combination of visual and audio deterrents to discourage wildlife, particularly birds and bats, from the recycling containment in order to mitigate potential impacts. This Mitigation Plan would be implemented while the Recycling Containment is active and in use, as to not desensitize birds to the deterrents.

The following mitigations will be implemented to reduce any wildlife impacts that may occur from the Recycling Containment:

- The following visual bird deterrents will be installed (Appendix A):
    - Bird-X Prowler Owl decoys will be installed at all four corners of the Containment.
    - Scare-Eye Balloons will be installed along the perimeter of the Containment.
- A Bird-X BroadBand PRO System will be installed at the Containment facility. It utilizes sonic (naturally-recorded bird destress calls & predator cries) to deter birds; as well as, ultrasonic high-frequency sound waves to deter bats. Bird propane cannons were avoided, so as not to disturb other wildlife species.
- The containment will be inspected on a monthly basis when water is present in the containment. All inspectors will insure the containment is receiving only filtered produced water with no hydrocarbons, as well as being trained to inspect the premises for, and respond to any wildlife incident, should it occur.
- Inspection will include:
    - An inspection of the filtration system and all visual and audio deterrents to insure they are in working order and functioning properly.
    - A thorough search of the entire containment facility, and just beyond, for the presence of any wildlife (entrapped, injured, dead, etc.).
- In the event a wildlife incident should occur, James McDaniel with Enduring will be contacted immediately and he will notify the appropriate wildlife agency and division district office. Enduring, appropriate wildlife agency, and division district office will then work collaboratively to address the incident appropriately to insure the incident does not reoccur.

Appendix A:
Visual and Audio Deterrents

All Bird-X Products

Electronic Bird Control >
- Sonic Bird Control
- Ultrasonic Bird Control
- Other Electronic Bird Deterrents
- Solar Panel Products

Bird Spikes
- Bird Spikes Kits
- Stainless Steel Spikes
- Plastic Spikes

Bird Netting

Drones

Laser Bird Control

Shock Track Systems

Bird Balls

Bird Wire

Visual Scares and Predator Decoys

Bird Gels, Taste Aversions, & OvoControl® P

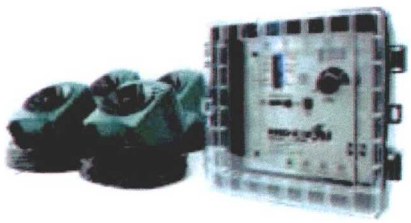
For Songbird Lovers

Remote Control Drone

Retail Products

Accessories

BroadBand PRO

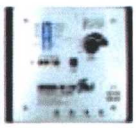
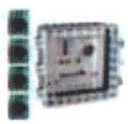


- **Combines SONIC and ULTRASONIC Bird Control Technology**
- **Creates Uninviting Environment For Birds**
- **Covers Up To SIX ACRES**

IN STOCK - AVAILABLE IMMEDIATELY!

Deter Birds With Multi-Faceted Sonic and Ultrasonic Attack! 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.

Starting at ~~$850.00~~ NOW $725.00 (15% SAVINGS!)


Voltage Options: BroadBand PRO 110v ($725
Quantity: 1
Price: **$725.00**
Product Total: $725.00

ADD TO CART >

Reviews | Details | Applications | Benefits | Add & Combine | Specs | Case Studies

Guarantee + Warranty

Backed by our 30 Day Electronics Performance Satisfaction Guarantee AND our 6-Month Manufacturer's Warranty Against Material Defects.

- **Option to add 3 Visual Scares to package for added efficacy**
- Emits a combination of audible noises & high-frequency sound waves that are silent-to-most-humans
  - **SONIC**: Uses naturally-recorded bird distress calls & predator ones, covers up to 6 acres
  - **ULTRASONIC**: Uses high-frequency sound waves, covers up to 3,600 sq. ft.
- 4 speakers included – 4 independent speakers with 100 ft. of wire each
- Fully programmable – control volume, sound delays, & daylight / night operation
- Weather resistant – NEMA type box is designed to withstand outdoor use
- Option to add an assortment of three (3) high-quality visual scare products

All Bird-X Products

Electronic Bird Control
- Sonic Bird Control
- Ultrasonic Bird Control
- Other Electronic Bird Deterrents
- Solar Panel Products

Bird Spikes
- Bird Spikes Kits
- Stainless Steel Spikes
- Plastic Spikes

Bird Netting

Drones

Laser Bird Control

Shock Track Systems

Bird Balls

Bird Wire

Visual Scares and Predator Decoys >

Bird Gels, Taste Aversions, & OvoControl® P

For Songbird Lovers

Remote Control Drone

Retail Products

Accessories

Prowler Owl

- **Proven Visual Scare**
- **Saves Money on Cleanup & Repair**
- **Eliminates Bird & Small Pest Problems**
- **Money-Back Guarantee**

Decades-proven visual deterrent, improved with dynamic realism & movement! Scare away birds & small pests with this predator replica of the most-feared aerial predator, the Great Horned Owl, which catches & eats nearly everything it can catch.

- Lifelike, wind-catching design increases effectiveness
- Accurate plumage & hunting flight pose
- Intimidating, glassy eyes "follow" pests
- Flexible wings move & flap in the wind realistically

Without movement, an owl scare is useless – don't be fooled by imitations that are immobile! **Install Prowler Owl decoy in any open outdoor area where pest birds or small critters are a problem.**

Quantity 1

Price **$ 39.25**

Product Total: $ 39.25

ADD TO CART >

Quality Guarantee

Guaranteed to be manufactured to specifications & free from defect at the time of purchase.

Reviews | Details | Applications | Benefits | Add & Combine | Specs

- Predator owl replica, life-size owl
- Owl scare repels pest birds & other small animals
- Always-moving "hunting" posture keeps birds away
- 4-foot wingspan & accurate markings
- Safe, humane, non-toxic, silent
- Covers up to 6,000 sq. ft.

All Bird-X Products

Electronic Bird Control
- Sonic Bird Control
- Ultrasonic Bird Control
- Other Electronic Bird Deterrents
- Solar Panel Products

Bird Spikes
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- Stainless Steel Spikes
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Bird Netting

Drones

Laser Bird Control

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Bird Balls

Bird Wire

Visual Scares and Predator Decoys >

Bird Gels, Taste Aversions, & OvoControl® P

For Songbird Lovers

Remote Control Drone

Scare-Eye Balloons

- **Simple, Highly Effective Bird Repellent**
- **Reduce Time & Energy Spent on Cleanup**
- **Reflective Mylar Eyes and Tails included**

(3-Pack)

Keep birds away with these simple vinyl ball visual deterrents that move with the wind & intimidate pest birds within visible range.

- **Includes three balloons** – one white, one yellow, one black
- **Easy to use, cost-effective solution** – hang the balloons anywhere
- Balloons move in the wind for fear of movement

Scare Eye® balloons are useful in many applications – homes, gardens, barns, trees, garages, marinas, doorways, & many more.

Quantity 1

Price **$ 32.55**

Product Total $ 32.55

ADD TO CART >

Quality Guarantee

Guaranteed to be manufactured to specifications and free from defect at the time of purchase.

Reviews | Details | Applications | Benefits | Add & Combine | Specs

- Predator decoy, 3D balloons
- Three balloons included: one (1) white, one (1) black, and one (1) yellow
- Includes mylar eyes, mylar tails, and strings for each balloon
- Weatherproof, vinyl, inflatable balloon
- Design exaggerates the glaring stare and gaping mouth of natural predators
- Wind causes the Scare-Eye Balloons to move in the wind, increasing efficacy
- Easy installation