FILE

INFORMATION REQUESTED BY NMOCD 8/1/2008

1) An updated diagrams(s) of the location of any pit or evaporation pond. This shall include design drawings of any pit or pond construction.

- See Enclosed Site Map with Pond Locations
- See Enclosed Diagrams with Pond and Piping Locations
- See Design Drawings of Pit or Pond Construction
- See Enclosed Containment Pond Liner Specifications

2) A monitoring plan with chemical of concern, sampling protocol, monitor location and design to address any discharges to surface and ground water and ensure that WQCC Water Quality Standards are not exceeded.

General System Description of Cooling Tower Water to Geothermal Water Reinjection

The Geothermal Water System is intended to consist of up-to four (4) Production and three (3) Reinjection Wells and a Closed Piping System that circulates through the Geothermal Energy Generators which produce Electrical Energy via the Binary Rankin Cycle. The Geothermal Water is circulated at various flows (based upon the Resource Temperature) from about 11,000GPM to 13,000GPM. This Power Generation Process also requires a Cooling Water System to complete the Rankin Cycle process to heat and cool the Cycle Media/Refrigerant. The Cooling Water system will draw water from either Plant Wells or an Existing Local Source and circulate through the Generators and a Cooling Tower at varying Flow-Rates of about 46,000GPM to 50,000GPM.

The inherent designed Mechanical/Physical cooling characteristics of the Cooling Tower evaporate approximately 2% to 4% of the Cooling Water flow (1,000GPM to 2,000GPM), dependant mainly upon local weather conditions at any point in time. This evaporation tends to concentrate the Cooling Water; therefore, at any level of water chemistry/quality from potable to non-potable, the constant evaporation of the Cooling Tower will concentrate water to levels which are not acceptable for the Generation Equipment, Cooling Tower, and/or the piping of which contain the water itself in the closed system. To offset this concentration "Fresh" Cooling Water can be added to the cooling loop at a rate of double, triple, or more than the evaporation rate. To decrease the amount of additional water needed, the Cooling Water Loop can be Chemically or Mechanically Treated to allow for higher levels of compatibility with the Equipment and Piping Materials. In either of these two cases, some water will need to be discharged in a form of a Blow-Down Stream consisting of concentrated Dissolved and Suspended Solids that were originally present in the Cooling Water Source.

To maintain the Project Zero Discharge, Minimal Evaporation, and Minimal Water Consumption characteristics, this Blowdown Stream will be injected into the Geothermal Reinjection Well Stream. To assure that the Quality of this Cooling Water Blowdown water

BEFORE THE OIL CONSERVATION DIVISION
Hidalgo, New Mexico
Case No. 14246..... Exhibit No. 3
Submitted by:
RASER POWER SYSTEM, LLC
Hearing Date: December 1, 2008

and to assure that any Chemical Addition of the Water Treatment System does not exceed the "original chemistry" of the Geothermal Water Stream, a Geothermal Water / Cooling Tower Blowdown Water Quality Monitoring System will be included in the Design. This System will employ real-time monitoring equipment capable of on-line monitoring and recording of Water Chemistry for both Historical and Reporting requirements. This data collection and reporting will also include the reporting to the Plant PLC Controller which will adjust not only the Cooling Water and Chemical Injection Systems; but, will also be able to administratively (1) Limit the amount of Blowdown Flow, (2) divert some or all flow to the Plant Evaporation Pond, or (3) take other steps to limit and/or stop Cooling Tower Blowdown Flow to the Geothermal Water Reinjection, up-to and including a total Plant Shut-Down until such time as the Chemistry of the Injection Flow is within acceptable Range. This "Acceptable Range" can be set and/or regulated administratively, as stipulated in/by Permit; however, the Chemistry of the Geothermal Reinjection Flow shall not exceed those levels as found in the Production/Reinjection Well Stream.

a. The proposed chemicals to be used in the cooling tower will include bleach for primary biocide control, sulfuric acid for pH control, Nalco 3DT189 for scale and corrosion control, along with Nalco 960 as required for supplemental biocide. Nalco 7408 - As a precautional measure, a Nalco 7408 feed system will be set up to scavenge any excess residual oxidant prior to effluent re-jection. Attached are the product bulleting and MSDS for the Nalco specialty chemicals specified.

b. The sampling protocol will be continuous monitoring of chemistry using a 3D Trasar control system. A bulletin summarizing the various control capabilities of the 3 Trasar system is also attached for your review. The pH sensor will control the acid injection pump as to maintain tower pH between 7.8-8.0. The conductivity sensor will control Cooling Tower conductivity between 1900-2000 mmhos, as to maintain a <1360 TDS in the Blow Down at all times. The controller will also activate the inhibitor pump as to maintain our target dosage of 75-80 ppm of Nalco 3DT189. The ORP sensor will activate the bleach pump as to maintain a free residual halogen level of 0.2-0.3 ppm. Operations will sample tower water daily and test for conductivity, TDS and pH using a daily calibrated hand held Myron L 6P analyzer, 3DT 189 inhibitor level using a handheld Flourometer, and free residual oxidant using a Hach DR-890 spectrophotometer test. This will ensure control systems are working properly and within calibration tolerance. All continuously monitored parameters from the controller will be sent to the control room via a 4-20 mA output. This will allow continuous monitoring and any alarms will be viewed and addressed immediately.

c. The controller sample point and grab sample location will be on the cooling tower return header.

d. The 3D Trasar unit is able to continuously sample the cooling water and adjust the chemical feed system based on the parameter setting specified above. The 3D Trasar system is a complete water treatment control and monitoring system, which

continuously measures key system parameters, detects upsets, takes appropriate corrective action and communicates with system users. With strict effluent chemistry restrictions it will be very important to focus on controlling the blowdown as closely as possible to maintain targets at all times. Real-time monitoring of specific conductance will allow the system to blow down and make up water as necessary to maintain the required chemistry in the system by preventing the system from over-cycling and breaking the permitted ion concentration. Typical treatment and control strategies to cooling towers can allow over-treated or over-cycled and under-treated or under-cycled at times to be discharged. With the 3DTrasar system we will be able to monitor all of these variables independently and maintain each one separately.

e. The water discharged from the cooling tower will be limited to 3.5 cycles of concentration, or approximately 1900-2000 mmhos; which calculates to approximately 1300-1350 ppm TDS, with a max. of 1400 ppm. At these cycles of concentration, TDS of the cooling tower blowown will never exceed the levels of dissolved solids measured in the Hot Well 55-7, thereby ensuring that the cooling tower blowdown reinjected with the Hot Brine will not contribute any additional solids to the aquifer.

f. Rasser Technology will use automation along with daily wet testing to ensure all of the above protocols are maintained. It is anticipated that our primary water treatment company will be Nalco. Their technical engineering staff out of El Paso, TX. will provide technical consulting on a twice per month or TBD basis. They will provide routine testing, operations training, and SPC and graphical monitoring of the water systems at the plant. Daily log sheets, along with DCS controller data and Nalco's Service Reports will be used to verify that the systems are being properly treated and that all state guidelines are being maintained as permitted.

3. GPS coordinates (decimal) of all production/development wells, injection wells and the center of any discharge pits are needed to compare distances to other operators in the area.

- See enclosed Table

4. A detailed evaluation of the chemicals proposed for the cooling tower and scientific/engineering explanation as to why they are the most suitable chemicals to use at the site given the location of the nursery and fish farm immediately down-gradient from the cooling tower blow-down discharge area and the contaminant hydrogeology considerations that prove no adverse impact(s) would result to surface water, ground water, wildlife, fresh water, etc. in the area.

- See enclosed Nalco - Letter of Suitability

1) Enclosed Site Map With Pond Locations

Enclosed Diagrams With Pond and Piping Locations

Enclosed Containment Pond Liner Specifications

Lightning Dock
Proposed Action
and
National Hydrologic Dataset
Water Inventory
Animas Valley, NM

WELL # 13-07
Beginning at the southeast corner of Section 7, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, North, a distance of 3781.0 feet along the west section line;
Thence, East, a distance of 839.1 feet to the location of said well.

WELL # 33-07
Beginning at the southeast corner of Section 7, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, North, a distance of 3721.2 feet along the west section line;
Thence, East, a distance of 1750.4 feet to the location of said well.

WELL # 53-07
Beginning at the southwest corner of Section 7, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, North, a distance of 3775.3 feet along the west section line;
Thence, East, a distance of 3035.1 feet to the location of said well

WELL # 45-07
Beginning at the northeast corner of Section 7, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, North, a distance of 2519.0 feet along the west section line;
Thence, East, a distance of 2433.2 feet to the location of said well

WELL # 47-07
Beginning at the southwest corner of Section 7, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, North, a distance of 1219.1 feet along the west section line;
Thence, East, a distance of 2256.3 feet to the location of said well.

WELL # 42-18
Beginning at the southwest corner of Section 18, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, North, a distance of 1368.8 feet along the west section line;
Thence, East, a distance of 2123.1 feet to the location of said well.

WELL # 62-18
Beginning at the northeast corner of Section 18, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, South, a distance of 1297.2 feet along the west section line;
Thence, East, a distance of 3359.4 feet to the location of said well.

WELL # 66-18
Beginning at the northwest corner of Section 18, Township 25 South, Range 19 West, New Mexico Principle Meridian, Hidalgo County, New Mexico;
Thence, South, a distance of 1278.3 feet along the west section line;
Thence, East, a distance of 4976.1 feet to the location of said well

Project Area 1 Mile Buffer (Geothermal Lease)

Proposed Wells

Injection

Production

Well Pits

60' x 80' x 6'

Geothermal Lease

Proposed Power Plant

Raser Surface Agreement

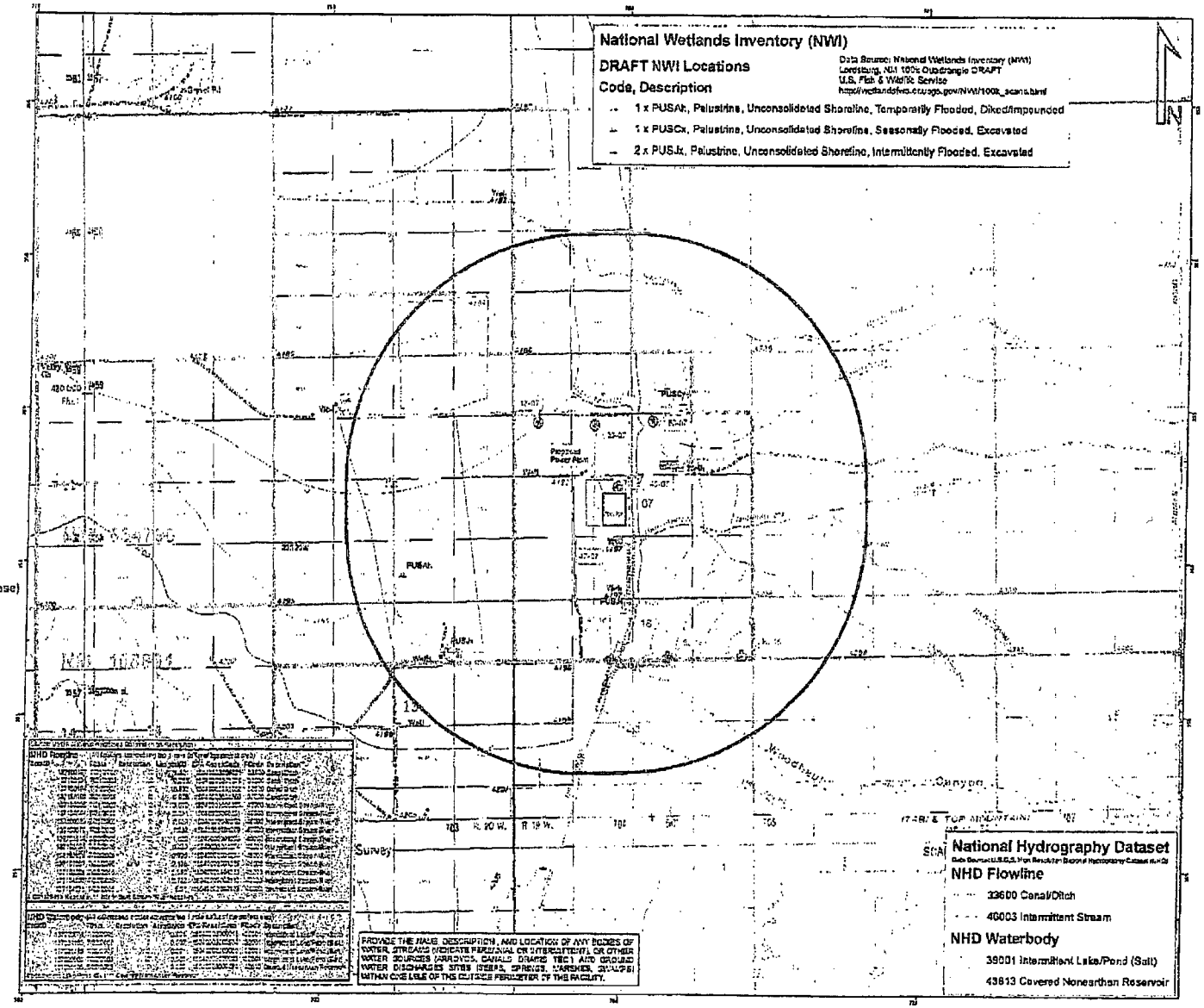
ROSETTE, INC.

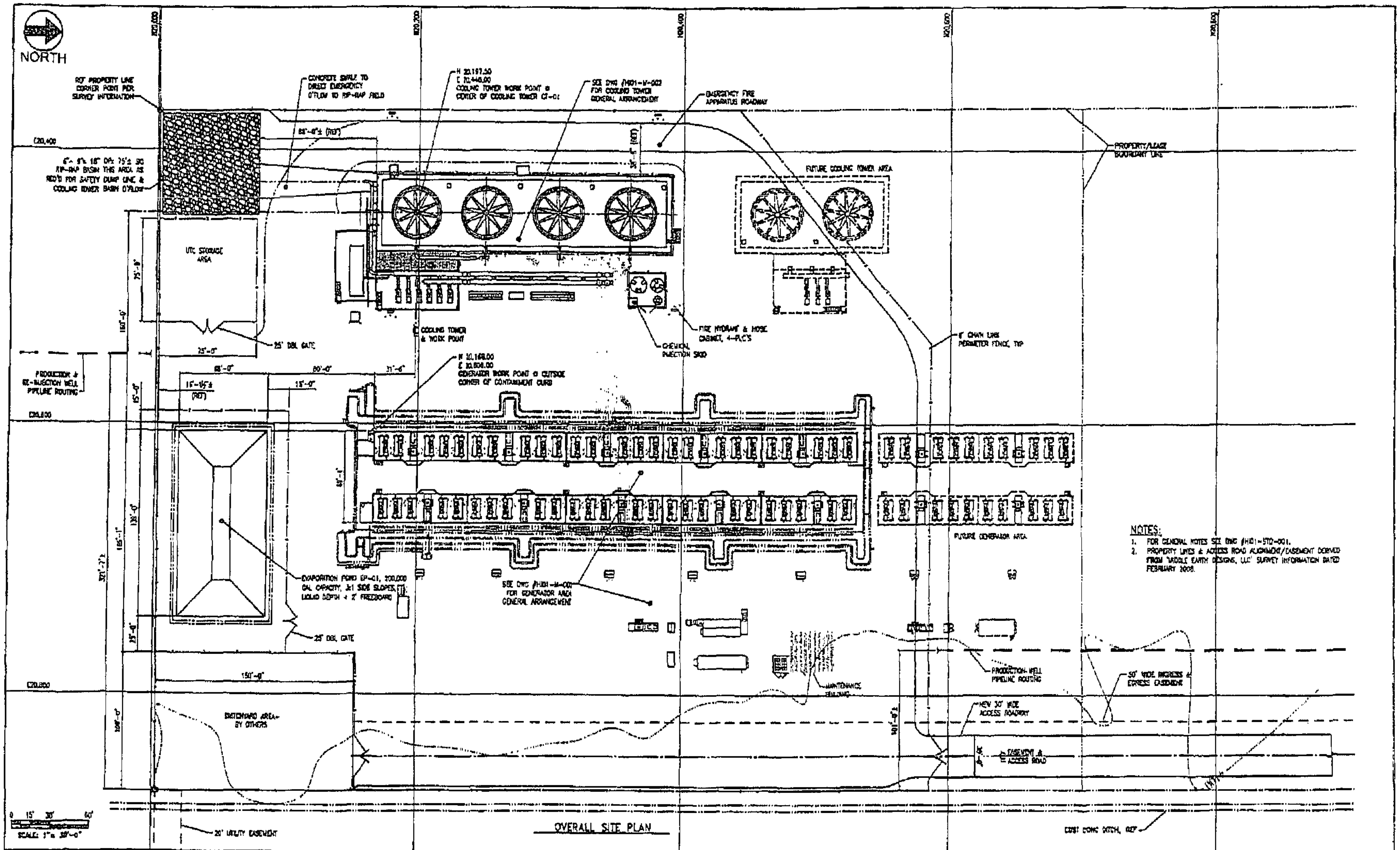
Raser Federal Geothermal Lease

Imagery:
USGS Digital Raser Graphics
1:24,000 scale Quadrangles
Coordinate System: UTM Zone 12 NAD83
Contour elevations reported in feet
National Geodetic Vertical Datum 1929

0 0.5 1 Miles

0 0.5 1 1.5 Km





NOTES:
1. FOR GENERAL NOTES SEE DWG #HI01-STD-001.
2. PROPERTY LINES & ACCESS ROAD ALIGNMENT/EASEMENT DERIVED FROM "MIDDLE EARTH DESIGNS, LLC" SURVEY INFORMATION DATED FEBRUARY 2008.

No.	DATE	BY	APP	REVISION
2	7-17-08			ISSUED FOR PERMIT
1				GENERAL UPDATE
0				ISSUED FOR CONSTRUCTION

REFERENCE DRAWING | NUMBER

CONFIDENTIAL

Intermountain Consumer Professional Engineers, Inc.

LIGHTNING DOCK GEOTHERMAL PLANT #1
HIDALGO COUNTY, NEW MEXICO
GENERAL ARRANGEMENT
GENERATING AREA SITE PLAN

Scale: 1" = 30'-0" | Project No. 443-006 | Drawing No. HI01-SP-100 | Revision 2

CONTAINMENT POND LINERS

Approval: BN

Original Issue Date: 04/15/08

Current Revision Date: 08/28/08

PART 1 - GENERAL

1.1. DESCRIPTION

A. Scope of Work:

1. This Specification covers: Part 1 – General, Part 2 – Products, engineering, design, fabrication, inspection, testing, and shipping, and Part 3 – Execution installation of linings may be offered by the Vendor.

B. Definitions:

1. Capacity : US gallons
2. Pressure: Pounds per square inch (PSIG)
3. Buyer: Lightning Dock #1 LLC
4. Owner : Lightning Dock #1, LLC
5. Seller: Vendor, Supplier, Manufacturer, Fabricator or Bidder as hereinafter referred to as Seller. Seller will supply the specified items as required by Part 1 –General and Part 2 – Products of this specification.
6. Contractor: The Owner will provide a Contractor to provide the installation services and interconnecting piping as required in Part 3 – Execution of this specification.

C. Operating conditions:

1. Ponds PP-01; PP-02; PP-03; PP-04; EP-01; RP-01; RP-02; RP-03; RP-04.
   - Number of ponds: Nine
   - Dimensions: Refer to Drawings
   - Capacity: Refer to Drawings
   - Water Temperature: 266 degrees F.
     300 degrees F Spike (upset condition)
   - Use: Receives Geothermal well water. A pond liner is required for each listed pond.

1.2. DESIGN CONDITIONS

A. Refer to specification section 01010 for Project Site Conditions.

1.3. SUBMITTALS

A. Product Data: Include specifications, samples, and reference installations.

B. Installation Detail: For the type of liners proposed.

C. Maintenance Data: For the type of liners proposed.

1.4. QUALITY ASSURANCE

A. In accordance with ASTM tests for thickness, breaking strength, flexibility, tear strength, UV resistance, and adhesions.

1.5. DELIVERY, STORAGE, AND HANDLING

A. Retain shipping protective covers and protective coatings during storage.

B. Protect units against damage during shipment.

C. Comply with manufacturer's rigging instructions for handling.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Lange Containment
2. Watersaver Company, Inc.
3. Firestone.
4. Or approved equal.

2.2. GENERAL

A. The liner material shall be:
1. UV resistant
2. Tear resistant
3. Puncture resistant.
4. Suitable for water temperatures specified.
5. Maintain flexibility in cold weather (-20°F)

B. The minimum liner thickness shall be 60 mil.

C. Provide a geotextile underlayment for the sloped sides of each pond. Side slopes shall be 3 feet (horizontal) to 1 foot (vertical).

D. Where possible the liners will be seamless. Where seaming is performed, the seams will be hot-wedge with double track weld with a 4-6 inch overlap. The seaming will be performed by a qualified individual.

E. The factory assembled units shall be folded and rolled on coves not to exceed a width of 10' 8".

F. Provide an installation plan for each pond lining and label each roll with the membrane type, thickness, dimensions, and an arrow indicating the direction for unrolling.

G. Include the requirements for perimeter anchor trenches. Backfill will be provided by others. The manufacturer shall recommend any intermediate slope anchoring, toe of slope anchoring and/or bottom ballast requirements.

H. Include all adhesives and primers necessary for the installation of the liners.

I. Include the services of a field representative to supervise and provide instruction during the installation and inspection of the linings.

2.3. MATERIALS

A. The following liners have been selected to be used on the site because of their thermal properties: Chlorosulfonated Polyethylene-Reinforced (CSPE-R), Ethylene Propylene Diene Monomer (EPDM) and Flexible Polypropylene (PPF). No other liners will be selected unless approved.

2.4. WORK BY OTHERS

A. Site preparation, including soil compaction, and backfill.

B. Removal of all vegetation.

C. Underlay installation

D. Lining Installation including lap seaming

E. Anchoring including ballast, and any recommended intermediate and/or toe slope anchors.

F. Chain link perimeter fencing.

PART 3 - EXECUTION

3.1. INSTALLATION

A. Follow manufacturer's written instructions for written instructions for laying, seam welds and perimeter details, for underlayment and linings.

B. Prepare the pond surfaces to be smooth, dry, free of rocks, roots, vegetation and any foreign material.

C. Survey the ponds prior to the start of installation.

D. Use sand bags as required to hold down the liners in windy conditions.

3.2. ADDITIONAL SPECIFICATIONS

Work shall conform to the appropriate sections of the following specifications.

- 02100 – Site Preparation and Earthwork

END OF SPECIFICATION 443-006-15252

B. Removal of all vegetation.

C. Underlay installation

D. Lining installation including lap seaming

E. Anchoring including ballast, and any recommended intermediate and/or toe slope anchors.

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