C-147 Registration Package

Sand Dunes Recycling Facility
Mesa Verde – East Recycling Containment #2

Submitted: June 6th, 2017

Prepared by:
Oxy Environmental – Dylan Allen
Oxy Facilities Engineering – Femi Serrano

Pettigrew and Associates – Claudius Sanchez

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: Oxy USA, Inc. (For multiple operators attach page with information) OGRID #: 16696

Address: 5 Greenway Plaza, Ste. 100, Houston, Texas 77046

Facility or well name (include API# if associated with a well): Sand Dunes Recycling Facility & Containments

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

U/L or Qtr/Qtr L4 Section 4 Township 24 South Range 31 East County: Eddy

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

2.

☒ **Recycling Facility:**

Location of recycling facility (if applicable): Latitude 32.250372 Longitude -103.790388 NAD83

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

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

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

☒ Fluid Storage

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

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

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

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

3.

☒ **Recycling Containment:** Mesa Verde – East Recycling Containment #2 (U/L: K, Section 18, T24S 32E, Lea County)

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

Center of Recycling Containment (if applicable): Latitude 32.214192 Longitude -103.715251 NAD83

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

☒ Lined ☒ Liner type: Thickness 60 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____

☐ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other _____ Volume: 251,000 bbl Dimensions: L 461' x W 431.30' x D 16'

☐ Recycling Containment Closure Completion Date: _____

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 6 ft. chain-link with barbed wire top

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): Dylan Allen Title: Environmental Specialist

Signature: _____ Date: 4/25/2017

e-mail address: Dylan_Allen@oxy.com Telephone: 432-685-5614

11.

OCD Representative Signature: _____ **Approval Date:** _____

Title: _____ **OCD Permit Number:** _____

☐ OCD Conditions _____

☐ Additional OCD Conditions on Attachment

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Introduction

In accordance with NMAC 19.15.34, Oxy USA Inc. requests the registration of the proposed Sand Dunes Recycling Facility, Sand Dunes – North Recycling Containment #1, Sand Dunes – South Recycling Containment #1, Mesa Verde – West Recycling Containment #2, and Mesa Verde – East Recycling Containment #2 through the approval of this C-147 registration package. The facility and containments will be used to treat and recycle produced water for re-use in Oxy USA Inc. drilling/completion activities.

This package contains the C-147 form and associated documents for registration of the Sand Dunes Recycling Facility, Mesa Verde – East Recycling Containment #2.

A copy of the C-147 has been submitted to the land owner, the Bureau of Land Management.

Siting Criteria for Recycling Containment #1 – Sand Dunes

All figures and maps located in Appendix 2.

Distance to Groundwater

Figures 1a and 1b demonstrate that the depth to groundwater in the area is greater than 50 feet. In Figure 1a and Table 3 (Appendix 8), the nearest (2 miles northeast) New Mexico Office of the State Engineer (OSE) water wells with depth to groundwater data show a measurement of 205 feet (C-02464) and 160 feet (C-02405). The depth to water averages for the surrounding townships/ranges in Tables 1 (T23S,R31E), 2 (T23S,R32E), 3 (T24S,R31E), and 4 (T24S, R32E) show measurements of 232 feet, 584 feet, 182 feet, and 380 feet, respectively. The minimum depth to water measurement in the four surrounding townships/ranges is 85 feet. Figure 1b shows that the proposed recycling containment is not within a "Highly Sensitive" aquifer area. A geologic map of the area is shown in Figure 1a.1.

Distance to Subsurface Mines

Figures 1c and 1d demonstrate that the recycling containment is not located within the area overlying a subsurface mine. Figure 1c is a map from the NM EMNRD – Mining and Mineral Division verifying the recycling containment is not near an active mine. Figure 1d shows that the nearest mine is a caliche pit (approximately 1 mile northeast) and the recycling containment area is not within a potash lease.

Distance to Cave/Karst High or Critical Areas

Figure 1f demonstrate that the proposed containment is located in a BLM designated "Low Potential" cave/karst area. The nearest "High Potential" cave/karst area is located 2.5 miles northwest.

Distance to Surface Water

Figures 1h and 1g demonstrate that the proposed recycling containment is not located within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measure from the ordinary high-water mark). The nearest continuously flowing water course is the Pecos River located approximately 11 miles west. The nearest significant watercourse, as designated by the BLM, is approximately 1.5 miles west. According to the National Wetlands Inventory (Figure 1i), the nearest freshwater pond is approximately 1.5 miles west. This siting criteria was verified by a visual inspection of the proposed site.

Distance to Non-Public Water Supply

Figure 1a demonstrates that the proposed recycling containment is not located 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 the initial application. The OSE database shows the nearest well (C-02958) is approximately 2,500 feet west of the proposed recycling containment. This water well appears to be used for a stock tank for watering livestock. The next nearest wells (Table 3: C-02661, C-02783, C-02784, C-02785, C-02661) located approximately 2,500 feet north of the proposed recycling containment are monitoring wells. A site inspection also verified no fresh water wells or springs within 500 horizontal feet of the proposed recycling containment.

Distance to Structures

Figure 1h demonstrates that the proposed recycling containment is not located within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. The nearest structures are oil and gas wells and tank batteries. There is a cattle pen and stock tank approximately 2,500 ft. west as shown on Figure 1h. The nearest possible permanent residence is a ranch house 1.5 miles southwest of the proposed recycling containment.

Distance to Wetlands

Figure 1i demonstrates that the proposed recycling containment is not within 500 feet of a wetland. According to the U.S. Fish and Wildlife Service National Wetlands Inventory map, the nearest wetland is a freshwater pond located approximately 1.5 miles west. This was verified by a visual inspection of the site and a topographic map (Figure 1g).

Distance to Municipal Boundaries and Defined Fresh Water Fields

Figure 1j demonstrates that the proposed recycling containment is not 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. The closest municipal fresh water field (Sheep Draw) is approximately 35 miles northwest and services Carlsbad (28 miles northwest). The Village of Malaga (16 miles west) and the Village of Loving (18 miles northwest) are not incorporated.

Distance to 100-Year Floodplain

Figure 1k and the FEMA Flood Insurance Rate Map (FIRM) (Appendix 9) demonstrates that the proposed recycling containment is not within a 100-year floodplain. The FEMA FIRM map shows the proposed recycling containment to be located in “Zone X”: Area determined to be outside the 0.2% annual chance floodplain. This is confirmed by the BLM Flood Zone layer shown in Figure 1k. The nearest 100-year floodplain area is located 2.5 miles southwest.

Siting Criteria for Recycling Containment #2 – Mesa Verde

All figures and maps located in Appendix 3.

Distance to Groundwater

Figures 2a and 2b demonstrate that the depth to groundwater in the area is greater than 50 feet. In Figure 2a and Table 4, the nearest (2.5 miles north) New Mexico Office of the State Engineer (OSE) water well with depth to groundwater data show a measurement of 380 feet (C-03555-POD1). The depth to water averages for the surrounding townships/ranges in Tables 1 (T23S,R31E), 2 (T23S,R32E), 3 (T24S,R31E), and 4 (T24S, R32E) show measurements of 232 feet, 584 feet, 182 feet, and 380 feet, respectively. The minimum depth to water measurement in the four surrounding townships/ranges is 85 feet. Figure 2b shows that the proposed recycling containment is not within a "Highly Sensitive" aquifer area. A geologic map of the area is shown in Figure 2a.1.

Distance to Subsurface Mines

Figures 2c and 2d demonstrate that the proposed recycling containment is not located within the area overlying a subsurface mine. Figure 2c is a map from the NM EMNRD – Mining and Mineral Division verifying the proposed recycling containment is not near an active mine. Figure 2d shows that the nearest mine is a caliche pit (approximately 1 mile to the northwest) and the recycling containment area is not within a potash lease.

Distance to Cave/Karst High or Critical Areas

Figure 2f demonstrates that the proposed recycling containment is located in a BLM designated "Low Potential" cave/karst area. The nearest "High Potential" cave/karst area is located 7 miles northwest.

Distance to Surface Water

Figures 2h and 2g demonstrate that the proposed recycling containment is not located within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measure from the ordinary high-water mark). The nearest continuously flowing water course is the Pecos River located approximately 15 miles to the west. The nearest significant watercourse, as designated by the BLM, is approximately 5.7 miles to the northwest. According to the National Wetlands Inventory (Figure 2i), the nearest freshwater pond is approximately 1.1 miles to the northeast. This siting criteria was verified by a visual inspection of the proposed site.

Distance to Non-Public Water Supply

Figure 2a demonstrates that the proposed recycling containment is not located 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 the initial application. The OSE database (Table 4) shows the nearest well (C-03530-POD1) is

approximately 4,000 feet north of the proposed recycling containment. This water well has the OSE designation: STK 72-12-1 Livestock Watering. A site inspection also verified no fresh water wells or springs within 500 horizontal feet of the proposed recycling containment.

Distance to Structures

Figure 2h demonstrates that the proposed recycling containment is not located within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. The nearest structures are oil and gas wells, tank batteries, and power lines. The nearest possible permanent residence is a ranch house 5 miles to the west.

Distance to Wetlands

Figure 2i demonstrates that proposed recycling containment is not within 500 feet of a wetland. According to the U.S. Fish and Wildlife Service National Wetlands Inventory map, the nearest wetland is a freshwater pond located approximately 1.1 miles to the northeast. This was verified by a visual inspection of the site and a topographic map (Figure 2g).

Distance to Municipal Boundaries and Defined Fresh Water Fields

Figure 2j demonstrates that the proposed recycling containment is not 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. The closest municipal fresh water field (Sheep Draw) is approximately 40 miles northwest and services Carlsbad (32 miles northwest). The Village of Malaga (21 miles west) and the Village of Loving (23 miles northwest) are not incorporated.

Distance to 100-Year Floodplain

Figures 2k and the FEMA Flood Insurance Rate Map (FIRM) (Appendix 10) demonstrate that the proposed recycling containment is not within a designated FEMA 100-year floodplain. The proposed recycling containment is located in “Zone D”: Areas in which flood hazards are undetermined. The BLM Flood Zones map indicate that the proposed recycling containment is not within a 100-year floodplain. The low risk of flooding in the area has been confirmed by a site inspection and topographic map.

Design and Construction Plan – Recycling Containments

This plan addresses construction of lined earthen containments. Field conditions may create the need for minor modification of the containment design (e.g. changing the length, width or depth).

Engineering Drawings (Appendix 4 and 5)

The design elements are addressed in the section of this submission containing the engineering drawings. The recommendations for compaction and preparation of the liner foundation will be based on site-specific and nearby data. The operator, engineer, and selected contractor will review the recommendations prior to beginning work on the liner foundation and adhere to the specific recommendations.

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

Fencing & Netting for Wildlife Protection

The design offers multiple solutions for wildlife protection. This includes a fence to enclose the recycling containment in a manner that deters unauthorized wildlife and human access. The fence will either be a barbed wire fence with four strands evenly spaced in the interval between 1 foot and 4 feet above ground level – satisfying the minimum requirements or a 6 ft. chain-link fence with barbwire on top – in order to provide extra protection.

Depending on the pond size limitations, the recycling containment will either be netted, flagged, or equipped with an audible avian species protection system (Appendix 11), which effectively deters birds from approaching the area. This will serve to be protective of wildlife, including migratory birds in accordance with NMAC 19.15.34.12(E).

The O&M plan calls for the operator to inspect the containments on a monthly basis 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.

Material Excavated

Where topsoil is present, prior to constructing containment, the operator will strip and stockpile the topsoil for use as the final cover or fill at the time of closure. The topsoil will be stockpiled adjacent to containment levee, outside of working areas. The operator will take care to limit the height of the soil stockpile to allow the soil to remain aerobic. Material excavated during construction will not be located within a 100 feet of continuously flowing water course and/or lakebed, or 200 feet of any other significant watercourse and/or wetland.

Earthwork

A geotechnical assessment will be performed prior to construction to develop recommendations regarding the foundation for the containment liner. The containment will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base that is smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear. Geotextile will be placed under the liner as needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity. The containment will be constructed in compliance with NMAC requirements as shown below;

- ✓ Inside grade no steeper than two horizontal feet to one vertical foot (2H:1V).
- ✓ Outside grade is no steeper than three horizontal feet to one vertical foot (3H:1V)
- ✓ Top of the berm is wide enough to install an anchor trench and provide adequate room for inspection and maintenance.
- ✓ Caliche gravel placed on the outside levee provides additional erosion control.
- ✓ The containment is excavated into the ground such that most of fluid force lies against native earth and the engineered foundation

Field conditions may create the need for changes to the design. Any changes to the construction or grade requirements due to unforeseen conditions will be reviewed and approved prior to initiating installation of the liner system. Any design change that does not conform to the NMOCD Rule will be the subject of a variance request and will be submitted to the OCD for review and approval.

Liner Installation (see Appendix 4 and 5)

The containment will have a primary (upper) liner and a secondary (lower) liner with a leak detection system appropriate to the site's conditions.

Liner installation will be in compliance with the NMAC requirement. The proposed primary (upper) liner is a 60-mil HDPE geomembrane liner composed of an impervious, synthetic material that is resistant to ultraviolet light, petroleum hydrocarbons, salts and acidic and alkaline solutions. The proposed secondary liner is 30-mil LLDPE string reinforced. Liner compatibility meets or exceeds a subsequent relevant publication to

EPA SW -846 method 9090A.

The liners and drainage material will be installed consistent with the Manufacture's specifications. In addition to any specifications of the Manufacturer, protocols for liner installation include measures to:

- ✓ Minimize liner seams and orient them up and down, not across, a slope of the levee.
- ✓ Use factory welded seams where possible.
- ✓ Ensure field seams in geosynthetic material are thermally seamed and prior to field seaming, overlap liners four to six inches.
- ✓ Minimize the number of field seams and comers and irregularly shaped areas.
- ✓ Ensure no horizontal seams within five feet of the slope's toe.
- ✓ Use qualified personnel to perform field welding and testing.
- ✓ Avoid excessive stress-strain on the liner
- ✓ The edges of all liners are anchored in the bottom of a compacted earth-filled trench that is at least 18 inches deep
- ✓ Ensure injection/withdrawal of fluids from the containment shall be through a header or diverter or other hardware that prevents damage to liner.
- ✓ Top of the levee shall be wide enough to install an anchor trench and provide adequate room for inspection and maintenance.

The design show that at any point of discharge into or suction from the recycling containment, the liner is protected from excessive hydrostatic force or mechanical damage. External discharge or suction lines do not penetrate the liner.

Pumping from the containment to hydraulic fracturing operations is the responsibility of stimulation contractors. Typically, lines are permanently placed in the containment with floats attached to prevent damage to the liner system. The containment may be equipped with permanent HDPE

stinger (supported by a sacrificial liner or geotextile) for withdrawal of fluid if the owner deems necessary during operations. Appendix A shows the details of the outflow pipes.

Leak Detection System Installation (see Appendix 4 and 5)

The recycling containment design has a leak detection system between the upper and lower geomembrane liners of 200-mil geonet to facilitate drainage sufficiently permeable to allow the transport of fluids to the observation ports. The leak detection system consists of a properly designed drainage and collection and removal system placed above the lower geomembrane liner in depressions. The slope of the interior sub-grade is approximately 1% toward the monitoring riser pipe to facilitate the earliest possible leak detection of the containment bottom. A pump may be placed in the observation port to provide for fluid removal. Piping will withstand chemical attack from any seepage; structural loading from stresses and disturbances from overlying water, cover materials, equipment operation or expansion or contraction

Signage

Installed signage per NMAC rules will be an upright sign no less than 12 inches by 24 inches and lettering not less than two inches in height in a conspicuous place on the fence surrounding the containment. The sign will be posted in a manner and location that a person can easily read the legend. The sign will provide the following information:

- ✓ the operator's name,
- ✓ the location of the site by quarter-quarter or unit letter, section, township and range, and
- ✓ emergency telephone numbers

Operating and Maintenance Plan

The operator will operate and maintain the lined earthen containment to contain liquids and solids (blow sand and minimal precipitates from the treated produced water) and maintain the integrity of the liner system in a manner that prevents contamination of fresh water and protects public health and the environment as described below. The purpose of the lined earthen containment is to facilitate recycling, reuse and reclamation of produced water derived from nearby oil and gas wells. During periods when water for E&P operations is not needed, produced water will discharge to one of the injection wells in the operator's SWD system. The containment will not be used for the disposal of produced water or other oilfield waste.

The operation of the containment are summarized below.

a. Via pipeline, produced water generated from nearby oil and gas wells is delivered to a treatment system located as indicated in the C-147.

b. After treatment, the produced water discharges into the containment

c. When required, treated produced water is removed from the containment for E&P operations. At this time, treated produced water will be used for drilling beneath the fresh water zones (beneath surface casing), for well stimulation (e.g. hydraulic fracturing) and other E&P uses as approved by OCD.

d. Whenever the maximum fluid capacity of the containment is reached, treatment and discharge to the containment ceases (see Freeboard and Overtopping Plan, below)

e. The operator will keep accurate records and shall report monthly to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use on form C-148.

f. The operator will maintain accurate records that identify the sources and disposition of all recycled water that shall be made available for review by the division upon request.

g. The containment shall be deemed to have ceased operations if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use. The operator will report cessation of operations to the appropriate division district office. The appropriate division district office may grant an extension to this determination of cessation of operations not to exceed six months.

The operation of the lined earthen containment will follow the mandates listed below:

1. The operator will not discharge into or store any hazardous waste (as defined by 40 CFR 261 and NMAC 19.15.2.7.H.3) in the containments.

2. If the containment's primary liner is compromised above the fluid's surface, the operator will repair the damage or initiate replacement of the primary liner within 48 hours of discovery or seek an extension of time from the division district office.
3. If the primary liner is compromised below the fluid's surface, the operator will remove all fluid above the damage or leak within 48 hours of discovery, notify the division district office and repair the damage or replace the primary liner.
4. If any penetration of the containment liner is confirmed by sampling of fluid in the leak detection system (see Inspection and monitoring plan), The operator will

    a. Begin and maintain fluid removal from the leak detection/pump-back system
    b. Notify the district office within 48 hours (phone or email) of the discovery
    c. Identify the location of the leak and
    d. Repair the damage or, if necessary, replace the containment liner

5. The operator will install, or maintain on site, an oil absorbent boom or other device to contain an unanticipated release and the operator will remove any visible layer of oil from the surface of the recycling containment.
6. The operator will report releases of fluid in a manner consistent with NMAC 19.15.29
7. The containment will be operated to prevent the collection of surface water run-on.
8. The operator will maintain the containment free of miscellaneous solid waste or debris.
9. The operator will maintain at least three feet of freeboard for the containment and will use a free-standing staff gauge to allow easy determination of the required 3-feet of freeboard.
10. As described in the design/construction plan, the injection or withdrawal of fluids from the containment is accomplished through a hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
11. The operator shall ensure that all gates associated with the fence are closed and locked when responsible personnel are not onsite.
12. The operator will maintain the fences in good repair

Monitoring, Inspection, and Reporting Plan

The operator will inspect the recycling containment and associated leak detection systems weekly while it contains fluids. The operator shall maintain a current log of such inspections and make the log available for review by the division upon request. See Appendix 12 for a sample template of the Weekly Visual Inspection Report.

Weekly inspections consist of

- ✓ reading and recording the fluid height of staff gauges
- ✓ recording any evidence that the pond surface shows visible oil
- ✓ visually inspecting the containment's exposed liners
- ✓ checking the leak detection system for any evidence of a loss of integrity of the primary liner.

As stated above, if a liner's integrity is compromised, or if any penetration of the liner occurs above the water surface, then the operator will notify the District office within 48 hours (phone or email).

Monthly, the operator will

- ✓ Inspect diversion ditches and berms around the containment to check for erosion and collection of surface water run-on.
- ✓ Inspect the leak detection system for evidence of damage or malfunction and monitor for leakage
- ✓ Inspect the containment for dead migratory birds and other wildlife. Within 30 days of discovery, report the discovery of dead migratory birds or other wildlife to the appropriate wildlife agency and to the division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.
- ✓ Report to the division the total volume of water received for recycling, with the amount of fresh water received listed separately, and the total volume of water leaving the facility for disposition by use of the form C-148.
- ✓ Record sources and disposition of all recycled water

The operator will maintain a log of all inspections and make the log available for the appropriate Division district office's review upon request. See Appendix 13 for a sample template of the Monthly Inspection Log.

Freeboard and Overtopping Prevention Plan

The method of operation of the containment allows for maintaining freeboard with very few potential problems. When the capacity of the containment is reached (3-feet of freeboard), the discharge of treated produced water ceases and the produced water generated by surrounding oil and gas wells is managed by injection into the nearby salt water disposal (SWD) well.

If rising water levels suggest that 3-feet of freeboard will not be maintained, the operator will implement one or more of the following options

I. Cease discharging treated produced water to the containment

II. Accelerate re-use of the treated produced water for purposes approved by the Division

III. Transfer treated produced water from the containment to the nearby salt water disposal (SWD) well.

The reading of the staff gauge typically occurs daily when treatment operations are ongoing and weekly when discharge to the containment is not occurring.

Protocol for Leak Detection Monitoring, Fluid Removal and Reporting

As shown in the attached Engineering Drawings, the leak detection system includes a monitoring system. Any fluid released from the primary liner will flow to the collection sump where fluid level monitoring is possible at the monitoring riser pipe associated with the leak detection system.

The site operator may employ a portable electronic water level meter to determine if fluid exists in the monitoring riser pipe. Obtaining accurate readings of water levels in a sloped pipe beneath a containment can be a challenge. An electrician's wire snake may be required to push the probe to the bottom of the port and the probe may be fixed in a 2-inch pipe "dry housing" to avoid false readings due to water condensation on the pipe. There are many techniques to determine the existence of water in the sumps – including low flow pumps and a simple small bailer affixed to an electrician's snake. The operator will use the method that works best for this containment.

If seepage from the containment into the leak detection system is suspected by a positive fluid level measurement, the operator will

1. Re-measure fluid levels in the monitoring riser pipe on a daily basis for one week to determine the rate of seepage.
2. Collect a water sample from the monitoring riser pipe to confirm the seepage is treated produced water from the containment via field conductivity and chloride measurements.
3. Notify NMOCD of a confirmed positive detection in the system within 48- hours of sampling (initial notification).
4. Install a pump into the monitoring riser pipe sump to continually (manually on a daily basis or via automatic timers) remove fluids from the leak detection system into the containment until the liner is repaired or replaced.

5. Dispatch a liner professional to inspect the portion of the containment suspected of leakage during a “low water” monitoring event.
6. Provide NMOCD a second report describing the inspection and/or repair within 20 days of the initial notification

If the point of release is obvious from a low water inspection, the liner professional will repair the loss of integrity. If the point of release cannot be determined by the inspection, the liner professional will develop a more robust plan to identify the point(s) of release.

The inspection plan and schedule will be submitted to OCD with the second report. The operator will implement the plan upon OCD approval.

C-147 Recycling Containment Closure Plan

This C-147 closure plan contains the requirements and documentation for closure and site reclamation of recycling containments per NMAC 19.15.34.14.

Closure Criteria/Requirements

This closure plan will be executed when recycling containment operations have ceased or if less than 20% of the total fluid capacity is used every six months following the first withdrawal of produced water for use.

1. Once operations have ceased, notification will be sent to the District 2 - New Mexico Oil Conservation Division Office.
2. After operations have ceased, all fluids will be removed within 60 days and the containment will be closed within six months.
3. All fluids, contents, and synthetic liners will be removed before closing of the containment and transferred to division approved facility. Fluids and contents may be removed by recycling, reusing, or reclaiming for operations.
4. The soil beneath the containment will be tested for impacts using a five point composite sample, including stained/wet soils, and analyzed for constituents in Table I (as required by NMAC 19.15.34.14). If the concentrations of a contaminant exceed the parameters in Table I, additional delineation and approval may be required by the division in order to proceed the closure process. If all concentrations of contaminants are below or equal to the parameters in Table I, the closure process will proceed with non-waste containing, uncontaminated, earthen material.

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]

Reclamation Criteria/Requirements

1. After the containment has been closed, either 1) the surface owner reclamation requirements will be completed; or 2) the location will be reclaimed to safe and stable conditions that blend into the surrounding undisturbed area. Topsoils and subsoils will be replaced to the original features of the area and contoured in order to achieve erosion control, long term stability, and maintain current surface flow patterns. During the first favorable growing season after closure, the area will be reseeded.
2. Reclamation will be deemed completed when all ground disturbance has ceased and a uniform vegetative cover has been established (life-form ratio of plus or minus 50% of pre disturbance level and total plant cover of at least 70% of pre-disturbance level).
3. Re-vegetation, reclamation, or any obligations imposed by the Bureau of Land Management (surface owner) shall supersede these provisions and govern any obligations, provided that the other requirements provide equal or better protection of fresh water, human health, and the environment.

Documentation/Correspondence

1. Within 60 days after closure completion, a C-147 form closure report package, including all required attachments, will be submitted to the division. The division will be notified when reclamation and re-vegetation activities are completed.
2. As required, correspondence will be made to the surface owner when reclamation and re-vegetation are complete.

Financial Assurance Requirements for Recycling Containments

In accordance with NMAC 19.15.34.15.A(2), Oxy USA Inc. does not require additional financial assurance due to NMAC 19.15.8. These containments are limited to only wells owned or operated by Oxy.

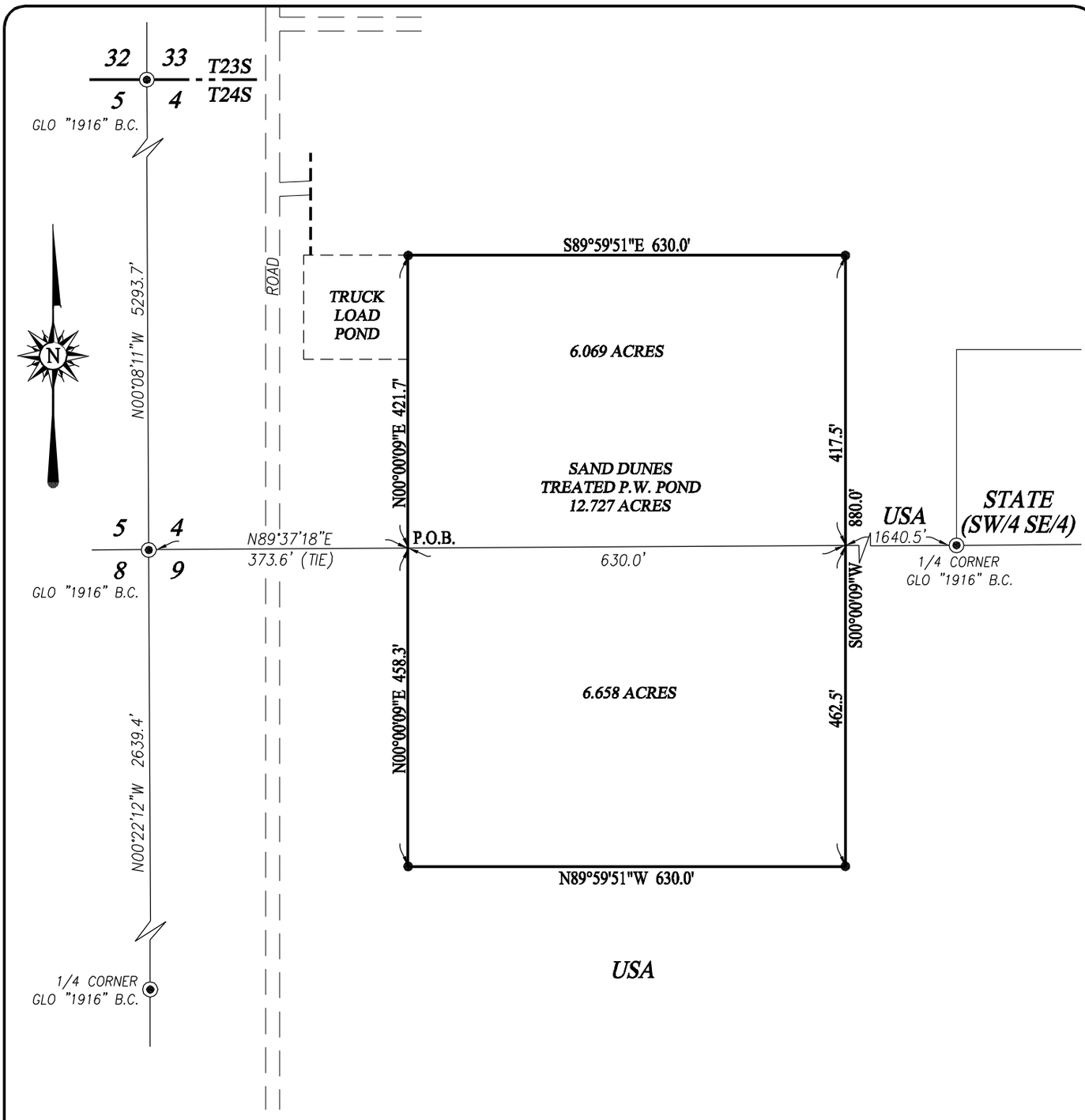
Variances

The Sand Dunes Recycling Facility and Containments C-147 Registration requests one variance to use an audible bird protection system as an alternative to netting the recycling containments.

Depending on the pond size limitations, the recycling containment will either be netted, flagged, or equipped with an audible avian species protection system (Appendix 11), which effectively deters birds from approaching the area. This will serve to be protective of wildlife, including migratory birds in accordance with NMAC 19.15.34.12(E).

Appendices

Appendix 1 – Survey Plats



DESCRIPTION:

A TRACT SITUATED IN THE SOUTHWEST QUARTER OF SECTION 4 AND NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE SOUTH LINE WHICH LIES N89°37'18"E 373.6 FEET FROM THE SOUTHWEST CORNER OF SAID SECTION 4; THEN N00°00'09"E 421.7 FEET; THEN S89°59'51"E 630.0 FEET; THEN S00°00'09"W 880.0 FEET; THEN N89°59'51"W 630.0 FEET; THEN N00°00'09"E 458.3 FEET TO THE POINT OF BEGINNING AND CONTAINING 12.727 ACRES MORE OR LESS.

SECTION 4 6.069 ACRES
SECTION 9 6.658 ACRES

LEGEND

- ◉ DENOTES FOUND CORNER AS NOTED
- ● DENOTES SET SPIKE NAIL

NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON Ronald J Eidson

DATE: 03/31/2017

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

200 0 200 400 Feet

Scale: 1"=200'

OXY U.S.A. INC.

SURVEY FOR A 880 x 630 TRACT FOR THE SAND DUNES TREATED P.W. POND SITUATED IN THE SW/4 OF SECTION 4 AND NW/4 OF SECTION 9, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

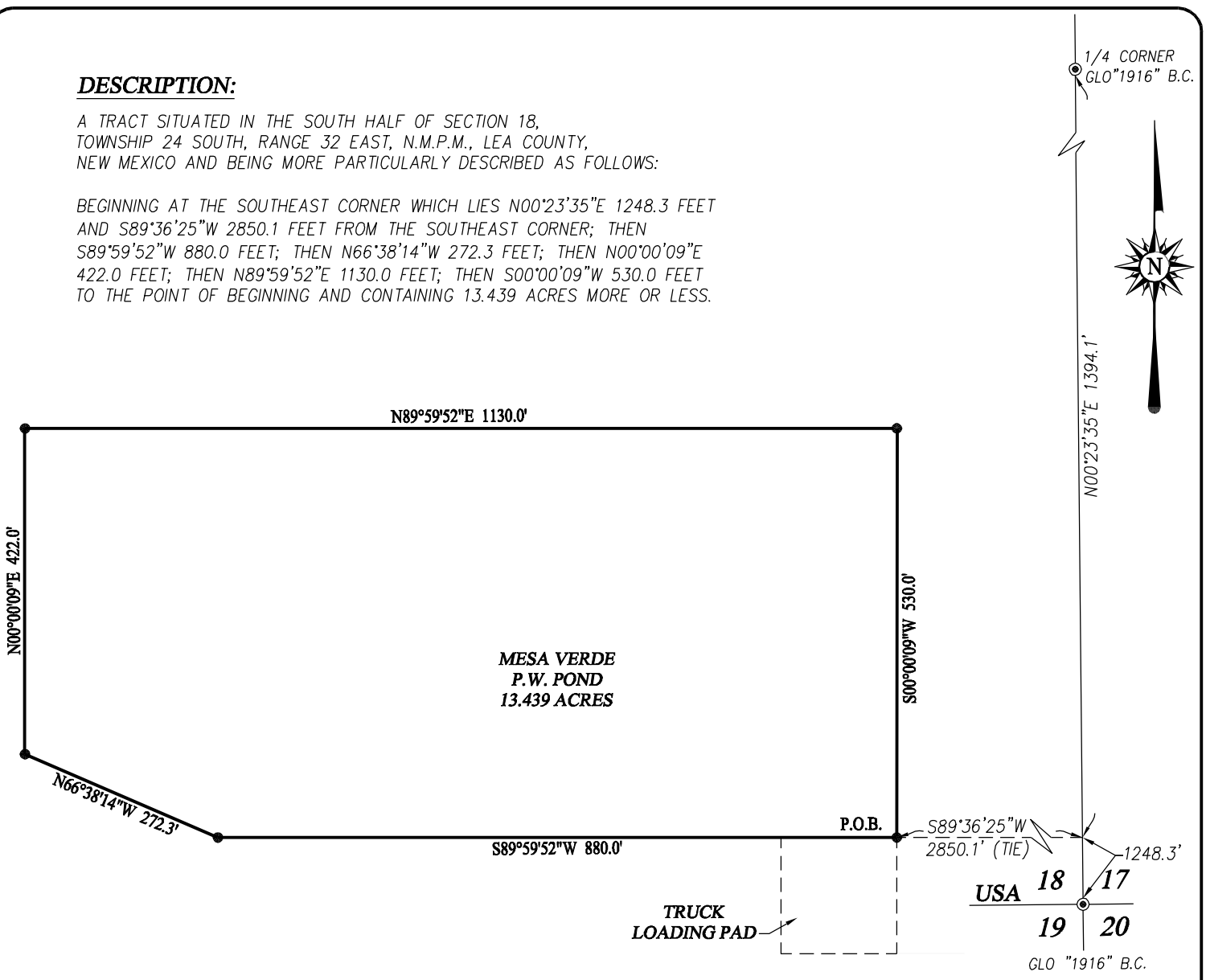
Survey Date: 3/30/17	CAD Date: 3/31/17	Drawn By: ACK
W.O. No.: 17110253	Rev: .	Rel. W.O.: 17110059	Sheet 1 of 1

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

DESCRIPTION:

A TRACT SITUATED IN THE SOUTH HALF OF SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER WHICH LIES N00°23'35"E 1248.3 FEET AND S89°36'25"W 2850.1 FEET FROM THE SOUTHEAST CORNER; THEN S89°59'52"W 880.0 FEET; THEN N66°38'14"W 272.3 FEET; THEN N00°00'09"E 422.0 FEET; THEN N89°59'52"E 1130.0 FEET; THEN S00°00'09"W 530.0 FEET TO THE POINT OF BEGINNING AND CONTAINING 13.439 ACRES MORE OR LESS.



NOTE

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON Ronald J Eidson

DATE: 03/31/2017

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

LEGEND

- DENOTES FOUND CORNER AS NOTED
- DENOTES SET SPIKE NAIL

200 0 200 400 Feet

Scale: 1"=200'

OXY U.S.A. INC.

SURVEY FOR A TRACT TO THE MESA VERDE P.W. POND SITUATED IN THE S/2 OF SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M. LEA COUNTY, NEW MEXICO

Survey Date: 3/30/17	CAD Date: 3/31/17	Drawn By: ACK	
W.O. No.: 17110252	Rev:	Rel. W.O.: 17110044	Sheet 1 of 1

PROVIDING SURVEYING SERVICES SINCE 1946
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412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000