NM1-35

Vadose Zone Monitoring Wells VZ-1, VZ-2, VZ-3, and VZ-4 Installation NOI

August 23, 2021

Notice of Intent of
Vadose Zone Well Installation

LEA LAND, LLC SURFACE WASTE MANAGEMENT FACILITY
PERMIT # NM1-35
LEA COUNTY, NEW MEXICO
NOTICE OF INTENT TO INSTALL VADOSE ZONE MONITORING WELLS

Submitted To:

New Mexico Oil Conservation Division
Environmental Bureau
1220 South St Francis Dr.
Santa Fe, New Mexico 87505
505.476.3441

Prepared For:

Lea Land LLC
1300 West Main Street
Oklahoma City, OK, 73106
405.236.4257

Prepared By:

Clay Kilmer, LLC
3312 June St. NE
Albuquerque, NM 87111
505.235.4482

August 2021

CKLLC Project #: LLC-TO1-VZ WELLS

Clay Kilmer, LLC
Environmental Geoscience
Water Resources

August 23, 2021

Ms. Emily Hernandez, Chief
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St Francis Dr.
Santa Fe, New Mexico 87505

Submitted electronically
Hard copy upon request

Re: Lea Land, LLC Surface Waste Management Facility:
NMOCD Permit No. NM-1-0035 (June 22, 2020)
Notice of Intent to Install Vadose Zone Monitoring Wells

Dear Ms. Hernandez:

On behalf of Lea Land LLC., Clay Kilmer, LLC (CKLLC) submits the attached Notice of Intent (NOI) to install vadose zone monitoring wells at the Lea Land LLC Surface Waste Management Facility. It is anticipated that this document will inform NMOCD of intended schedule and details of monitoring well installation, and will provide NMOCD a minimum of 30 days notice of well installation in accordance with Condition 6.M of the January 24, 2020 NMOCD Permit NM1-35 Modification Approval.

Included with this NOI submittal are the approved well locations and construction details, as well as the requisite New Mexico Office of the State Engineer (NMOSE) Permits for the new wells. To facilitate your review, the approved "Vadose Zone Monitoring Plan" from the current Permit No. NMOCD NM-1-0035 is attached.

We appreciate OCD's on-going review of documents associated with the Lea Land LLC Surface Waste Management Facility. Please contact us with your questions or comments.

Very truly yours,
Clay Kilmer, LLC

Clay Kilmer, P.G.
Certified Groundwater Scientist
claykilmer@gmail.com

cc: Mr. Jim Griswold, Environmental, OCD
Ms. Stephanie Grantham, Lea Land LLC.
Mr. I. Keith Gordon, P.E., IKG, LLC
Mark Turnbough, PhD

Clay Kilmer LLC
3312 June Street, Northeast
Albuquerque, NM 87111
(505) 235-4482
claykilmer@gmail.com

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1.0 INTRODUCTION

The Lea Land, LLC Surface Waste Management Facility (LLSWMF, facility) operates under Permit No. NM1-35, approved by the New Mexico Oil Conservation Divison (NMOCD) June 22, 2020 (**ATTACHMENT A**). The facility is permitted for the permanent disposal of Resource Conservation and Recovery Act (RCRA) exempt and non-exempt/non-hazardous oilfield waste at an approved landfill (~100 acres), with associated infrastructure (~118 acres). The permitted landfill has a waste capacity of approximately 14.6 million cubic yards.

1.1 Site Location

The facility is located in Section 32 of Township 20 South, Range 32 East, approximately 28 miles east of Carlsbad, adjacent to the south of US Highway 62-180 in Lea County, New Mexico (**Figure 1**). The LLSWMF is owned and operated by Lea Land LLC., Oklahoma City, Oklahoma.

1.2 Purpose

This submittal satisfies NMOCD agency notice requirements for vadoze zone well installation set forth in Conditions 6.M and 6.N of the January 24, 2020 NMOCD Permit NM1-35 Modification Approval, cited below.

> ***6.M -*** *At least 30 days prior to the start of construction of the landfill, evaporation ponds, vadose zone monitoring system, stabilization and solidification area, or process areas, the operator shall furnish OCD with a complete set of construction drawings, including a major milestone schedule for construction. These construction drawings must substantially comply with the engineering design provided with the application and show the location of the pond evaporation units, including liner and spray evaporation units.*

- **30-Day Notice** – Submission of this document satisfies agency notice requirements. A formal signed Notice of Intent is included as **ATTACHMENT B**.
- **Construction Drawings** – Proposed vadose zone well designs are included in the Vadose Zone Monitoring Plan for the facility (Gordon Environmental-PSC, 2019). A copy is included as **ATTACHMENT C**.
- **Projected Schedule** – Well installation schedule will depend upon availability of appropriate drilling equipment and crew. It is anticiapted that well installation will require approximately 90 days after receipt of OCD's acknowledgement of receipt of this workplan.

6.N *- The operator shall submit as-built drawings to OCD within 30 days of the completion of construction of landfill cells, evaporation ponds, vadose zone monitoring system, stabilization and solidification area, or process areas.*

- **Well As-Built Documentation** – Well logs and as-built drawings will be submitted to OCD within 30 days of completion of the vadose zone monitoring wells. Wells will be considered completed on the date of the well drilling contractor's submission of a Well Record (Form WR-20) to the Office of the New Mexico State Engineer.

2.0 VADOSE ZONE MONITORING PLAN

The approved Vadose Zone Monitoring Plan (Plan) includes plans for the number, placement and design of the monitoring wells (**Attachment C, Figure II.9.6**). The Plan also includes commitments for monitoring, recordkeeping, and reporting procedures for the site's proposed vadose zone monitoring system. The Plan includes provisions for installation of 4 vadose zone wells arrayed around waste cells and an additional 5 vadose zone wells arrayed around the future liquid waste management facilities. Pursuant to this Notice, Lea Land LLC intends to install wells LLC-VZ-1, LLC-VZ-2, LLC-VZ-3 and LLC-VZ-4 around expansion area waste cells at the present time and to install the remaining wells around liquid waste management facilities concurrently with construction of those facilities.

2.1 Vadose Zone Monitoring Network

Locations of the vadose zone wells proposed for immediate installation are shown on the map in **Figure 2**. Well names, coordinates and projected depths and screened intervals are presented in **Table 1**.

2.2 Permitting and Agency Notice

Drilling permits for the vadose zone wells have been obtained from the New Mexico Office of the State Engineer (NMOSE), copies are included in **Attachment D**. A 30-day Notice of Intent to Install the monitoring wells is included in **Attachment B**.

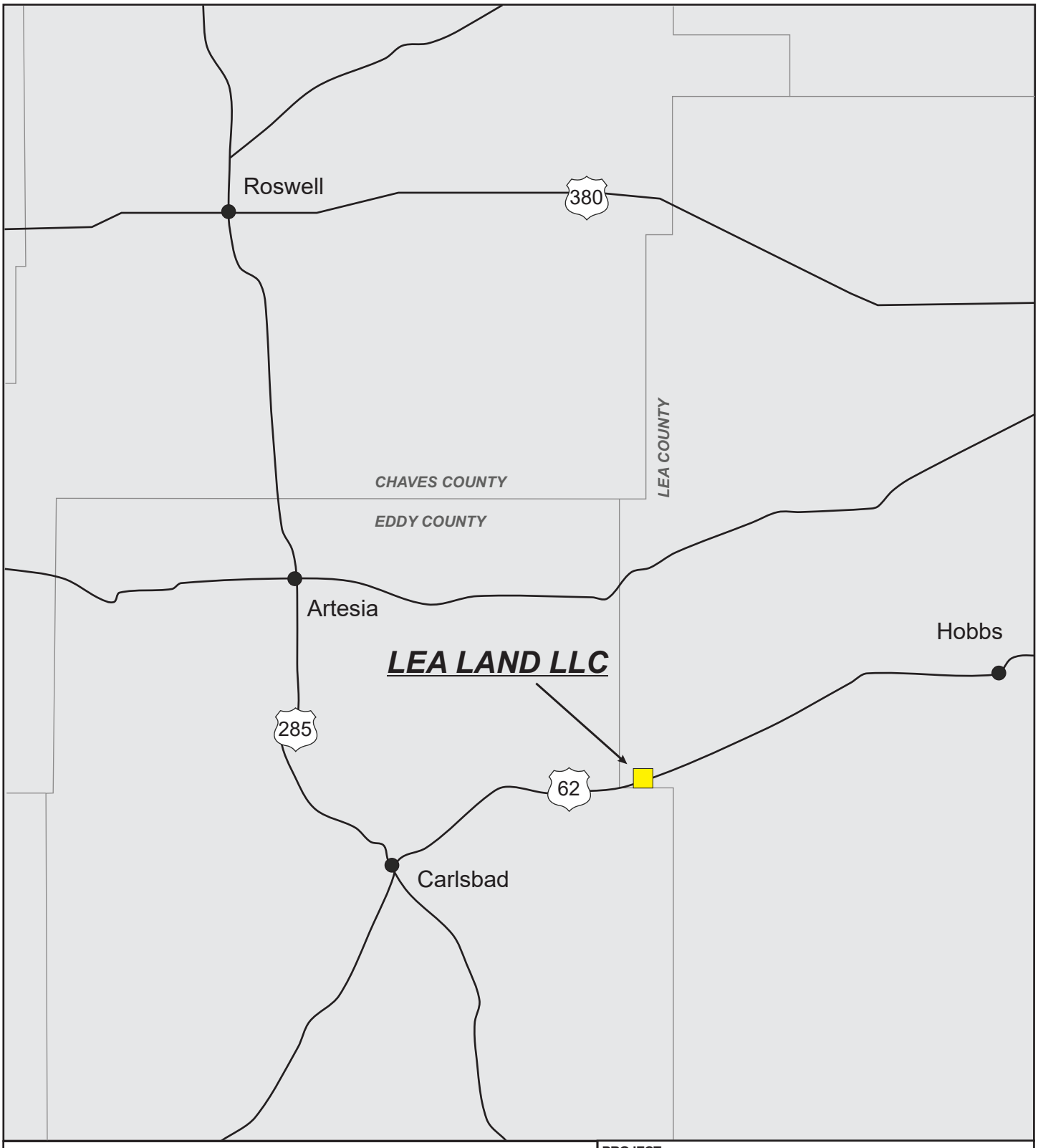
3.0 REFERENCES

Gordon Environmental – PSC, 2019, Surface Waste Management Facilty Application for Permit Renewal and Modification, Lea Land LLC Surface Waste Management Facility

New Mexico Oil Conservation Division, Adrienne Sandoval, June 22, 2020, Approval and Conditions, Modification-Commercial Surface Waste Management Faility Permit NM1-35

New Mexico Office of the State Engineer, 2021, Permits to Install Wells With No Water Right (WR-08) for Lea Land LLC vadose zone monitoring wells.

FIGURES



NORTH

Scale, miles

0 15 30

PROJECT

Lea Land LLC
Lea County, New Mexico

TITLE

Figure 1.--Site Location Map

Clay Kilmer, LLC
Environmental Geoscience
Water Resources

3312 June Street NE
Albuquerque, NM 87111
(505) 235-4482

Eddy County

Lea County

General Slope Direction
Dewey Lake Redbeds

(BLM-79) 21.32.31.13
3530

B

31

Line of Hydrogeologic Cross Section

32

B'

VZ-4

VZ-1

VZ-3

VZ-2

3500

3490

3480

3470

UNITS II-V

UNIT I

Red Cloud Road

MW-3
3466.46

MW-2
3477.70

B-1

B-2
3471.6

MW-4
3469.71

B-3
3474.2

B-5
3474.5

B-4
3472.3

(VZ-8)

(VZ-7)

B-7
3489.4

B-6
3490.9

(VZ-6)

B-8

(VZ-9)

MW-5
3493.03

B-9

B-10
3498.2

(VZ-5)

MW-1
3493.79

T. 20 S. R. 32 E.

T. 21 S. R. 31 E.

5

5

4

FACILITY EXPANSION
(basegrade elevations)

APPROVED VADOSE ZONE WELLS (FUTURE)
To be developed in conjunction with proposed liquids management facilities

EXPLANATION

VZ-1 — Location of proposed Vadoze Zone Monitoring well (this Notice) showing designation

(VZ-5) — Location of future Vadose Zone Monitoring well to be developed in conjunction with liquids management facilities

MW-1
3493.79 — Location of Lea Land groundwater monitoring well showing designation and elevation (ft above MSL) of the top of the Dewey Lake Redbeds

B-2
3471.6 — Location of Lea Land site stratigraphic boring showing designation and elevation (ft above MSL) of the top of the Dewey Lake Redbeds

21.31.3.22
3493 — Location of BLM 1979 potash study groundwater monitoring well, or NMBM GW Rpt 6 well, or USGS potash mineral exploration boring showing NMPM location designation and elevation (ft above MSL) of the top of the Dewey Lake Redbeds

Isopleth on line of equal elevation (ft) of base grade of facility expansion, Units II - V

3500

NORTH

Scale, feet

0 2000

Modified from Gordon Environmental-PSC, 2019, Fig. II.9.6

PROJECT
Lea Land LLC
Lea County, New Mexico

TITLE
Figure 2.--Approved Facility Vadose Zone Well Locations

Clay Kilmer, LLC
Environmental Geoscience
Water Resources

3312 June Street NE
Albuquerque, NM 87111
(505) 235-4482

TABLES

Table 1.--Lea Land, LLC Landfill
Vadose Zone Monitoring Wells
Proposed Locations and Completions

Proposed Well Name and Capitan Basin Permit No.	UTM Zone 13N East (m)	UTM Zone 13N North (m)	LS Elev (ft)	Projected Elev. Top Dewey Lake Redbeds (ft)	Projected Depth to Dewey Lake Redbeds (ft)	Projected Well Depth (ft)	Projected Screen Interval (ft)
LLC-VZ-1 - CP-1874-p1	613113	3599502	3537.3	3502	35.3	40.3	30-40
LLC-VZ-2 - CP-1872-p1	613764	3599329	3530.4	3488	42.4	47.4	37-47
LLC-VZ-3 - CP-1874-p2	603804	3599637	3521.5	3479	42.5	47.5	38-48
LLC-VZ-4 - CP-1874-p3	613643	3599887	3517.7	3481	36.7	41.7	32-42

ATTACHMENTS

ATTACHMENT A
NMOCD Decision on NM1-35, Major Modification 2020-6-22

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Cabinet Secretary

Adrienne Sandoval
Director, Oil Conservation Division

June 22, 2020

Stephanie Grantham
Lea Land LLC
1300 West Main Street
Oklahoma City, Oklahoma 73106

RE: Modification of Commercial Surface Waste Management Facility Permit NM1-35. Section 32, Township 20 South, Range 32 East NMPM, Lea County, New Mexico, Lea County, New Mexico

Ms. Grantham,

Pursuant to applicable parts of the Oil Conservation Commission regulations 19.15.36 NMAC, the Oil Conservation Division (OCD) has completed its review of your application for a major modification of commercial waste management facility at the location described above. OCD hereby modifies permit NM1-35 with conditions. Attached are the general and specific conditions.

If you have any questions, please contact Susan Lucas Kamat of my staff at (505) 670-8745 or by email at *Susan.LucasKamat@state.nm.us*. On behalf of the Oil Conservation Division, I wish to thank you and your staff for your cooperation during this permit review.

Respectfully,

Adrienne Sandoval
Director

AS/slk

Attachment – NM1-35 Permit Conditions

SURFACE WASTE MANAGEMENT FACILITY PERMIT CONDITIONS
NM1-35
Lea Land, LLC
Section 32, Township 20 South, Range 32 East NMPM

June 22, 2020

Upon confirmation that Lea Land, LLC of 1300 West Main Street in Oklahoma City, Oklahoma 73106 (the operator) has provided financial assurance required under Section 1.H of this permit modification, the operator is permitted to modify and operate the existing surface waste management facility as described in the Modification Application filed by the operator and in accordance with (a) the terms of this Permit Modification, (b) the rules governing solid waste management facilities 19.15.36 NMAC, and (c) all other applicable provisions of the Oil and Gas Act and the rules promulgated under the Act. The operator is responsible for ensuring any oil and gas operations located within the overall facility area do not interfere with the proper operation of the facility as described in the Application and authorized by this Permit Modification. Any change to the operations proposed or any change to the area covered will require a subsequent modification to the Permit including any necessary changes to the amount of financial assurance. The Oil Conservation Division (OCD) of the Energy, Minerals, and Natural Resources Department will determine if any Permit changes constitute a "major modification" under 19.15.36 NMAC.

1. GENERAL PROVISIONS

A. Permitee and Permitted Facility. OCD modifies surface oil field waste management permit NM1-35 to the operator for the modification, operation, and eventual closure of a commercial facility located upon a 474.41-acre tract in an unincorporated portion of Lea County, New Mexico, approximately 38 miles west of Hobbs.

The waste management facility is intended for the permanent disposal of Resource Conservation and Recovery Act (RCRA) exempt and non-exempt/non-hazardous oil field waste and will include a waste processing area (~82 acres), a landfill (~100 acres), and associated infrastructure (~118 acres). The landfill will have a waste capacity of approximately 14.6 million cubic yards.

B. Scope of Permit. OCD regulates the disposition of water produced or used in connection with the exploration and production of oil and gas and to direct disposal of that water in a manner which will afford reasonable protection against contamination of fresh water supplies pursuant to authority granted in the Oil & Gas Act (Chapter 70, Article 2 NMSA 1978). Under that Act, OCD also regulates the disposition of nondomestic wastes resulting from exploration, production, or storage of crude oil and natural gas to protect public health and the environment. Similarly, OCD regulates the disposition of nondomestic wastes resulting from the oil field service industry, the transportation of crude oil and natural gas, the treatment of natural gas, and the refinement of crude oil to protect public health and the environment pursuant to jurisdiction and authority granted by the same Act.

This permit modification does not convey any property rights of any sort or any exclusive privilege to the operator and does not authorize any injury to property or persons, any invasion of other private rights, or any infringement of state, federal, or local laws, rules, or regulations.

C. Owner/Operator Commitments. The operator must ensure all operations are consistent with the terms and conditions of this permit and in conformance with all pertinent rules and regulations under the Oil & Gas Act. Furthermore, the operator shall abide by the approval conditions contained herein, along with all commitments submitted in its permit application of June 2019, including any attachments and/or amendments, all of which are incorporated into this Permit Modification by reference.

D. Modifications. The operator must notify the OCD in advance of any further increase in the land area the facility occupies, any changes in the design capacity, any changes in the nature of the oil field waste streams, or any additions of a new treatment process. As a result, the OCD Director may require a modification to the permit conditions.

E. Definitions. Terms not specifically defined in the permit shall have the same meanings as those in the Oil & Gas Act, or the rules adopted pursuant to the Act, as the context requires.

F. General Performance Standards. The operator must operate in accordance with these conditions, comply with the Oil & Gas Act and rules issued pursuant to the Act, protect public health and the environment, prevent the waste of oil and gas, and prevent the contamination of fresh waters.

G. Effective Date, Expiration, Renewal, and Penalties for Operating Without a Permit. This permit is effective DATE and will expire ten years thereafter on DATE. If it so desires, the owner/operator may submit an application for renewal to OCD no later than 120 calendar days before the expiration date. If the operator submits such a renewal application before the required date and is in compliance with the existing permit, then that existing permit will not expire until the OCD approves or denies the renewal application. Operating with an expired permit will subject the owner/operator to civil and/or criminal penalties (see Section 70-2-31 NMSA 1978).

H. Financial Assurance. The operator must provide financial assurance in a form acceptable to OCD for the waste management facility's estimated closure and post-closure cost. The estimated amount currently required is $1,385,673.00, which includes the cost of closure construction and post-closure operations for Phase I described in the application. On an annual basis, or prior to development of each phase of the facility, or should unforeseen conditions arise, the operator will update the closure/post-closure estimate and, thus, the amount of financial assurance.

2. GENERAL FACILITY OPERATIONS

A. Labeling. The operator must clearly label all tanks, drums, and other containers to identify the contents and to provide emergency notification information. The operator may use a tank coding system if it is incorporated into their emergency response planning.

B. Inspections and Maintenance of Secondary Containment Systems. The operator must inspect all secondary containment systems and sumps at least monthly to ensure proper operation and to prevent over filling or system failure. The operator must empty all secondary containment systems of any fluids within 48 hours of discovery, notify the OCD of the discovery, and initiate corrective actions. The operator must keep written records of its inspections and of any fluid analyses. The operator shall maintain and make the documentation available for OCD inspection.

C. Release Reporting and Corrective Action for Releases. The operator must comply with the spill reporting and corrective action provisions of the Oil & Gas Regulations (19.15.29 and 19.15.30 NMAC) as may be amended from time to time.

D. Annual Report. The operator must submit a comprehensive annual report to the OCD by September 1st of each year detailing the operator's activities during the preceding year (where a year is defined as July 1st through June 30th). The annual report must include the following information for the preceding year: (1) all inspection forms, including those for leak detection systems; (2) all analytical results, (3) hydrogen sulfide monitoring results, (4) process piping integrity test results, (5) training records, (6) complaint logs and resolutions, and (7) a summary of the nature, amount, and any related remediation of any reportable releases.

3. MATERIAL STORAGE

A. Process, Maintenance, and Material Storage Areas. The operator must pave and curb all process, maintenance, and material storage areas at the facility, excluding evaporation ponds, below-grade tanks, and sumps, or incorporate another appropriate spill collection device for these areas as approved by the OCD.

B. Above Ground Tanks. The operator must place above ground tanks on impermeable pads and surround the tanks with lined berms or with other impermeable secondary containment system having a capacity of at least one and one-third times the capacity of the largest tank, or the combined volume of any interconnected tanks. This does not apply to tanks containing fresh water.

4. WASTE MANAGEMENT

A. Waste Streams. This permit authorizes the operator to handle the RCRA-exempt waste streams. OCD approval must be obtained to receive any waste stream not specified in the application prior to its collection, storage, treatment, or disposal.

B. Waste Storage. The operator must store wastes at the facility only in clearly marked storage areas that have been specified in the application, except for any waste that may be generated during emergency response operations. However, such emergency waste may be stored elsewhere for no more than 72 hours. OCD may approve additional storage on a case-by-case basis.

The operator must not store non-oil field waste generated at the facility by the operator for more than 180 calendar days from the date any container is filled without OCD approval.

C. Class V Wells. Leach fields and other wastewater disposal systems at OCD-regulated facilities which inject non-hazardous fluids into or above an underground source of drinking water are Underground Injection Control Class V wells pursuant to 20.6.2.5002 NMAC. This permit does not authorize the use of a Class V injection well for the disposal of industrial waste at the facility. Other Class V wells, including wells used only for the injection of domestic wastes, must be permitted by the New Mexico Environment Department.

5. BELOW GRADE TANKS AND SUMPS

A. Below grade tanks and sumps must have secondary containment systems with leak detection and meet construction and operating requirements of 19.15.17 NMAC.

6. FACILITY-SPECIFIC CONDITIONS, EXCEPTIONS, WAIVERS, AND ALTERNATIVES

A. The request for waiving the landfill gas control requirements of 19.15.36.13.O NMAC is adequately addressed and supported in the application and hereby approved.

B. The request for an alternative to the groundwater monitoring requirements of 19.15.36.14.B NMAC by incorporation of a vadose zone monitoring system around the landfill, evaporation ponds, and stabilization/solidification areas is adequately addressed and supported in the application and hereby approved. The operator shall notify the OCD 30 days prior to installation of the vadose zone monitoring wells and system. Final vadose zone monitoring well locations may be modified based on field conditions. The operator shall furnish OCD with maps detailing the final vadose zone monitoring well locations and logs. The vadose zone monitoring system shall be installed and operational prior to the commencement of operations in the new landfill units, evaporation ponds, and of stabilization/solidification areas.

The operator shall inspect and monitor the vadose zone monitoring wells on a regular basis for the presence of liquids, along with gaseous hydrogen sulfide and methane. If liquids or gases are found to be present, the operator shall notify the OCD immediately. If liquids are present, the operator shall also gather representative samples. All groundwater samples must also be analyzed by EPA Method 8260 (full list) for volatile organic compounds, in addition to those parameters outlined in the application.

C. The request for an alternative to the geonet detection and drainage layers requirements of 19.15.36.14.C NMAC is adequately addressed and supported in the application and hereby approved.

D. The request for a final cover alternate has been adequately addressed and supported in the application and hereby approved. The final cover requirements otherwise specified in 19.15.36.14.C.(9) NMAC shall incorporate either of the following options.

Option 1 – Three layers with a total thickness of 50 inches consisting of the required vegetative cover layer (Layer 1) being 12 inches in thickness having hydraulic conductivity of 5.2×10^{-4} cm/sec, the evapotranspiration layer (Layer 2) being 26 inches in thickness having hydraulic conductivity of 1.9×10^{-4} cm/sec, and the required intermediate cover layer (Layer 3) being 12 inches in thickness having hydraulic conductivity of 1.9×10^{-4} cm/sec.

Option 2 – Three layers with a total thickness of 44 inches consisting of the required vegetative cover layer (Layer 1) being 12 inches in thickness having hydraulic conductivity of 3.3×10^{-5} cm/sec, the evapotranspiration layer (Layer 2) being 20 inches in thickness having hydraulic conductivity of 1.0×10^{-5} cm/sec, and the required intermediate cover layer (Layer 3) being 12 inches in thickness having hydraulic conductivity of 1.0×10^{-5} cm/sec.

The operator shall notify the OCD as to which option is selected prior to final cover construction. The operator shall submit pre-construction testing results to the OCD as part of the construction quality assurance (CQA) plan. Should the operator select Option 2 above (i.e. lower values of hydraulic conductivity) and the on-site soils do not meet the required parameters, the final cover shall be implemented as per the Option 1 parameters for both thickness and hydraulic conductivity.

E. The request for an alternative to the bird control requirements of 19.15.36.13.I and 19.15.36.17.C.(3) NMAC is adequately addressed and supported in the application and hereby approved.

F. The request for an exception to the intermediate cover stabilization requirements of 19.15.36.14.A.(7) NMAC providing for a 2-year extension on vegetating the intermediate cover that has not yet reached final grade is adequately addressed and supported in the application and hereby approved.

G. The request for an alternative to the final cover stabilization requirements of 19.15.36.18.C.(2)(b) NMAC to use alternate materials for stabilization is adequately addressed and supported in the application and hereby approved. No additional time to stabilize the area is approved.

H. The request for an alternative to the base layer compacted soil requirements of 19.15.36.14.C.(1) NMAC is adequately addressed and supported in the application and hereby approved.

I. The request for a proposed alternative to the leachate collection system requirements of 19.15.36.14.C.(5) and (6) NMAC to use a chimney drain is adequately addressed and supported in the application and hereby approved.

The operator shall submit pre-construction testing results to the OCD as part of the CQA plan. Should the on-site soils to be used as part of the leachate collection system fail to comply with the proposed uniformity coefficient of 30 (obtained by dry sieve) and maximum 10 percent passing the No. 200 sieve, the operator shall notify the OCD of its intent to use a chimney drain. The operator shall demonstrate, using the Hydrologic Evaluation of Landfill Performance (HELP) model and associated engineering calculations, that the chimney drain will not affect the liner, leachate collection system, or final cover performance.

J. Prior to construction activities within the facility, the operator shall determine that all abandoned oil wells within the area are properly plugged in accordance with OCD regulations. If any wells are found to be unplugged or improperly plugged, the operator shall take the appropriate corrective actions.

K. Naturally Occurring Radioactive Material (NORM) waste cannot be accepted at the facility unless in compliance with 19.15.35 NMAC.

L. The operator shall provide a survey plat to the OCD upon the final approval of the permit.

M. At least 30 days prior to the start of construction of the landfill, evaporation ponds, vadose zone monitoring system, stabilization and solidification area, or process areas, the operator shall furnish OCD with a complete set of construction drawings, including a major milestone schedule for construction. These construction drawings must substantially comply with the engineering design provided with the application and show the location of the pond evaporation units, including liner and spray evaporation units.

The major milestone schedule shall be regularly updated throughout construction activities.

The operator shall provide a detailed description of the processes and equipment for the process area with the construction drawings.

An updated project-specific CQA plan shall be submitted with the construction drawings and schedule. The CQA plan shall include a concrete section detailing the mix design, placement, and cracking control.

N. The operator shall submit as-built drawings to OCD within 30 days of the completion of construction of landfill cells, evaporation ponds, vadose zone monitoring system, stabilization and solidification area, or process areas,.

O. If disposal wells are incorporated into facility operations at a later date, those wells must be separately permitted under provisions of the New Mexico Underground Injection Control program.

P. An updated list of emergency coordinators and their contact information shall be provided to the OCD by the operator before waste can be accepted into the facility.

Q. The operator shall monitor the leak detection sumps for the presence of liquids at least monthly. If liquids are present, the operator shall notify the OCD immediately and shall sample and test the liquid as directed by the OCD.

ATTACHMENT B
30-Day Notice of Intent to Install
Vadose Zone Wells

NMOCD NOTICE OF INTENT

INSTALL AND/OR DECOMMISSION BOREHOLES, PIEZOMETERS OR GROUND WATER WELLS

Date: 08/23/2021

Owner/Operator Name: Lea Land, LLC

Mailing address: 1300 W. Main St, Oklahoma City, OK 73106

Phone: (505) 827-2855 Well or Boring(s) # LLC-VZ-1, LLC-VZ-2, LLC-VZ-3

Facility Name: Lea Land LLC Surface Waste Management Facility Permit No NM1-35

Consultant/Contractor Name: Clay Kilmer, LLC

Mailing Address: 3312 June Street NE, ABQ, NM 87111

Phone: (505) 235-4482

Qualified Ground Water Scientist Name (Print): Clay Kilmer

This Notice of Intent is to provide at least 30 days prior notification to the New Mexico Oil Conservation Division of the (X) installation and/or ( ) decommissioning of any boreholes, piezometers, or ground water monitoring wells per **Section 6.M of the Approval Conditions of Permit NM1-35, June 22, 2020**.

1. I certify that the (X) installation and/or ( ) decommissioning will comply with the Oil and Gas Rules and any other rules or regulations that might apply.
2. I certify that within 30 days of final completion of the installation that an installation report in accordance with **Section 6.N of the Approval Conditions of Permit NM1-35, June 22, 2020**, will be submitted to the OCD.
3. I certify that the facility monitoring plan will be revised as appropriate to include any changes (installation and/or decommissioning) in the approved facility monitoring plan and sent to the OCD for final approval and then be placed in the facility record.
4. I certify that I have notified the State Engineers Office of the above install/decommission and have obtained required permits for proposed actions.

Clay Kilmer

Certification Signature (Ground Water Scientist)

ATTACHMENT C
Vadose Zone Monitoring Plan, Aplication
Volume II Section 9, June 2019

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1.0 INTRODUCTION

Lea Land LLC (the Facility) is an existing Surface Waste Management Facility (SWMF) providing oil field waste solids (OFWS) disposal services. The existing Lea Land SWMF is subject to regulation under the New Mexico Oil and Gas Rules, specifically 19.15.9.711 and 19.15.36 NMAC, administered by the Oil Conservation Division (OCD) of the NM Energy, Minerals, and Natural Resources Department (NMEMNRD). This document is a component of the "Application for Permit Modification" that proposes continued operations of the existing approved waste disposal unit; lateral and vertical expansion of the landfill via the construction of new double-lined cells; and the addition of waste processing capabilities. The proposed Facility is designed in compliance with 19.15.36 NMAC, and will be constructed and operated in compliance with a Surface Waste Management Facility Permit issued by the OCD. The Facility is owned by, and will be constructed and operated by, Lea Land LLC.

The Lea Land SWMF is one of the most recently designed facilities to meet the new more stringent standards that, for instance, mandate double liners and leak detection for land disposal. The new services that Lea Land will provide needed resources to fill an existing void in the market for technologies that exceed current OCD requirements.

Lea Land, LLC proposes to modify existing OCD Permit NO. NM-01-0035 to expand and operate the "Surface Waste Management Facility" for oil field waste processing and disposal services. The Facility was originally permitted in 2001 and was designed and operated subject to regulation under the New Mexico (NM) Oil and Gas Rules, specifically OCD Part 711 [19.15.9.711 NMAC, 11-30-00]. The original permit area was 72.69 acres; the proposed new Facility footprint will be enhanced to 463 ± acres.

1.1 Site Location

The Lea Land site is located approximately 27 miles northeast of Carlsbad, straddling US Highway 62-180 (Highway 62) in Lea County, NM. The Lea Land site is comprised of a 642-acre ± tract of land encompassing Section 32, Township 20 South, Range 32 East, Lea County, NM. Site access is currently provided on the south side of US Highway 62. The coordinates for the approximate center of the Lea Land site are Latitude 32°31'46.77" and Longitude -103°47'18.25".

1.2 Facility Description

The Lea Land SWMF comprises approximately 463 acres ± of the 642-acre ± site, and will include two main components: an oil field waste Processing Area and an oil field waste solids Landfill, as well as related infrastructure (i.e., access, waste receiving, stormwater management, etc.). Oil field wastes are delivered to the Lea Land SWMF from oil and gas exploration and production operations in southeastern NM and west Texas. The Permit Plans (**Attachment III.1.A**) identify the locations of the Processing Area and Landfill Disposal facilities. The proposed facilities are detailed in **Table II.1.2** (**Volume II.1**), and are anticipated to be developed in four primary phases as described in **Table II.1.3** (**Volume II.1**).

1.3 Purpose

The purpose of this Vadose Zone Monitoring Plan is to provide the technical rationale and environmental benefits for a Request for Groundwater Monitoring Suspension and plans for alternative Vadose Zone Monitoring at the Facility. The Request for Suspension of Groundwater Monitoring and Vadose Zone Monitoring Plan are based upon regional hydrogeology and detailed site-specific investigations

A permit for major modification of the Surface Waste Management Facility for oil and gas waste is sought under provisions set forth in 19.15.36 NMAC. Provisions of 19.15.36.13 NMAC include facility siting criteria that no landfill shall be located where ground water is less than 100 feet below the lowest elevation of the design depth and that no other surface waste management facility shall be located where ground water is less than 50 feet below the lowest elevation at which the operator will place oil field waste. 19.15.36.14.B NMAC includes requirements for groundwater monitoring at facilities where "fresh groundwater" exists, unless "otherwise approved by the division". Fresh water is defined in 19.15.2.7.F(3) NMAC as water that contains less than 10,000 milligrams per liter (mg/l) of total dissolved solids (TDS). Groundwater is defined in 19.15.2.7.G(10) NMAC as *"interstitial water that occurs in saturated earth material and is capable of entering a well in sufficient amounts to be used as a water supply"*.

The Lea Land SWMF is located in an area where few shallow groundwater resources are known to exist. Information obtained from 10 soil borings and 5 groundwater monitoring wells that were drilled on the Lea Land SWMF, as well as several other groundwater monitoring wells in the vicinity of the site, provide ample demonstration that the minimum depth to the shallowest saturated zone on the property exceeds 150 ft below ground surface (bgs); and more than 100 ft below projected landfill

basegrade levels.

Depth to water-bearing zones in the Dewey Lake Redbeds, which is the shallowest saturation in the vicinity of the site, ranges from 173 ft to 198 ft bgs and ranges between 122 ft and 149 ft below the deepest proposed basegrade in the facility**.** Saturated zones at the site are vertically separated from the proposed facility by approximately 125 ft of dense non water-bearing Dewey Lake Redbed shale deposits. Saturated zones in the Dewey Lake Redbeds are hydraulically tight and highly confined. Monitoring wells at the site will not sustain adequate yields for well purging for groundwater sample collection, and well recharge is near zero. Therefore, saturation in the Dewey Lake Redbeds beneath the site does not qualify as groundwater, according to 19.15.2.7.G(10) NMAC.

The proposed facility design includes a double geomembrane clay liner (GCL) and two high density polyethylene (HDPE) liners below a leak detection layer, as well as installation of technology and operational provisions for leachate monitoring and collection. Based upon shallow stratigraphy in the vicinity of the proposed facility, it is anticipated that in the unlikely event that leakage were to occur through two composite liner systems, the leachate would migrate vertically through Santa Rosa Sandstone and pool on the upper surface of the laterally extensive and dense Dewey Lake Redbed shales that are present at an average depth of 50 ft bgs at the site. Subsurface stratigraphic information for the site and surrounding area indicates that potential leakage would migrate downslope above the sandstone-shale interface and likely move to the east.

The proposed Facility design includes double HDPE lined waste cells and provisions for leachate monitoring, and since the facility is underlain by laterally extensive dense shale and projected depth to the shallowest water bearing zone is significant. Therefore, vadose zone monitoring at the interface at the Dewey Lake Redbeds/Santa Rosa Sandstone interface is proposed as the most appropriate detection zone for the site. Due to the exceptional depth to a water-bearing zone at the site, as well as the low hydraulic conductance of the Dewey Lake Redbeds shale bedrock, it is anticipated that properly positioned and completed vadose zone monitoring wells at the site would detect leakage from the facility long before monitoring wells completed in deeper, hydraulically tight and confined horizons in the Dewey Lake Redbeds. This strategy provides a greater level of protection to environmental resources at the facility through early detection.

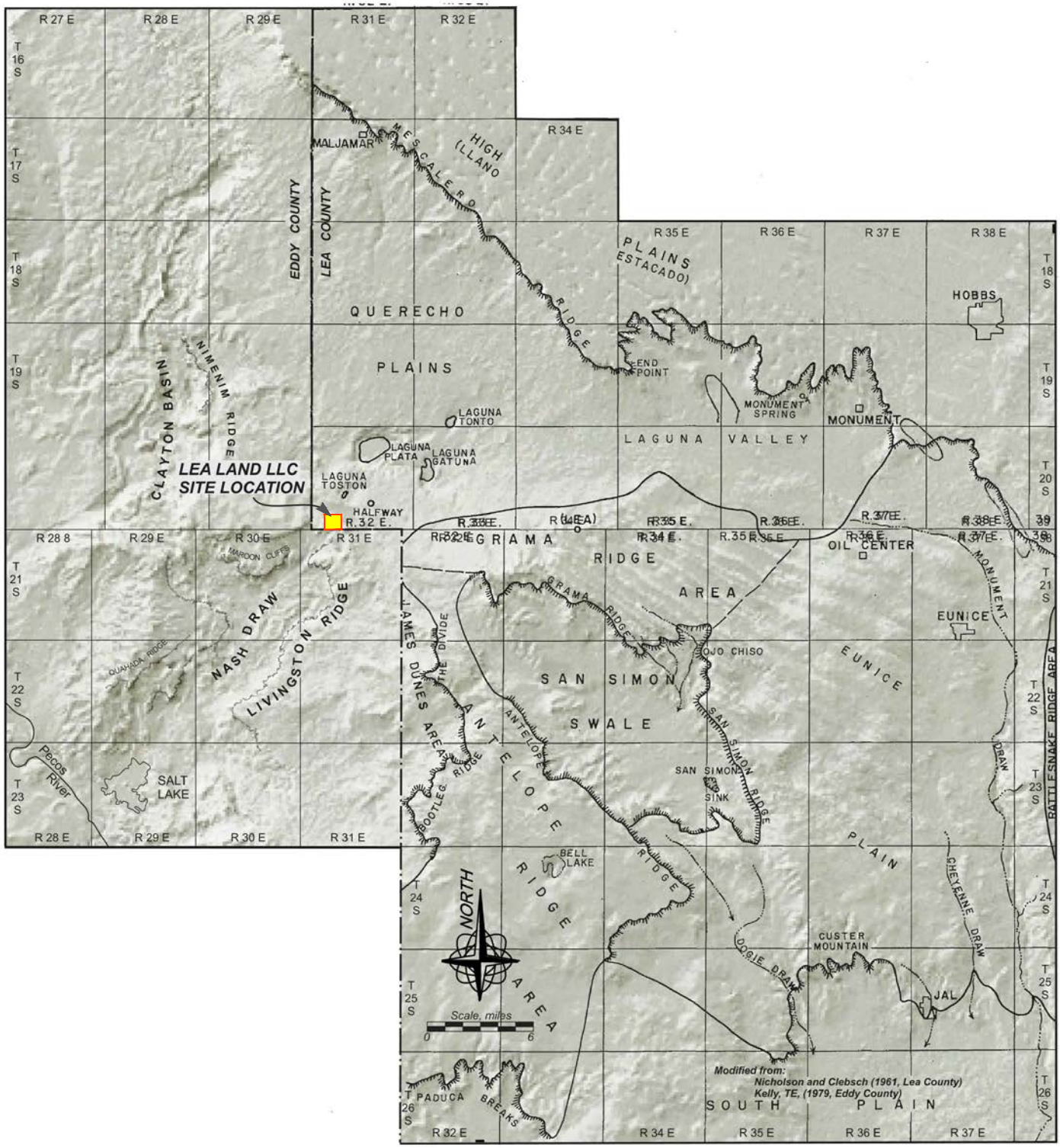
The following sections provide specific descriptions of the subsurface stratigraphy and water-bearing zones in the vicinity of the proposed facility, as well as proposed design, installation methods and operational strategy for the proposed vadose zone monitoring network at the site. **Volume IV.2** provides the results of numerous hydrogeologic and geotechnical investigations conducted to gather pertinent site-specific subsurface data.

2.0 HYDROGEOLOGIC SETTING

The Lea Land SWMF is located near the boundary between the Southern High Plains Section (Llano Estacado) and the Pecos Valley Section of the Great Plains Physiographic Province (Hawley, 1993). The Great Plains Physiographic Province is characterized by low relief and lightly deformed Permian and Triassic sedimentary bedrock units overlain by variable thicknesses of late Tertiary and Quaternary age layers. These consist of unconsolidated to semi-consolidated deposits of sand, silt, clay, gravel and calcrete (caliche) of the Ogallala Formation and younger Quaternary deposits of unconsolidated or aeolian sands and silts.

Physiography of the vicinity of the Lea Land SWMF in western Lea County and eastern Eddy County was described by Nicholson and Clebsch (1961) and Kelly (1979) and is summarized in the physiographic map in **Figure II.9.1**. The site is situated in the Upper Pecos-Black watershed (USGS cataloging Unit 1306011).

The Lea Land SWMF is located near the southwestern terminus of the Querecho Plains, which is a broad and relatively flat terrain that slopes gently from Mescalero Ridge at the western terminus of the Llano Estacado toward the Pecos River, approximately 80 miles to the west of Mescalero Ridge. The Querecho Plains are generally underlain by thin accumulations of unconsolidated sand, silt, gravel and caliche that mantle Triassic age redbeds and sandstones. The Tertiary Ogallala Formation, which is a thick sequence of unconsolidated to semi-consolidated sand, silt and gravel forms the caprock on Mescalero Ridge. Ogallala sediments were deposited on an erosional surface foot incised into Triassic Chinle Formation in much of southeastern New Mexico. The Ogallala has been removed by erosion and is absent west of Mescalero Ridge



REGIONAL PHYSIOGRAPHY

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

NOTES:

1.) GEOGRAPHIC COORDINATES FOR THE CENTER OF THE SITE:
32° 31' 46.77 N, -103° 47' 18.25 W

GORDON ENVIRONMENTAL PSC
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD: PHYSIOGRAPHY.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.1
APPROVED BY: CWF	www.team-psc.com	

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\PHYSIOGRAPHY.dwg
Date/Time:Mar. 25, 2019-13:16:10 ; LAYOUT: Layout A (P)

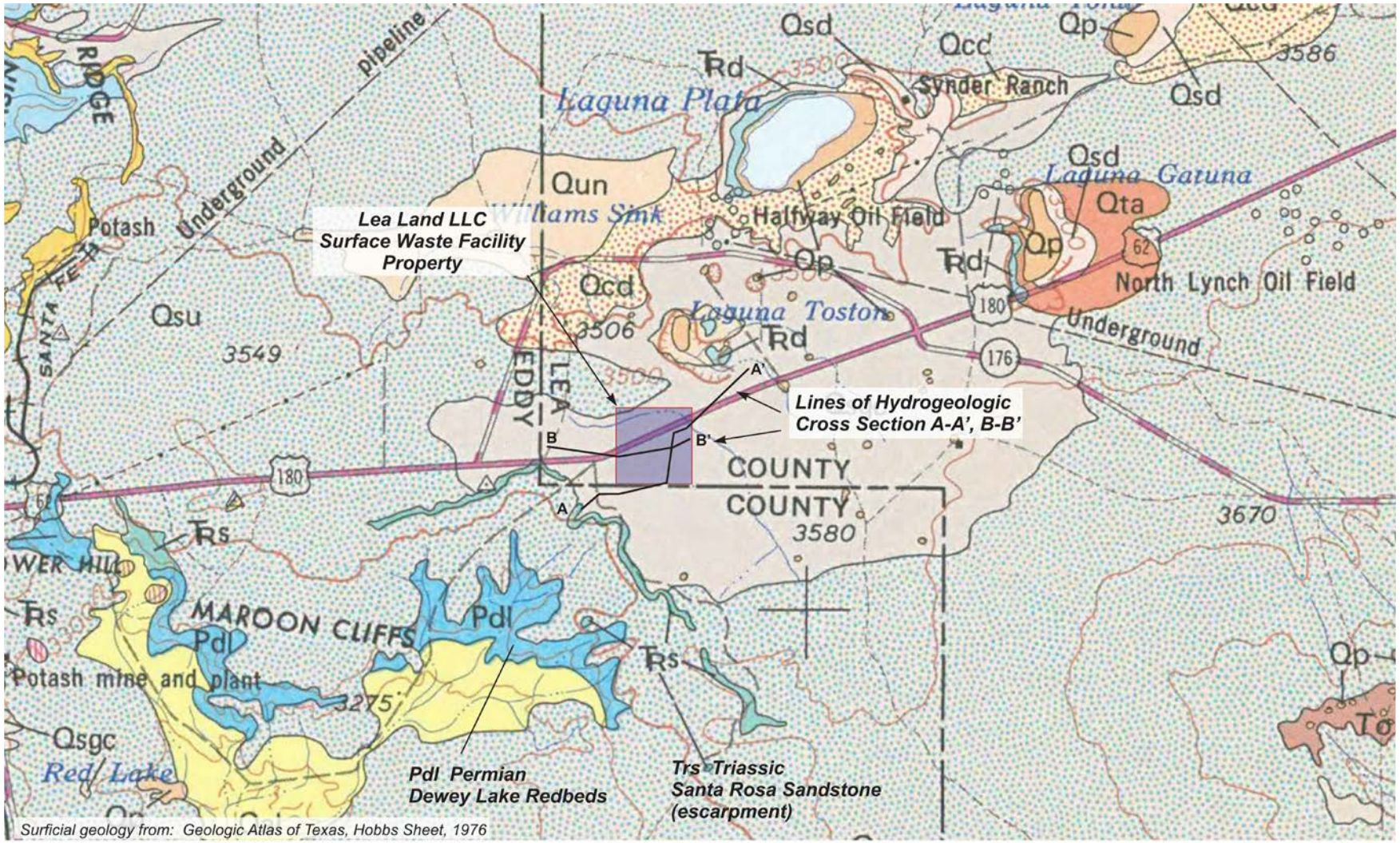
Surface geology of the vicinity of the Lea Land SWMF was mapped by the Texas Bureau of Economic Geology (1954) and is shown in **Figure II.9.2**. The Lea Land SWMF is situated east of the northernmost extension of Livingston Ridge, which is a west-facing escarpment formed by ledge-forming sandstone beds of the Triassic Santa Rosa Sandstone. The Facility rests on thinly alluvium-mantled beds of the Santa Rosa Sandstone, which dip gently to the northeast. Near surface stratigraphic units in the subsurface at the Lea Land SWMF include, Quaternary alluvium, Triassic Santa Rosa Sandstone, Permian Dewey Lake Redbeds, and Permian Rustler and Salado Formations.

Potential subsidence features are present in eastern Eddy County and Western Lea County. (**Figure II.9.1**). The most notable of these are Nash Draw and Clayton Basin. Several large playas, including Williams Sink, Laguna Plata, Laguna Gatuna, Laguna Tonto and Laguna Toston are present in the vicinity of the Lea Land SWMF. These features are believed to have formed from a combination of dissolution of deep-seated soluble substrates (Rustler and Salado) and more significantly wind deflation (Nicholson and Clebsch, 1961).

2.1 Groundwater Occurrence and Site Conditions

Shallow saturation at the Lea Land SWMF is present in hydraulically tight and confined zones in the Dewey Lake Redbeds unit. The top of the Dewey Lake Redbeds is present at an average depth of approximately 50 ft bgs at the Lea Land SWMF. Based upon data obtained from numerous geotechnical borings and groundwater monitoring wells that were drilled at the facility, the shallow saturated zones are present at depths ranging from 123 ft and 148 ft below the top of the Dewey Lake Redbeds; and ranging from 173 ft and 198 ft bgs. Water levels in the completed groundwater monitoring wells at the Lea Land SWMF rose between approximately 20 and 48 ft above the zones where water was initially noted during air rotary drilling of the wells (i.e., artesian conditions).

The Dewey Lake Redbeds are overlain by the Santa Rosa Sandstone, which consists of Triassic fine-grained silty sandstone and interbedded siltstone. The Santa Rosa Sandstone produces modest quantities of reasonably good quality water to wells further east in Lea County and West Texas; however this unit is above the water table and is not water-bearing at the Lea Land SWMF.



NOTES:
1.) GEOGRAPHIC COORDINATES FOR THE CENTER OF THE SITE:
32° 31' 46.77 N, -103° 47' 18.25 W

NORTH

Scale, miles
0 2.0 4.0

SURFACE GEOLOGY MAP

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

GORDON PSC ENVIRONMENTAL
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD: SURF GEO.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.2
APPROVED BY: CWF	www.team-psc.com	

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\SITE GEOLOGY MAP.dwg
Date/Time:Mar. 25, 2019-11:59:25 ; LAYOUT: A (LS)

Wells and borings in the vicinity of the Lea Land SWMF that yielded data of significance with regard to water-bearing occurrence or potential are plotted on the well location map presented as **Figure II.9.3**. The geometry of land surface and underlying geologic units, as well as water saturations near the Lea Land SWMF are depicted in hydrogeologic cross-section A-A' shown as **Figure II.9.4**. This diagram indicates that the shallowest saturated zone at the Facility is well below the top of the Dewey Lake Redbeds, at an average depth of approximately 185 ft below land surface, and water is slow to recharge.

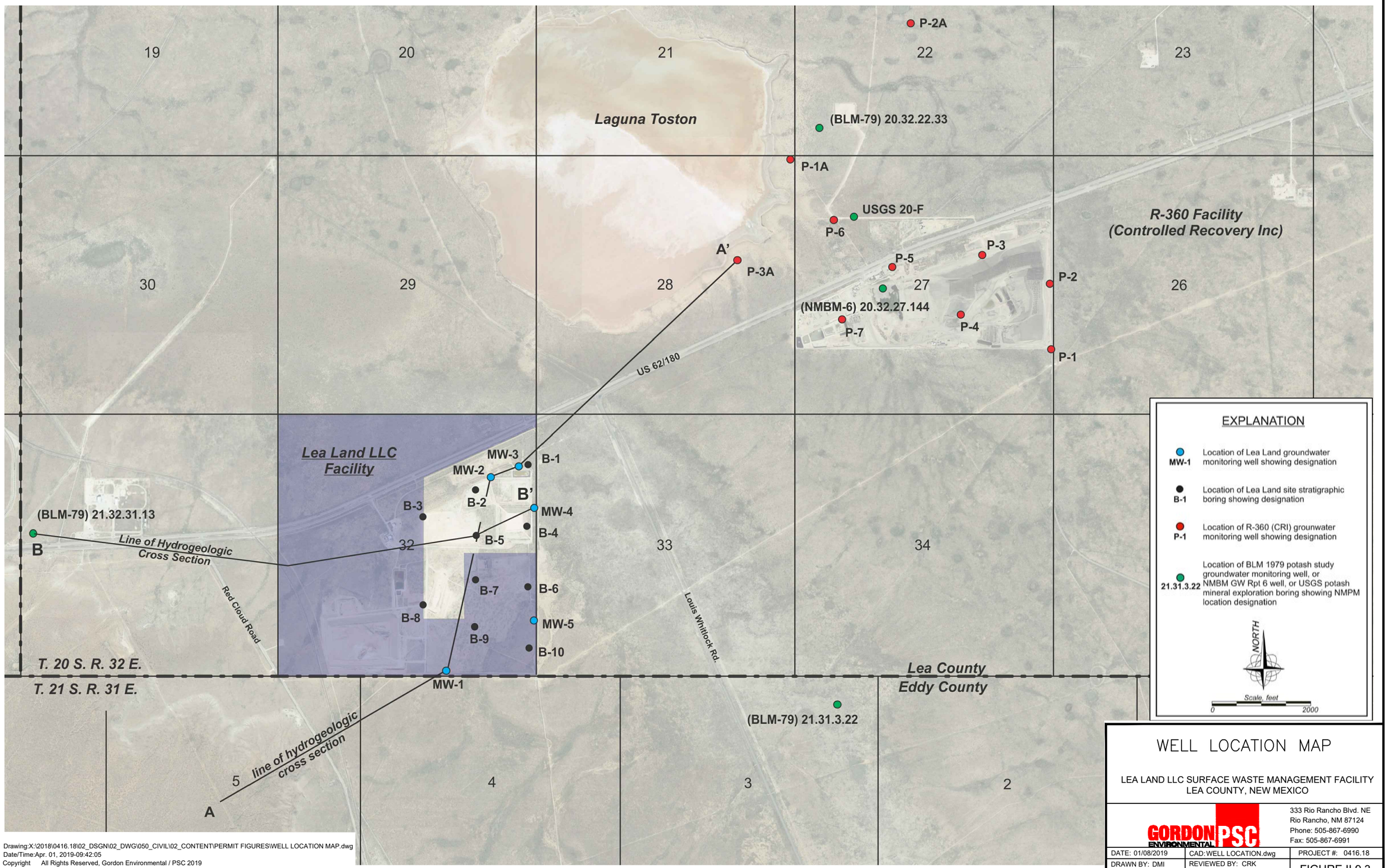
Table II.9.1 provides a summary of information from site characterization borings, groundwater monitoring wells, mineral exploration wells and/or other borings in the vicinity of the Lea Land SWMF. Data included in **Table II.9.1** were obtained from the following sources:

- Logs from groundwater monitoring wells at the Lea Land site **(Volume IV.2, Attachment IV.2.D)**
- Logs from geotechnical borings at the Lea Land site (**Volume IV.2, Attachment IV.2.E**)
- Logs from Controlled Recovery Inc. monitoring wells **(Volume IV.2, Attachment IV.2.B)**
- Well logs and supporting data from BLM monitoring wells (Geohydrology Associates Inc.,1979; **Volume IV.2, Attachment IV.2.A)**
- USGS Potash Log Hole F-20-1956 **(Volume IV.2, Attachment IV.2.C)**
- Water well data from Nicholson and Clebsch (1961)

The potentiometric surface gradient at the Lea Land SWMF was mapped using information from the Lea Land SWMF groundwater monitoring wells, as well as from other vicinity wells, as summarized in **Table II.9.1**. Local gradient is toward the southwest at a rate of approximately 100 ft per mile, as shown in **Figure II.9.5**.

No water production wells are present in the vicinity of the Lea Land SWMF. Soil borings and monitoring wells drilled at the Facility found dry alluvium and Santa Rosa Sandstone on top of the Dewey Lake Redbeds, and no saturation in approximately the upper 123-148 ft of the redbeds beneath the site.

Available water quality data taken from samples collected from wells completed in the Dewey Lake Redbeds at the Lea Land SWMF and other vicinity wells is summarized in **Table II.9.2**. Analyses of water samples taken from Lea Land SWMF wells in March 2010 and June 2018 indicate that the water is of fairly good chemical quality, with Total Dissolved Solids (TDS) ranging from 778



WELL LOCATION MAP

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

GORDON ENVIRONMENTAL PSC
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD:WELL LOCATION.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.3
APPROVED BY: CWF	www.team-psc.com	

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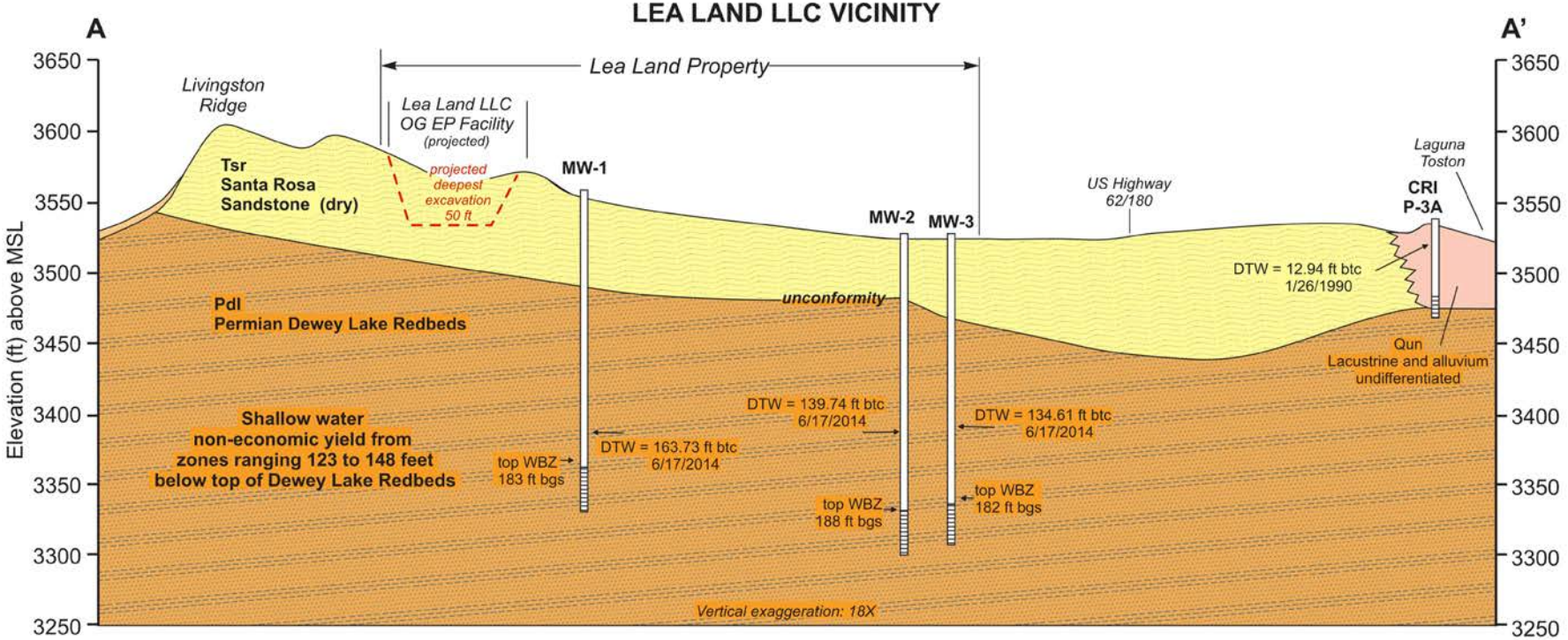
Date/Time:Apr. 01, 2019-09:42:05

HYDROGEOLOGIC CROSS SECTION
LEA LAND LLC VICINITY



EXPLANATION

- Qun — Quaternary alluvium and lacustrine deposits, undifferentiated
- Tsr — Triassic Santa Rosa Sandstone
- Pdl — Permian Dewey Lake Redbeds

Notes: btc: below top of casing
bgs: below ground surface

HYDROGEOLOGIC CROSS–SECTION A–A'

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

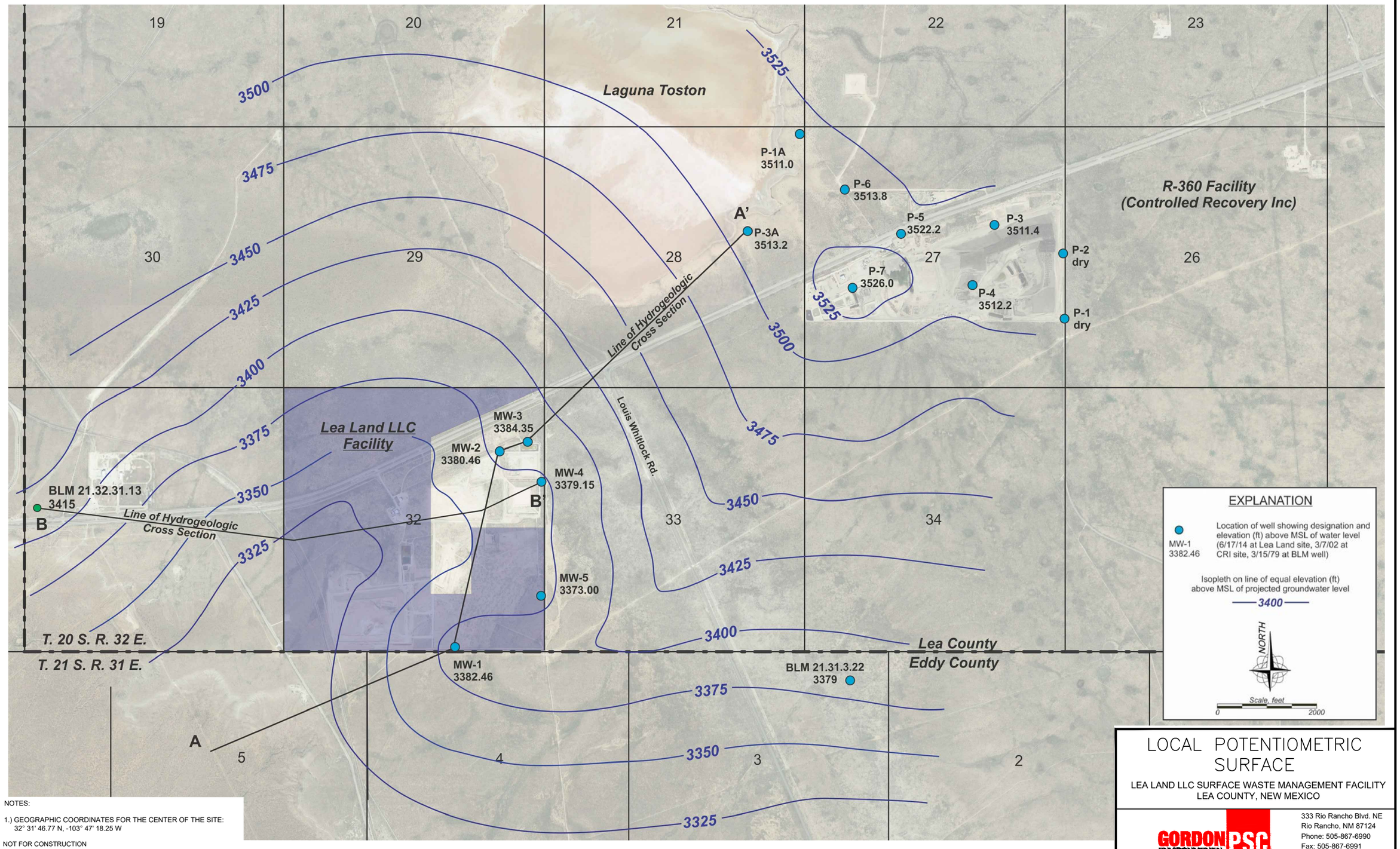
GORDON PSC ENVIRONMENTAL
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD: HYDRO GEO X-SEC.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.4
APPROVED BY: CWF	www.team-psc.com	

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\HYDROGEOLOGIC CROSS-SECTION A A'.dwg
Date/Time:Mar. 25, 2019-12:32:19 ; LAYOUT: A (LS)

TABLE II.9.1 - Summary Data from Wells and Borings in the Vicinity of the Lea Land SWMF

Well or Boring	Latitude	Longitude	Owner	Completion Date	[1]LS Elev (ft)	Water Bearing Zone	Top Casing Elev (ft)	Depth (ft)	WL (ft) Below Top Casing	WL (ft) Below Land Surface	WL Date	WL Elev (ft) above MSL	Top Screen Elev (ft) Above MSL	Bottom Screen Elev (ft) Above MSL	Depth to Top of Water-Bearing Zone (ft)	Depth to Top of Pdl Dewey Lake Redbed (ft)	Elev Top of Pdl Dewey Lake Redbeds (ft)	Source of Data
Lea Land Facility Groundwater Monitoring Wells																		
MW-1	32.522613	-103.78581	Lea Land	Jun-96	3543.79	Pdl	3546.29	215.0	163.73		6/17/2014	3382.56	3361	3329	183	50	3493.79	LL Permit Doc, GW Monitoring Reports
MW-2	32.533437	-103.78285	Lea Land	Jun-96	3517.70	Pdl	3520.20	220.0	139.74		6/17/2014	3380.46	3330	3298	188	40	3477.70	LL Permit Doc, GW Monitoring Reports
MW-3	32.533989	-103.78099	Lea Land	Jun-96	3516.46	Pdl	3518.96	214.0	134.61		6/17/2014	3384.35	3335	3303	182	50	3466.46	LL Permit Doc, GW Monitoring Reports
MW-4	32.531736	-103.78001	Lea Land	Jun-96	3517.71	Pdl	3520.21	203.5	141.06		6/17/2014	3379.15	3347	3315	171.5	48	3469.71	LL Permit Doc, GW Monitoring Reports
MW-5	32.525402	-103.78000	Lea Land	Jun-97	3523.03	Pdl	3525.53	210.0	152.53		6/17/2014	3373.00	3346	3314	178	30	3493.03	LL Permit Doc, GW Monitoring Reports
Lea Land Facility Soil Borings																		
B-1	32.535111	-103.780339	Lea Land	11/8/1993	3515.5	Pdl	not cased	126		125		3390.50				60	3455.5	Lea Land Boring Logs-Permit Document
B-2	32.533001	-103.783891	Lea Land	11/8/1993	3516.6	dry	not cased	155		dry						45	3471.6	Lea Land Boring Logs-Permit Document
B-3	32.531446	-103.787568	Lea Land	11/8/1993	3519.2	dry	not cased	150.0		dry						45	3474.2	Lea Land Boring Logs-Permit Document
B-4	32.531098	-103.780226	Lea Land	11/8/1993	3517.3	dry	not cased	148.0		dry						45	3472.3	Lea Land Boring Logs-Permit Document
B-5	32.530447	-103.783806	Lea Land	11/8/1993	3519.5	Pdl	not cased	201.0		199		3320.50				45	3474.5	Lea Land Boring Logs-Permit Document
B-6	32.527602	-103.780036	Lea Land	11/8/1993	3520.9	dry	not cased	165.0		dry						30	3490.9	Lea Land Boring Logs-Permit Document
B-7	32.527902	-103.783752	Lea Land	11/8/1993	3524.4	dry	not cased	184		dry						35	3489.4	Lea Land Boring Logs-Permit Document
B-8	32.526431	-103.787421	Lea Land	11/8/1993	3536.4	dry	not cased	166		dry						95	3441.4	Lea Land Boring Logs-Permit Document
B-9	32.525223	-103.783718	Lea Land	11/8/1993	3530.1	dry	not cased	160		dry						75	3455.1	Lea Land Boring Logs-Permit Document
B-10	32.524025	-103.779907	Lea Land	11/8/1993	3548.2	dry	not cased	178		dry						50	3498.2	Lea Land Boring Logs-Permit Document
Controlled Recovery Inc. Monitoring Wells																		
P-1	32.540629	-103.745681	CRI	10/31/1989	3553	dry	3554.9	97.95	dry		3/7/2002					45	3508	Safety-Environmental Solutions 2003
P-2	32.544247	-103.745751	CRI	10/31/1989	3546	dry	3556.6	59.28	dry		3/7/2002					40	3506	Safety-Environmental Solutions 2003
P-3	32.545867	-103.750232	CRI	10/31/1989	3542	Qal	3543.4	46.8	31.98		3/7/2002	3511.4				40	3502	Safety-Environmental Solutions 2003
P-4	32.542550	-103.751759	CRI	10/31/1989	3550	Qal	3551.2	58.6	39.01		3/7/2002	3512.2				50	3500	Safety-Environmental Solutions 2003
P-5	32.545331	-103.756278	CRI	10/31/1989	3539	Qal	3541.0	48.57	18.85		3/7/2002	3522.2				50	3489	Safety-Environmental Solutions 2003
P-6	32.547877	-103.760023	CRI	10/31/1989	3529	Qal	3531.8	50.21	18.00		3/7/2002	3513.8				40	3489	Safety-Environmental Solutions 2003
P-7	32.542377	-103.759548	CRI	10/31/1989	3541	Qal	3543.7	42.04	17.74		3/7/2002	3526.0				35	3506	Safety-Environmental Solutions 2003
P-1A	32.551305	-103.762889	CRI	1/26/1990	3519	Qal	3522.9	31.26	11.86		3/7/2002	3511.0				30	3489	Safety-Environmental Solutions 2003
P-2A	32.558896	-103.75490	CRI	1/26/1990	3527	Qal	3529.3	47.41	37.14		3/7/2002	3492.2				45	3482	Safety-Environmental Solutions 2003
P-3A	32.545635	-103.76645	CRI	1/26/1990	3522	Qal	3526.1	55.45	12.94		3/7/2002	3513.2	3482	3467		50	3472	Safety-Environmental Solutions 2003
BLM 1978 Potash Environmental Study Wells																		
BLM 20.32.17.13	32.575143	-103.79470	BLM	11/8/1978	3460.5	Qplaya	3450.35	100	9.90		3/15/1979	3440.45	20	40	18	35	3425.5	Geohydrology 1979
BLM 20.32.22.33	32.553150	-103.76076	BLM	11/8/1978	3527	Tr undiff	3512.52	170	29.65		3/15/1979	3482.87	150	179	35	30	3497.0	Geohydrology 1979
BLM 20.32.31.13	32.531335	-103.81209	BLM	11/8/1978	3553	Pdl	3549.95	250	135.12		3/15/1979	3414.83	240	250	unknown	23	3530.0	Geohydrology 1979
BLM 21.31.3.22	32.520657	-103.75978	BLM	11/9/1978	3523	Pdl	3519.59	200	140.81		3/15/1979	3378.78	140	160	150	30	3493.0	Geohydrology 1979
NMBM GW-6																		
20.32.18.233	32.573908	-103.804859	Freeport	1954	3450	Tr		400		89.2	3/24/1954	3360.8	WBZ 215-243 ft					Nicholson-Clebsch, 1961
20.32.27.144	32.544000	-103.756733	Joel Frey		3545	Qal		25		12.3	6/11/1954	3532.7						Nicholson-Clebsch, 1961
20.32.30.142	32.546506	-103.806406			3530	Pdl				9.9	6/11/1954	3520.1						Nicholson-Clebsch, 1961
NMOSE Permitted Water Wells and Monitoring Wells																		
CP-00368	32.533577	-103.81851	Ballard-Bonfield	6/9/1966	3573		not cased	303		dry			not cased			9	3564	NMOSE WATERS DATABASE
CP-00370	32.535000	-103.82900	Ballard-Bonfield	7/14/1966	3549		not cased	120		80	7/14/1966		not cased			80	3469	NMOSE WATERS DATABASE
C-02953 EXPL	32.481000	-103.79000	DOE WIPP	4/7/2004	3500				630									NMOSE WATERS DATABASE
C-03233 EXPLORE	32.458000	-103.79300	DOE WIPP	6/19/2006	3349			566										NMOSE WATERS DATABASE
C-03151	32.491000	-103.71100	DOE WIPP	8/23/2005	3433			1352										NMOSE WATERS DATABASE
C-02727	32.440000	-103.79000	DOE WIPP	8/27/2000	3440	Pr		913										NMOSE WATERS DATABASE
Mineral Exploration Wells																		
USGS 20-F	32.54044	-103.758712	FM Coop.	3/6/1953	3532		not cased	1273								40	3492.0	Mineral Expl Hole



NOTES:

1.) GEOGRAPHIC COORDINATES FOR THE CENTER OF THE SITE:
32° 31' 46.77 N, -103° 47' 18.25 W

NOT FOR CONSTRUCTION

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\LOCAL POTENTIOMETRIC SURFACE.dwg
SIZE: ANSI-B Date/Time:Mar. 25, 2019-12:23:17 ; LAYOUT: B (LS)

LOCAL POTENTIOMETRIC SURFACE

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

GORDON ENVIRONMENTAL PSC
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD:LOCAL POTENT.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.5
APPROVED BY: CWF	www.team-psc.com	

TABLE II.9.2 - Water Quality Data Summary

Volatile Organic Compounds

Lab Method		EPA Method 8260B - (all units in micrograms per liter)																												
		Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethene	Methylene chloride	trans-1,2-Dichloroethene	1,1-Dichloroethane	cis-1,2-Dichloroethene	Chloroform	Carbon tetrachloride	1,1,1-Trichloroethane	Benzene	1,2-Dichloroethane	Trichloroethene	1,2-Dichloropropane	Bromodichloromethane	cis-1,3-Dichloropropene	Tetrachloroethene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane	Dibromochloromethane	Chlorobenzene	Bromoform	1,1,2,2-Tetrachloroethane	1,4 Dichlorobenzene	1,2-Dichlorobenzene
NMWQCC Standard		100	1.0	--	--	--	25	5	100	--	5	100	--	100	5	5	5	5	--	--	5	--	5	--	100	--	10	75	600
Lea Land Monitoring Wells Completed in Dewey Lake Redbeds																														
Well Location	**Sample Date**																													
Lea Land MW-2	**6/13/18**	<0.2	<0.1	<0.3	<0.2	<0.1	<0.2	<0.09	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1	<0.08	<0.03	<0.08	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1
Lea Land MW-4	**6/13/18**	<0.2	<0.1	<0.3	<0.2	<0.1	<0.2	<0.09	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1	<0.08	<0.03	<0.08	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1
Lea Land MW-5	**6/13/18**	<0.2	<0.1	<0.3	<0.2	<0.1	<0.2	<0.09	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1	<0.08	<0.03	<0.08	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1

Inorganic Compounds

Lab Method		All units are milligrams per liter (mg/L) except conductivity (micromhos/cm3) and pH (standard units).																												
		300.0					350.1	160.1	200.7						310.1			5310C	120.1	150.1	6010B								1	1	1
		Chloride	Nitrate as N	Nitrate+Nitrite as N by IC	Nitrite as N	Sulfate	Ammonia	Total Dissolved Solids	Calcium	Iron	Magnesium	Manganese	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity Total	Total Organic Carbon	Conductivity mS/cm	pH	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Boron	Chromium, total	Chromium +6
NMWQCC Standard		250	10.0	--	10.0	600	--	1,000	--	1.0	--	0.2	--	--	--	--	--	--	--	6-9	0.01	1.0	0.01	0.05	0.05	0.0020	0.05	0.05		0.05	
Lea Land Monitoring Wells Completed in Dewey Lake Redbeds																														
Well Location	**Sample Date**																													
Lea Land MW-2	**6/13/18**	79.8	3.36	3.36	<0.02	462	0.09	818	50.6	<0.05	40.1	<0.02	5.33	224	205	<1.0	168	1.36	1510	7.72											
	3/19/10																				<0.005	0.033	<0.00209	0.0030	<0.005	<0.0002	0.069	<0.005			
Lea Land MW-3	**3/19/10**																				<0.005	0.017	<0.00209	<0.005	<0.005	<0.0002	0.075	<0.005			
Lea Land MW-4	**6/13/18**	62.5	3.32	3.32	<0.02	361	0.05	778	48.4	<0.05	43.2	<0.02	4.92	170	190	<1.0	156	<0.05	1280	7.74											
	3/19/10																				<0.005	0.025	<0.00209	0.004	<0.005	<0.0002	0.087	<0.005			
Lea Land MW-5	**6/13/18**	54.0	3.15	3.15	<0.02	412	0.07	886	58.6	<0.05	42.0	<0.02	4.14	176	224	<1.0	184	0.501	886	7.70											
	3/19/10																				<0.005	0.023	<0.00209	<0.005	<0.005	<0.0002	0.068	<0.005			
BLM 1979 Potash Area Groundwater Monitoring Wells Completed in Dewey Lake Redbeds																														
[1]BLM 20.32.22.33	**Jan 1979**	75.0				550		3136	105																			0.3	<0.02	<0.02
[1]BLM 21.31.3.22	**Jan 1979**	18.0				20.0		424.0	19.9																			<0.05	<0.02	<0.02

Notes:

All units are milligrams per liter (mg/L) except conductivity (micromhos/cm^3) and pH (standard units).

[1] Methods undetermined

to 886 milligrams per liter (mg/L). The water was found to contain no Volatile Organic Compounds (VOCs) and meets New Mexico Water Quality Control Commission (NMWQCC) standards for tested inorganic compounds, and slightly exceeds the NMWQCC standard for selenium of 0.05 mg/L, ranging in selenium concentration from 0.069 mg/L to 0.09 mg/l.

2.2 Dewey Lake Redbed Shale Aquiclude

The vicinity of the Lea Land SWMF is underlain by thick and laterally extensive deposits of shale in the Permian age Dewey Lake Redbeds. Saturated zones within the Dewey Lake Redbeds range from 123 ft and 148 ft below the top of the redbeds; and from 173 ft to 198 ft bgs at the Lea Land SWMF.

A summary of geotechnical testing data obtained from samples of soil media at the Lea Land SWMF and in the vicinity is presented in **Table II.9.3**. Media tests included extensive geotechnical laboratory tests of soil samples taken from soil borings and surficial samples, and in-situ hydraulic tests of saturated zones penetrated by groundwater monitoring wells at the Lea Land SWMF and other nearby wells.

Estimates of hydraulic conductance of the samples from the Santa Rosa Sandstone made from sample texture ranged from 10^{-3} centimeters per second (cm/s) to 10^{-8} cm/s. Texture-based estimates of hydraulic conductance of boring samples taken from the Dewey Lake Redbeds yielded a similar range of conductance. Hydraulic conductance of the saturated zones in the Dewey Lake Redbeds was measured during well tests. Well MW-4 was slug-tested in 1997 (Intera), yielding a hydraulic conductivity value of 4.19×10^{-9} cm/s and a storativity value of 3.71×10^{-9} (dimensionless), indicating very low conductance and confined, or artesian conditions. Tests of other vicinity wells completed in the Dewey Lake Redbeds were conducted by BLM (Geohydrology, 1979); these tests yielded hydraulic conductance values ranging from 1.33×10^{-6} cm/s to 3.15×10^{-7} cm/s. Well tests yield results that are indicative of **horizontal** hydraulic conductance, which is multiple orders of magnitude greater than **vertical** hydraulic conductance in highly stratified geologic units such as the Dewey Lake Redbeds. Therefore, we conclude that these test results are conservative and that the Dewey Lake Redbeds present high impedance to vertical fluid flow at the Lea Land SWMF.

TABLE II.9.3 - Soil Laboratory Analysis Summary

(Page 1 of 3)

Boring, Well or Source	Depth Top Sample (Top Tested Interval)	Depth Bottom Sample (Bottom Tested Interval)	Work Completed By	Date	USCS	Sieve - % Passing		Atterberg Limits		Carbonate %	[1]Permeability Range Based on Texture (cm/sec)	Ksat, (cm/sec) [Constant Head]	Ksat, (cm/sec) [Falling Head]
						No. 40	No. 200	Liquid Limit	Plasticity Index				
Tests of Borehole Media from Santa Rosa Sandstone and Alluvial Veneers													
B-1	5	6	STEC	11/8/1993	SM	71.6%	32.4%	NP	NP	100	10-3 to 10-6		
B-1	35	36	STEC	11/8/1993	SM	67.8%	23.4%	NP	NP	100	10-3 to 10-6		
B-1	45	46	STEC	11/8/1993	SM	82.2%	38.6%	NP	NP	24	10-3 to 10-6		
B-2	10	11	STEC	11/8/1993	SM	90.9%	30.4%	NP	NP	17	10-3 to 10-6		
B-2	25	26	STEC	11/8/1993	SM	82.2%	38.5%	NP	NP	24	10-3 to 10-6		
B-3	15	16	STEC	11/8/1993	SM	93.6%	30.5%	28	NP	8	10-3 to 10-6		
B-4	40	41	STEC	11/8/1993	SM	90.2%	38.0%	NP	NP	18	10-3 to 10-6		
B-5	35	36	STEC	11/8/1993	SM	89.9%	35.1%	NP	NP	18	10-3 to 10-6		
B-7	25	26	STEC	11/8/1993	SM	59.0%	19.1%	NP	NP	77	10-3 to 10-6		
B-8	0	1	STEC	11/8/1993	CL	85.4%	54.4%	NP	NP	4	10-6 to 10-8		
B-8	5	6	STEC	11/8/1993	SM	69.7%	33.4%	29	NP	77	10-3 to 10-6		
B-8	15	16	STEC	11/8/1993	SM	59.0%	19.1%	NP	NP	77	10-3 to 10-6		
B-8	85	86	STEC	11/8/1993	SM	95.4%	30.5%	NP	NP	18	10-3 to 10-6		
B-9	0	1	STEC	11/8/1993	ML	97.8%	53.9%	24	NP	5	10-3 to 10-6		
B-9	30	31	STEC	11/8/1993	SM	71.6%	32.4%	NP	NP	100	10-3 to 10-6		
B-9	35	36	STEC	11/8/1993	SM	93.6%	30.5%	28	NP	8	10-3 to 10-6		
B-9	50	51	STEC	11/8/1993	SM	95.4%	30.5%	NP	NP	18	10-3 to 10-6		
B-10	10	11	STEC	11/8/1993	SM	69.7%	33.4%	29	NP	77	10-3 to 10-6		
B-10	15	16	STEC	11/8/1993	SM	83.3%	37.8%	NP	NP	40	10-3 to 10-6		
Tests of Borrow Material Samples (Santa Rosa Sandstone and Alluvial Materials)													
Onsite Stockpile Soil 1			DBSA	7/19/2016								3.40E-04	N/A
Onsite Stockpile Soil 2			DBSA	7/19/2016								1.40E-04	N/A

Note:

[1] Permeability range estimates from Engineering document FM-5-47/NAVFAC MO 330/AFJMAN 32-1221(1)

TABLE II.9.3 - Soil Laboratory Analysis Summary

(Page 2 of 3)

Boring, Well or Source	Depth Top Sample (Top Tested Interval)	Depth Bottom Sample (Bottom Tested Interval)	Work Completed By	Date	USCS	Sieve - % Passing		Atterberg Limits		Carbonate %	[1]Permeability Range Based on Texture (cm/sec)	Ksat (cm/sec) (Horizotal)	Coefficient of Storage (dimensoinless)	Comments
						No. 40	No. 200	Liquid Limit	Plasticity Index					
rehole Media from Dewey Lake Redbeds														
B-1	75	76	STEC	11/8/1993	CL	85.4%	54.4%	25	8	4	10-6 to 10-8			
B-1	90	91	STEC	11/8/1993	SC	78.9%	49.2%	31	14	19	10-6 to 10-8			
B-2	65	66	STEC	11/8/1993	CL	85.4%	54.4%	25	8	4	10-6 to 10-8			
B-4	50	51	STEC	11/8/1993	SM	92.3%	40.9%	NP	NP	16	10-3 to 10-6			
B-4	140	141	STEC	11/8/1993	SC	78.9%	49.2%	31	14	19	10-6 to 10-8			
B-6	30	31	STEC	11/8/1993	CL	96.5%	73.8%	27	11	27	10-6 to 10-8			
B-6	40	41	STEC	11/8/1993	SM	83.3%	37.8%	NP	NP	40	10-3 to 10-6			
B-6	55	56	STEC	11/8/1993	SM	90.0%	30.4%	NP	NP	17	10-3 to 10-6			
B-6	110	111	STEC	11/8/1993	SM	90.2%	38.0%	NP	NP	18	10-3 to 10-6			
B-8	105	106	STEC	11/8/1993	ML	97.8%	53.9%	24	NP	5	10-3 to 10-6			
B-8	120	121	STEC	11/8/1993	ML	97.8%	53.9%	24	NP	5	10-3 to 10-6			
B-9	65	66	STEC	11/8/1993	SM	85.9%	28.6%	NP	NP	24	10-3 to 10-6			
B-10	60	61	STEC	11/8/1993	SM	92.3%	40.9%	NP	NP	18	10-3 to 10-6			
B-10	70	71	STEC	11/8/1993	CL	96.5%	73.8%	27	11	27	10-6 to 10-8			
Vells Completed in the Dewey Lake Redbeds														
Lea Land MW-4	170	203	Intera	2/27/1997								4.17E-09	3.71E-09	Slug test
BLM 20.32.22.33	150	179	Geohydrology	11/8/1978								3.15E-07		Pump Test
BLM 21.31.3.22	140	160	Geohydrology	11/8/1978								1.33E-06		Pump Test

Note:

[1] Permeability range estimates from Engineering document FM-5-47/NAVFAC MO 330/AFJMAN 32-1221(1)

TABLE II.9.3 - Soil Laboratory Analysis Summary
(Page 3 of 3)

Boring, Well or Source	Work Completed By	Date	USCS	Sieve - % Passing	Max Density (pcf)	Optimum Moisture (%)	Atterberg Limits			ASTM D-2922		Ksat, (cm/sec) [Constant Head]	Ksat, (cm/sec) [Falling Head]	Ksat, (cm/sec) (Corrected) [Constant Head]	Ksat, (cm/sec) (Corrected) [Falling Head]	Cu	Cc	Calculated Porosity (%)
				No. 200			Liquid Limit	Plastic Limit	Plasticity Index	Dry Density % Maximum	Moisture Content %							
unicipal Cell Closure (Santa Rosa Sandstone and Alluvial Materials)																		
Sample 1.0	DBS&A	8/7/20014	SC	45.8%	116.12	13.9	28	18	10	80.5%	13.5%	4.4E-03		4.1E-03		326	0.84	44.8
Sample 1.1	DBS&A	8/7/20014	SC		116.12	13.9				95.2%	17.4%		5.7E-07		5.3E-07			34.7
Sample 2.0	DBS&A	8/7/20014	SC	42.8%	117.99	12.7	28	17	11	80.4%	12.3%	4.1E-03		3.8E-03		205	0.48	44.3
Sample 2.0	DBS&A	8/7/20014	SC		117.99	12.7				95.3%	15.7%		3.0E-06		2.7E-06			33.9
Sample 3.0	DBS&A	8/7/20014	SC	44.4%	114.87	14.0	27	17	10	80.1%	13.7%	6.6E-03		6.1E-03		183	0.43	45.8
Sample 3.1	DBS&A	8/7/20014	SC		114.87	14.0				94.8%	17.4%		3.9E-06		3.5E-06			35.9
Sample 4.0	DBS&A	8/7/20014	SC	43.4%	114.87	14.0	28	17	11	80.3%	13.5%	4.9E-03		4.6E-03		211	0.39	45.5
Sample 4.1	DBS&A	8/7/20014	SC		114.87	14.0				95.1%	17.0%		1.0E-06		9.4E-07			35.5
Sample 5.0	DBS&A	8/7/20014	SC	48.4%	114.87	13.6	30	18	12	80.0%	13.0%	4.4E-03		4.1E-03		176	0.21	45.2
Sample 5.1	DBS&A	8/7/20014	SC		114.87	13.6				95.2%	16.3%		1.1E-06		1.0E-06			34.8
Sample 6.0	DBS&A	8/7/20014	SC	45.2%	115.49	13.6	29	19	10	80.0%	13.4%	5.2E-03		4.7E-03		195	0.23	45.6
Sample 6.1	DBS&A	8/7/20014	SC		115.49	13.6				94.9%	16.8%		8.2E-07		7.5E-07			35.4
Sample 7.0	DBS&A	8/7/20014	SC	43.7%	114.24	13.4	27	16	11	79.9%	12.9%	6.0E-03		5.6E-03		190	0.32	45.8
Sample 7.1	DBS&A	8/7/20014	SC		114.24	13.4				95.1%	16.4%		5.6E-06		5.3E-06			35.4
Sample 8.0	DBS&A	8/7/20014	SC	47.0%	115.49	14.4	30	18	12	80.1%	13.8%	5.3E-03		5.0E-03		184	0.13	45.2
Sample 8.1	DBS&A	8/7/20014	SC		115.49	14.4				95.3%	17.1%		4.4E-07		6.4E-07			34.8
Sample 9.0	DBS&A	8/7/20014	SC	44.8%	115.49	14.1	28	18	10	80.0%	13.8%	7.8E-03		7.4E-03		170	0.40	45.2
Sample 9.1	DBS&A	8/7/20014	SC		115.49	14.1				95.2%	16.8%		1.4E-06		1.3E-06			34.9
Sample 10.0	DBS&A	8/7/20014	SC	44.5%	114.24	14.3	29	17	12	80.1%	13.8%	7.5E-03		7.0E-03		214	0.52	45.9
Sample 10.1	DBS&A	8/7/20014	SC		114.24	14.3				94.9%	17.2%		1.3E-06		1.2E-06			35.8

Note:
[1] Permeability range estimates from Engineering document FM-5-47/NAVFAC MO 330/AFJMAN 32-1221(1)

Elevations of the upper surface of the Dewey Lake Redbeds determined from site borings and monitoring wells at the Lea Land SWMF and a BLM monitoring well to the west of the Facility are presented in **Figure II.9.6**. The excavation envelope for the proposed Lea Land Facility is also shown, indicating that the excavation for disposal cells at the Lea Land SWMF will approach within a few feet of the Dewey Lake Redbeds. Geometries of land surface, the Dewey Lake Redbed surface and the projected facility excavation are depicted on the "shallow" local hydrogeologic cross-section B-B' in **Figure II.9.7**.

3.0 PROPOSED VADOSE ZONE MONITORING PROGRAM

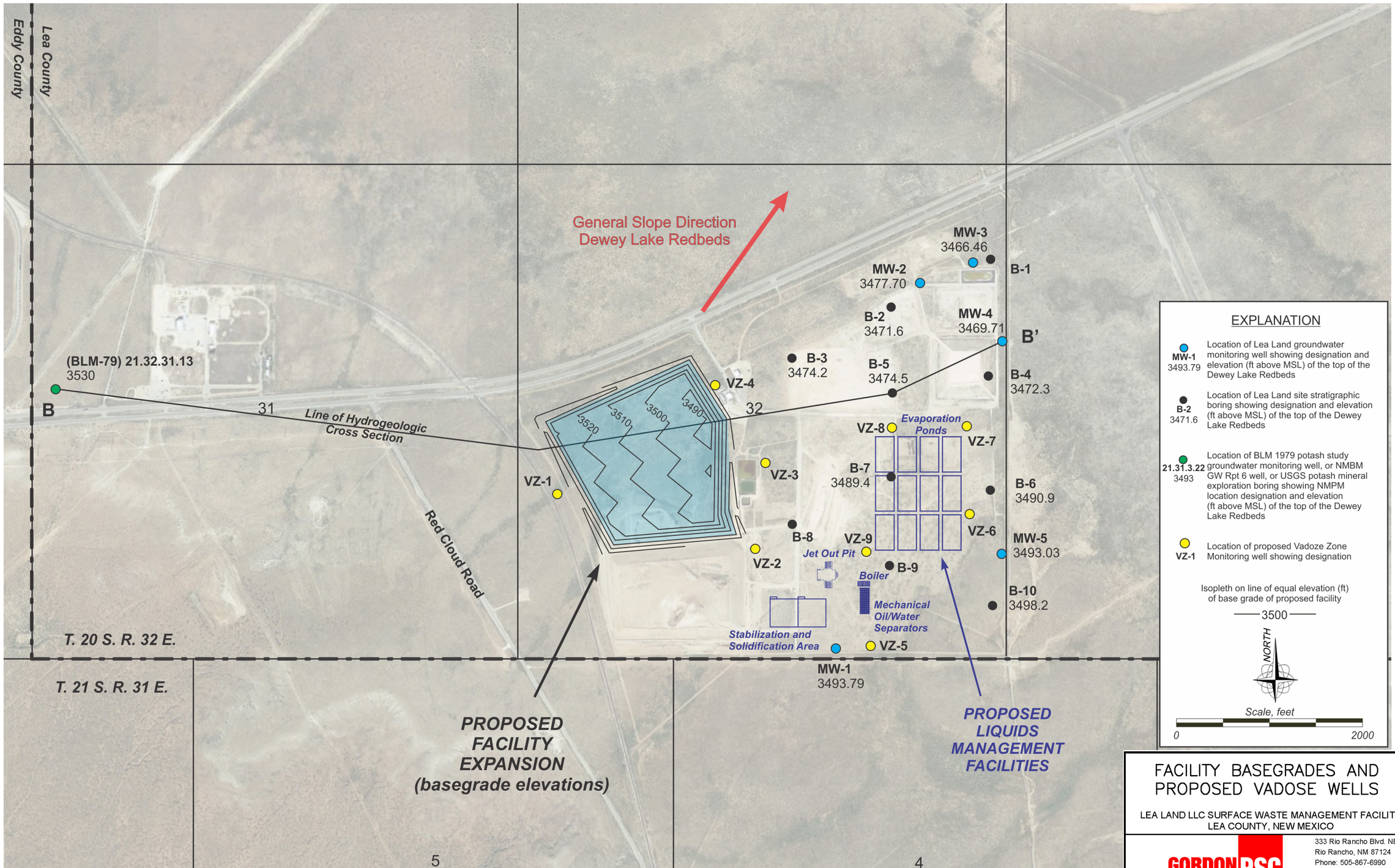
Due to the anticipated significant depth to the limited shallowest saturated zones in the Dewey Lake Redbeds, as well as high impedance to vertical water flow posed by the redbeds at the Lea Land SWMF, vadose zone monitoring is proposed as the most appropriate early detection technology for the site. The proposed vadose zone monitoring network wells would be positioned along the western and eastern boundary of the disposal cells immediately upslope and downslope on the upper Dewey Lake Redbed surface and screened across the Santa Rosa Sandstone and Dewey Lake Redbed interface, where leachate from a potential leak from the facility would be detected before approaching the saturated zones in the Dewey Lake Redbeds, more than 125 ft below.

3.1 Proposed Monitoring Well Locations

Locations of the proposed vadose zone monitoring wells for the facility are shown on the map in **Figure II.9.6.** Four wells are proposed along the western and eastern boundaries of the facility disposal cells. Based upon projection of the Dewey Lake Redbed structure, there is a high confidence level that proposed vadose zone monitoring wells will be positioned directly upgradient and downgradient from the proposed waste disposal cells.

3.2 Proposed Well Drilling and Completion

Proposed vadose zone monitoring wells would be installed using hollow-stem auger drilling methods; such that no fluids would be introduced into the borings during drilling. Drilling equipment would be equipped to switch to air rotary, should auger refusal be reached before adequate depth is reached for each vadose zone well. Undisturbed, depth-referenced samples will be collected on five-foot intervals using split spoon sampling equipment. Drive blow counts will be noted during



FACILITY BASEGRADES AND PROPOSED VADOSE WELLS

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

GORDON ENVIRONMENTAL PSC
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

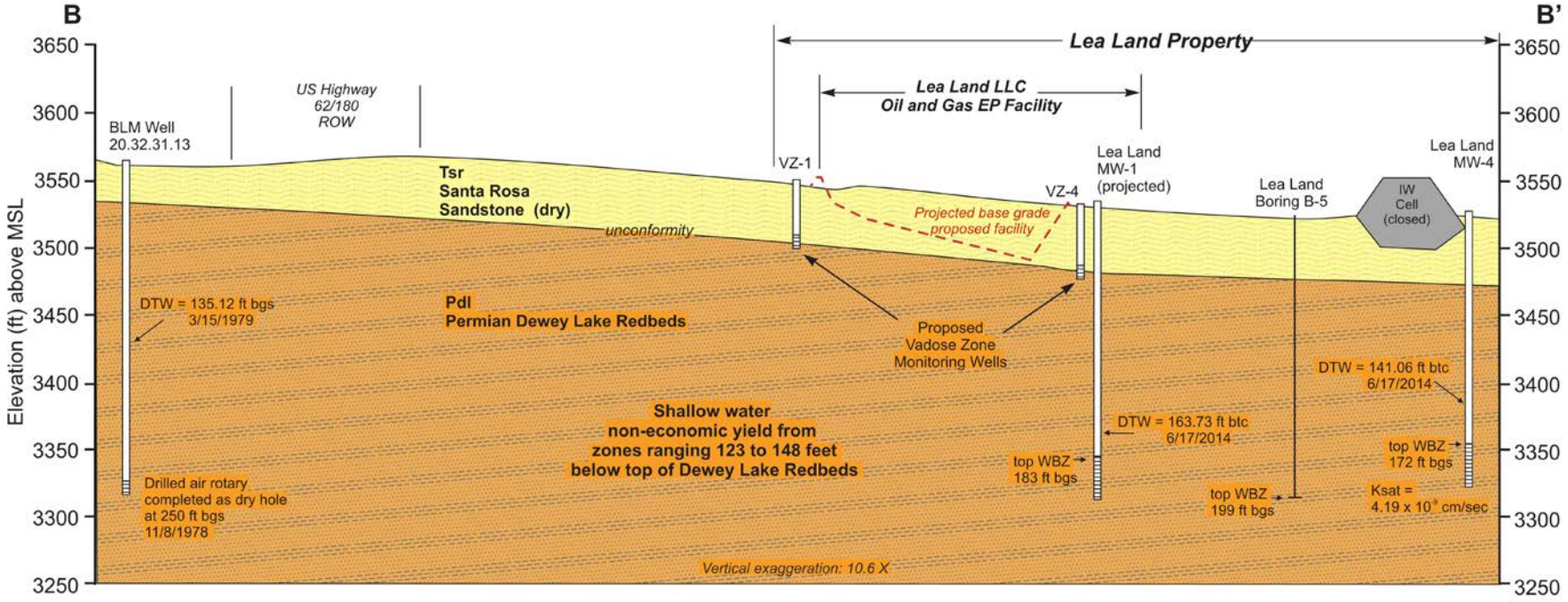
DATE: 03/20/2019	CAD:PROPOSED VADOSE.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.6
APPROVED BY: CWF	www.team-psc.com	

NOTES:

1.) GEOGRAPHIC COORDINATES FOR THE CENTER OF THE SITE:
32° 31' 46.77 N, -103° 47' 18.25 W

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\DLRB BASE GRADES.dwg
Date/Time:Apr. 01, 2019-06:57:58 ; LAYOUT: B (LS)

SHALLOW LOCAL HYDROGEOLOGIC CROSS SECTION LEA LAND LLC FACILITY



EXPLANATION

- Qun — Quaternary alluvium and lacustrine deposits, undifferentiated
- Tsr — Triassic Santa Rosa Sandstone
- Pdl — Permian Dewey Lake Redbeds

Notes: btc: below top of casing
bgs: below ground surface

SHALLOW LOCAL HYDROGEOLOGIC CROSS–SECTION B–B'

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

GORDON PSC ENVIRONMENTAL
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD: HYDRO GEO X-SEC.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.7
APPROVED BY: CWF	www.team-psc.com	

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\LOCAL HYDROGEOLOGIC CROSS-SECTION B B'.dwg
Date/Time:Mar. 29, 2019-09:09:24 ; LAYOUT: A (LS)

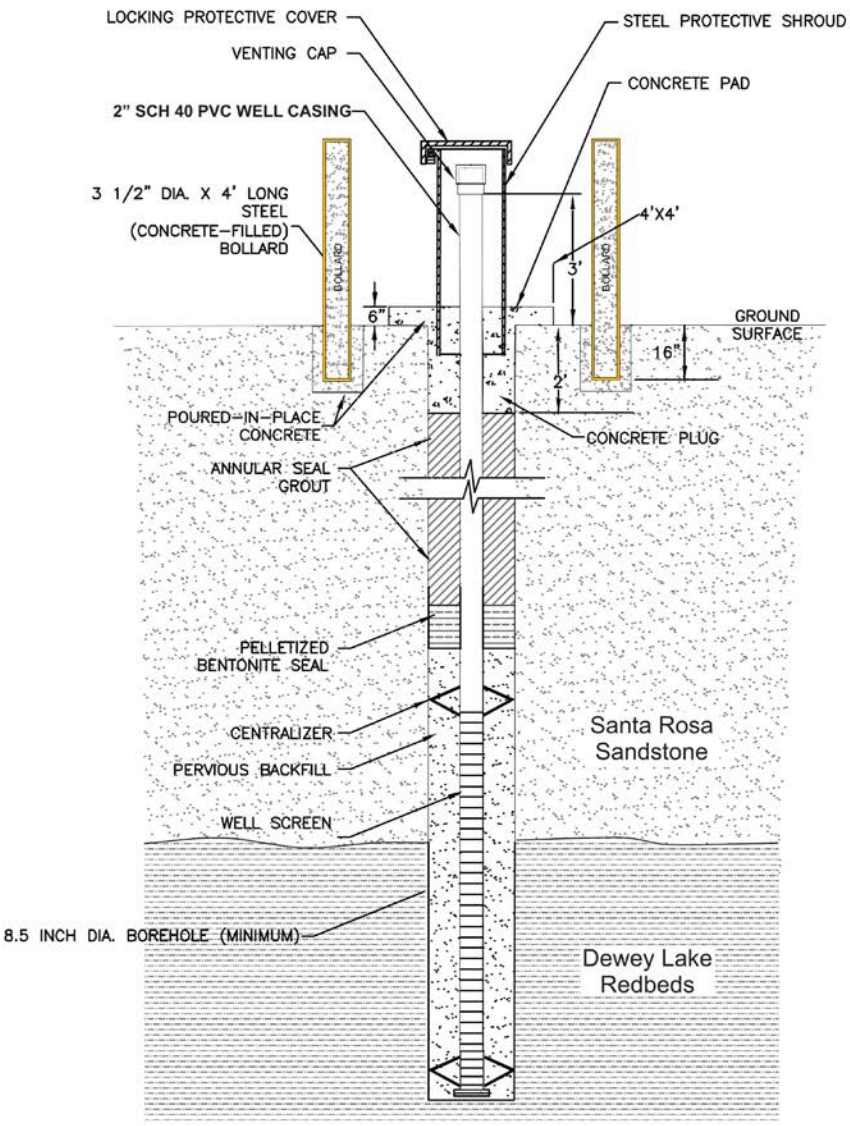
each sampling event and logged to allow precise determination of the upper redbed surface in each boring. A qualified hydrogeologist will be present on location during drilling, and will prepare detailed descriptions of the lithology, texture, sorting, rounding, color, plasticity, degree of lithification, moisture content, etc. for each sample and stratigraphic unit that is penetrated.

Each boring will be advanced into indurated Dewey Lake Redbeds to an adequate depth to reach an elevation of 3485 ft above MSL, or to a depth of five feet lower than the deepest penetration of the adjacent waste cell basegrades. Although split spoon sampling offers ample opportunity to identify saturated sediments with a high degree of confidence, each boring will be further evaluated for the presence of free water. Upon reaching total depth, the rig will be placed on standby for at least two hours, during which time soundings will be made inside the augers to check for accumulating fluid in the augers.

Vadose zone monitoring wells will be completed in accordance with specifications set forth on the well design sheet provided as **Figure II.9.8**. Each well will be completed using 2-inch schedule 40 flush joint casing, and completed with a 10-foot length of 0.010-inch slotted well screen, positioned with the lowermost end extending below the upper redbed surface to a depth adequate to reach an elevation of 3485 ft above MSL; or to a depth of five feet lower than the deepest penetration of waste cell basegrades. Well screens would span the vertical distance from approximately five feet above the Dewey Lake Redbeds and Santa Rosa Sandstone interface to total well depth. Each well annulus will be backfilled with a 10/20 grade silica sand pack extending two feet above the screen, with an annular seal consisting of bentonite grout or equivalent extending to land surface. Each well would be equipped with a radially sloped concrete surface pad with locking steel shroud extending approximately 3 ft above grade (**Figure II.9.8**).

3.3 Proposed Monitoring Program

The proposed vadose zone monitoring program would include monthly inspection of each well for the presence of fluid as with leak detection sumps in accordance with provisions set forth in 19.15.36.13.L.(1). Results of fluid detection measurements would be submitted with related leachate monitoring results in normal facility operations reporting to the OCD. If fluids are noted in any of the monitoring wells, fluid will be sampled and tested in accordance with 19.15.30.9.and



TYPICAL VADOSE ZONE MONITORING WELL

NOT TO SCALE

LEGEND

CASING: 2" DIA. SCH 40 PVC

SCREEN: 2" DIA. 0.10" MACHINE SLOT SCH 40 PVC

PEVIOUS ANNULAR FILL: 10-20 COLORADO SILICA SAND OR EQUIVALENT

ANNULAR SEAL: NEAT CEMENT WITH 2% BENTONITE OR EQUIVALENT

NOTE:

SPECIFIC VERTICAL DIMENSIONS FOR EACH NEW WELL WILL BE INCLUDED IN NMOSE AND NMOCD PERMITTING AND AS-BUILT SUBMITTALS

PROPOSED VADOSE ZONE MONITORING WELL COMPLETION

LEA LAND LLC SURFACE WASTE MANAGEMENT FACILITY
LEA COUNTY, NEW MEXICO

GORDON ENVIRONMENTAL PSC
333 Rio Rancho Blvd. NE
Rio Rancho, NM 87124
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 01/08/2019	CAD: PHYSIOGRAPHY.dwg	PROJECT #: 0416.18
DRAWN BY: DMI	REVIEWED BY: CRK	FIGURE II.9.8
APPROVED BY: CWF	www.team-psc.com	

Drawing:X:\2018\0416.18\02_DSGN\02_DWG\050_CIVIL\02_CONTENT\PERMIT FIGURES\PROPOSED VADOSE WELL COMPLETION.dwg
Date/Time:Mar. 29, 2019-09:17:16 ; LAYOUT: Layout A (P)

20.6.2.7 NMAC; and a reporting of findings will be transmitted to the division in accordance with requirements for groundwater monitoring and reporting set forth in 19.15.14.B.

4.0 CONCLUSIONS

Regional, vicinity and site characterization boring and testing data indicates that the shallowest saturated zones beneath the Lea Land SWMF are within hydraulically tight shale of the Dewey Lake Redbeds, at a depth of approximately 175 ft below land surface. Water within these beds is under confined conditions. Small non-sustainable quantities of water are present in groundwater monitoring wells at the Facility. These occurrences of groundwater are not regarded to be protectable as resources as defined by the Oil and Gas Rules:

19.15.2.7G(10) NMAC
"Ground water" means interstitial water that occurs in saturated earth material and can enter a well in sufficient amounts to be used as a water supply.

Due to the depth of the saturated zones within the Dewey Lake Redbeds and the fact that they are generally under confined conditions, a potential release from the Lea Land SWMF would not be expected to migrate readily into these confined groundwater zones through the 124-148 ft of overlying Dewey Lake redbed deposits. Therefore, groundwater monitoring wells completed in the shallow saturated zones in the Dewey Lake Redbeds at the Lea Land SWMF would not be expected to provide a high level of environmental protection as sentinel wells.

Based upon shallow stratigraphy at the site, as well as the geometry of the proposed waste disposal cells, it is concluded that vadose zone monitoring wells completed to communicate with more permeable basal Santa Rosa Sandstone sediments at the contact with underlying dense shale in the Dewey Lake Redbeds would provide the most effective early leak detection system and the greatest level of environmental protection for the site. These wells would be placed strategically at the downgradient east side of the Facility to optimize detection of potentially contaminated fluids.

This site has the advantage that the local subsurface conditions have been significantly characterized during subsurface investigations conducted at the Facility, as well as the CRI site and the 1979 BLM potash study monitoring well installation and testing. No additional reconnaissance drilling is recommended to augment the hydrogeologic or geotechnical database; however emergent subsurface data that is obtained during installations of proposed vadose zone monitoring

wells will be used to update subsurface mapping and adjust well locations as appropriate. Detailed logs will be prepared for the four proposed vadose zone monitoring wells (see **Volume II.9**, Vadose Zone Monitoring Plan) and will be provided to OCD. OCD will be notified of the proposed well installation program in advance and invited to observe.

5.0 REFERENCES

Geohydrology Associates, Inc., 1978, Collection of hydrologic data, eastside Roswell Range EIS area: Open-File Consultant Report to Bureau of Land Management, Denver, Colorado, Contract No. YA-512-CT-7-217, Table 4.

Geohydrology Associates, Inc., 1979, Water-resources study of the Carlsbad Potash Area, New Mexico: Open-File Consultant Report to Bureau of Land Management, Denver, Colorado, Contract No. YA-215-CT8-195

Hawley, J.W., 1993, The Ogallala and Gatuna Formations in the Southeastern New Mexico Region, A Progress Report, in Carlsbad Region, New Mexico And West Texas, New Mexico Geological Society 44th Annual Field Conference Guidebook, October 6-9, 1993, p.261-269.

Intera, 1997, Hydrologic testing on Well MW-4: Consultant report prepared for Lea Land, Inc., Carlsbad, New Mexico

New Mexico Oil Conservation Division, 2015, Electronic data and well log files for oil and gas wells in the vicinity of the Lea Land SWMF, http://www.emnrd.state.nm.us/OCD/ocdonline.html

Nicholson, A., and Clebsch, A., 1961, Geology and ground-water conditions in southern Lea County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Groundwater Report 6.

Office of the New Mexico State Engineer, 2013, Electronic image well log files for Lea County, http://www.ose.state.nm.us/water_info_rights_dist2_LeaCountyWellLogs.html

Stipp, T.F., 1954, Editorial Comments, United States Geological Survey Open-File Report Texas Bureau of Economic Geology, 1976, Geologic Atlas of Texas, Hobbs Sheet, University of Texas at Austin, C.G. Groat, Acting Director.

ATTACHMENT D
Vadose Zone Well Permits
New Mexico Office of the State Engineer

John R. D Antonio, Jr., P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 697046
File Nbr: CP 01872 POD1

Jun. 08, 2021

CLAY KILMER
CLAY KILMER LLC
3312 JUNE STREET NE
ALBUQUERQUE, NM 87111

Greetings:

Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

* If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.

* If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.

* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.

* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us.

Sincerely,

JUAN HERNANDEZ
(575)622-6521

Enclosure

explore

File No. CP-1872 POD1

NEW MEXICO OFFICE OF THE STATE ENGINEER

WR-07 APPLICATION FOR PERMIT TO DRILL A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And/Or Recovery	☐ Ground Source Heat Pump
☐ Exploratory Well (Pump test)	☐ Construction Site/Public Works Dewatering	☐ Other(Describe):
☒ Monitoring Well	☐ Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☐ Temporary Request - Requested Start Date: 05/15/2021 Requested End Date: 05/15/2041

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

1. APPLICANT(S)

Name: Lea Land LLC	Name: Clay Kilmer
Contact or Agent: Stephanie Grantham — check here if Agent ☐	Contact or Agent: — check here if Agent ☒
Mailing Address: 1300 West Main Street	Mailing Address: 3312 June Street NE
City: Oklahoma City	City: Albuquerque
State: OK Zip Code: 73106	State: NM Zip Code: 87111
Phone: 405-236-4257 ☐ Home ☐ Cell Phone (Work):	Phone: 505-235-4482 ☐ Home ☒ Cell Phone (Work):
E-mail (optional):	E-mail (optional): claykilmer@gmail.com

FOR OSE INTERNAL USE — Application for Permit, Form WR-07, Rev 11/17/16

File No.: CP-1872	Trn. No.: 697046	Receipt No.:
Trans Description (optional): POD 1		
Sub-Basin: CP	PCW/LOG Due Date: 6-8-22	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

■ UTM (NAD83) (Meters)
☐ Zone 12N
■ Zone 13N

☐ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range)* OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
LLC-VZ-2 CP-1872 POD1	613764.08	3599329.05	T.20S.R.32E.S.32 NESESW

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☐ Yes ■ No **If yes, how many**_____

Other description relating well to common landmarks, streets, or other:
Monitor wells at the Lea Land LLC Oil and Gas Waste Management Facility, 28 miles east of Carlsbad NM

Well is on land owned by: Lea Land LLC

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? ☐ Yes ■ No
If yes, how many_____

Approximate depth of well (feet): 55 ft	Outside diameter of well casing (inches): 2
Driller Name: Talon LPE	Driller License Number: 1800

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Proposed monitoring well will be completed as Vadose Zone monitoring wells at the alluvium and bedrock contact. Depth will not exceed 100 feet.

FOR OSE INTERNAL USE — Application for Permit, Form WR-07

File No.: CP-1872	Trn No.: 697046

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: ☐ Include a description of any proposed pump test, if applicable.	**Pollution Control and/or Recovery:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	**Construction De-Watering:** ☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	**Mine De-Watering:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ■ Include the reason for the monitoring well, and, ■ The duration of the planned monitoring.	☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	**Ground Source Heat Pump:** ☐ Include a description of the geothermal heat exchange project, ☐ The number of boreholes for the completed project and required depths. ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Clay Kilmer (agent for Lea Land LLC)
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Clay Kilmer
Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 8th day of June 20 21, for the State Engineer,

John R. D'Antonio, Jr., P.E., State Engineer

By: _____
Signature Print

Title: Juan Hernandez, Water Resource Manager I
Print

FOR OSE INTERNAL USE Application for Permit, Form WR-07

File No.: CP-1872	Trn No.: 697046

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL

17-1A Depth of the well shall not exceed the thickness of the valley fill.

17-4 No water shall be appropriated and beneficially used under this permit.

17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.

17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

Trn Desc: CP 01872 POD1

File Number: CP 01872
Trn Number: 697046

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.

17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.

17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.

17-Q The State Engineer retains jurisdiction over this permit.

17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

LOG The Point of Diversion CP 01872 POD1 must be completed and the Well Log filed on or before 06/08/2022.

IT IS THE PERMITTEES RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

SHOULD THE PERMITTEE CHANGE THE PURPOSE OF USE TO OTHER THAN MONITORING PURPOSES, AN APPLICATION SHALL BE ACQUIRED FROM THE OFFICE OF THE STATE ENGINEER.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

ACTION OF STATE ENGINEER

Notice of Intention Rcvd: Date Rcvd. Corrected:
Formal Application Rcvd: 06/01/2021 Pub. of Notice Ordered:
Date Returned - Correction: Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

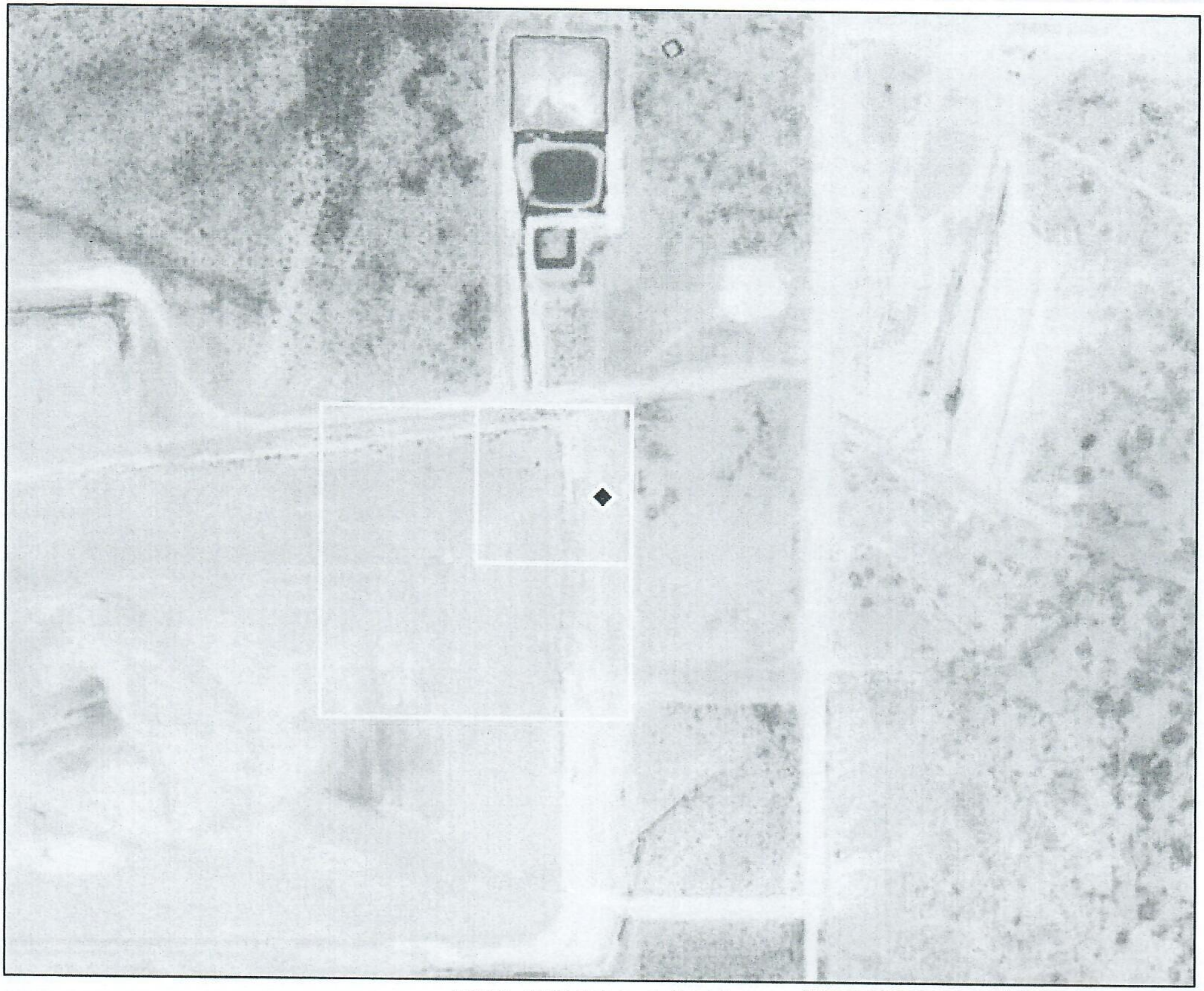
Witness my hand and seal this 8th day of Jun A.D., 2021

John R. D'Antonio, Jr., P.E., State Engineer

By: _____
JUAN HERNANDEZ

Trn Desc: CP 01872 POD1

File Number: CP 01872
Trn Number: 697046



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting **613764.080**

Northing **3599329.050**

State Plane - NAD 83 (f) - Zone E

Easting **709211.721**

Northing **555325.353**

Degrees Minutes Seconds

Latitude **32 : 31 : 31.707667**

Longitude **-103 : 47 : 19.198174**

Location pulled from Coordinate Search

NEW MEXICO OFFICE
OF THE
STATE ENGINEER

N

1:4,514

ft

0 90 180 360

Image Info
Source: Maxar
Date: 7/14/2020
Resolution (m):0.31
Accuracy (m): 5

Spatial Information
OSE Administrative Area: Lea
County: Lea
Groundwater Basin: Capitan
Abstract Area:CP

Sub-Basin: Upper Pecos-Black

Land Grant: Not in Land Grant
Restrictions:
NA

PLSS Description
NENESESW Qtr of Sec 32 of 020S 032E

Derived from CADNSDI, Qtr Sec locations are calculated and are only approximations

Calculated PLSS

◆ Coord Search Location

OSE District Boundary

New Mexico State Trust Lands

Subsurface Estate

Surface Estate

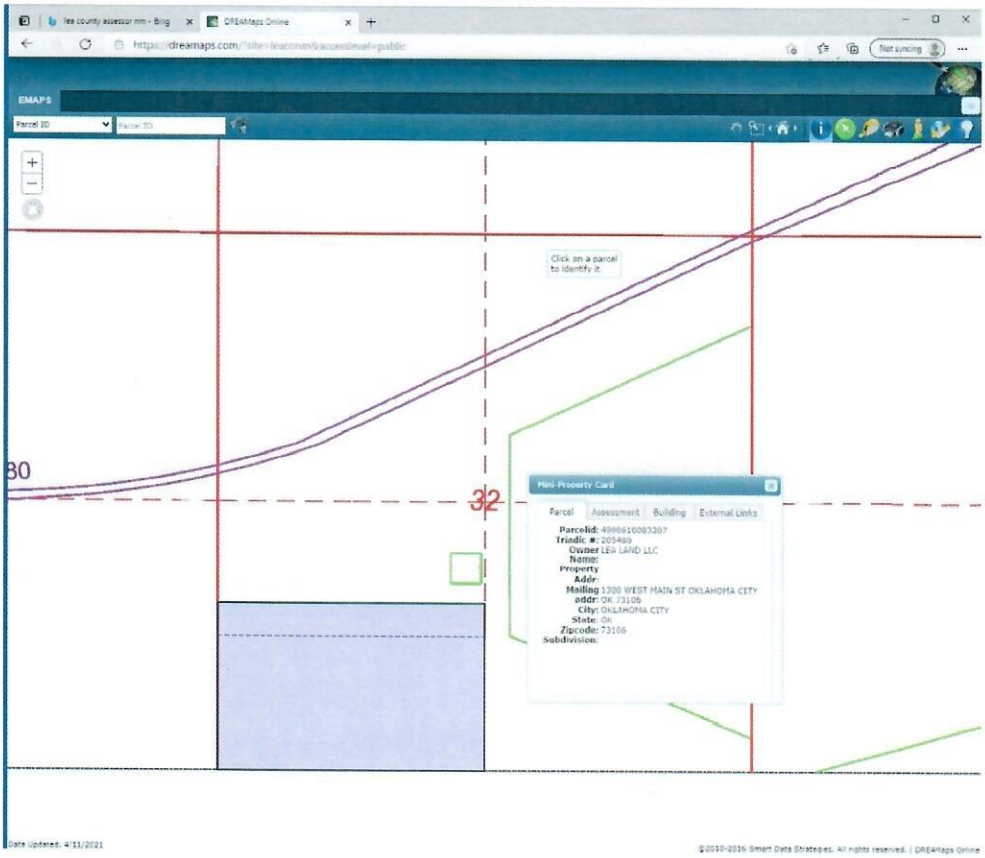
Both Estates

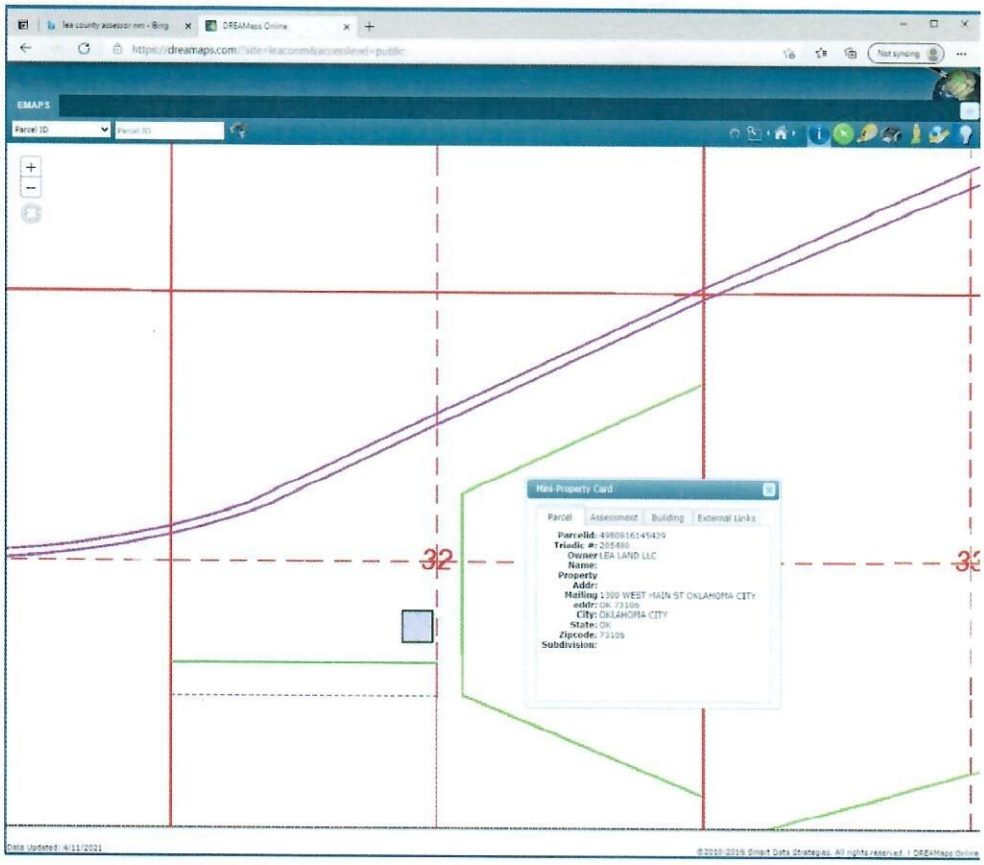
SiteBoundaries

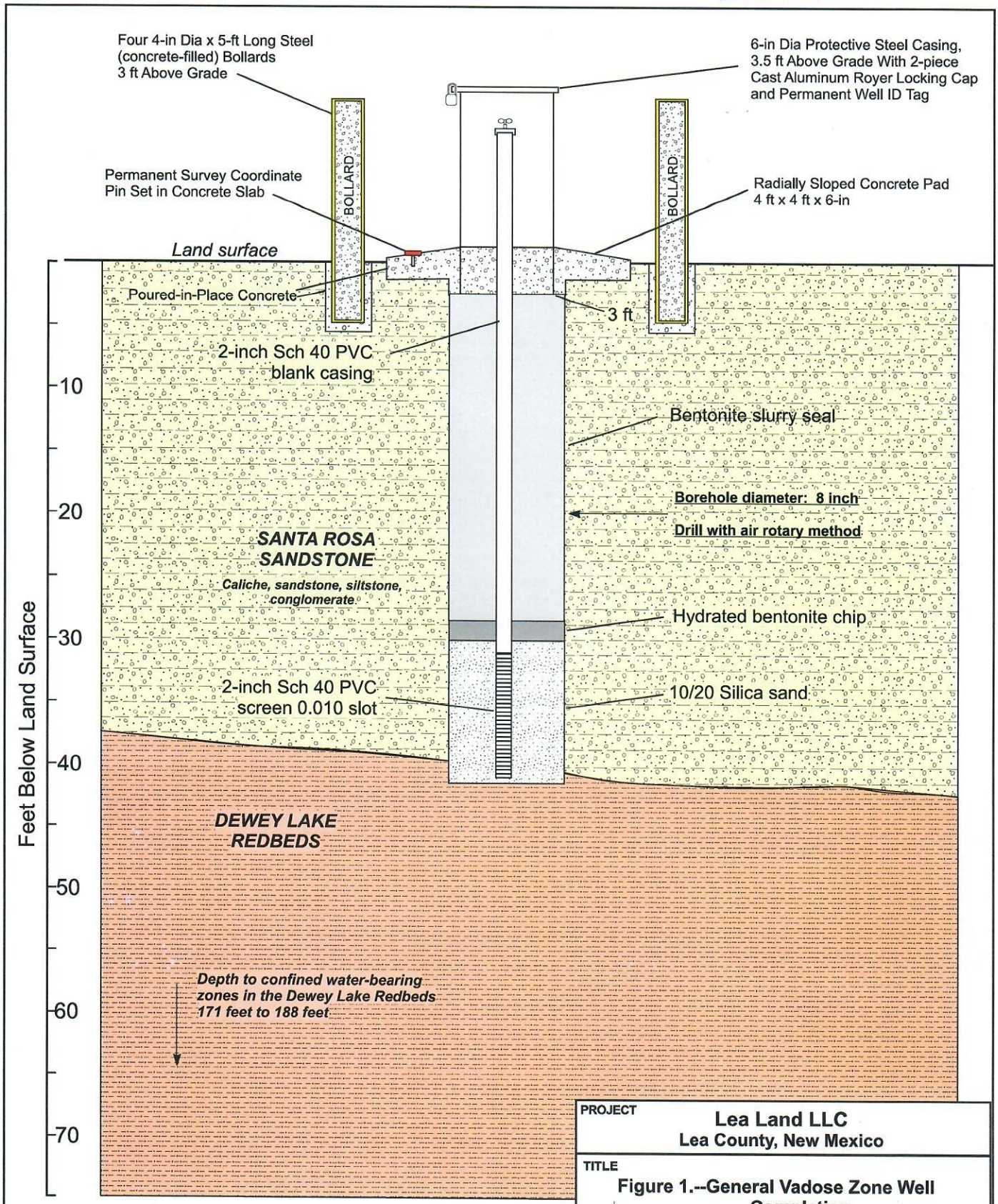
POD Information
Owner: LEA LAND INC
File Number: CP- 1872 POD1
POD Status: NoData
Permit Status: NoData
Permit Use: NoData
Purpose: MONITOR/LLC-VZ-2

YM 6/8/202

Lea County Assessor maps of Lea Land, LLC tracts.







PROJECT

Lea Land LLC
Lea County, New Mexico

TITLE

Figure 1.--General Vadose Zone Well Completion

Clay Kilmer, LLC
Environmental Geoscience
Water Resources

3312 June Street NE
Albuquerque, NM 87111
(505) 235-4482

2

9

OSE DIT JUN 1 2021 PM4:24

56468

WARRANTY DEED

Know All Men by these Presents: That **Lea Land, Inc.**, grantor, in consideration of the sum of ten and no/100 dollars and other valuable consideration in hand paid, does hereby grant, bargain, sell and convey unto **Lea Land, LLC**, an Oklahoma Limited Liability Company, the following described real property and premises situated in Lea County, New Mexico, to-wit:

Section 32, Township 20 South, Range 32 East, N.M.P.M. in Lea County, New Mexico, 2 acres, more or less, in the Southwest Quarter Section beginning at a point 1840 feet North, 40 feet West of the South ¼ corner Glo B.C. "1916", thence, 300 feet west, thence 300 feet North, thence 300 feet East and 300 feet South, to the point of beginning, P.O.B., being the same land referred as Tract 4 in Book 1435, Page 486 in the deeds records of Lea County, NM.

together with all improvements thereon and appurtenances thereto belonging and warranty the title to same.

TO HAVE AND TO HOLD said described premises unto the said grantee, forever free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and encumbrances of whatsoever nature, EXCEPT subject to outstanding oil, gas and other minerals and mineral rights of record, and also subject to easements of records, as well as visible easements, if any.

Signed and delivered this 27 day of May, 2008.

Lea Land, Inc.

By: _____
Robert G. Hall

Title: President

State of Oklahoma)
)ss:
County of Oklahoma)

Before me, the undersigned, a Notary Public in and for the County and State on this 27 day of May, 2008, personally appeared Robert G. Hall, to me known to be the identical person who subscribed his name and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth, and in the capacity therein stated. Given under my hand and seal the day and year last written above.

My Commission Expires: 3-17-2010

_____
Notary Public

56468

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

JUN 2 2008

at 1:31 o'clock A M
and recorded in Book
Page
Melinda Hughes, Lea County Clerk
By Deputy

COUNTY CLERK SEAL NEW MEXICO LEA COUNTY

2
1
0

53920

WARRANTY DEED

Know All Men by these Presents: That **Lea Land, Inc.**, grantor, in consideration of the sum of ten and no/100 dollars and other valuable consideration in hand paid, does hereby grant, bargain, sell and convey unto **Lea Land, LLC**, an Oklahoma Limited Liability Company, the following described real property and premises situated in Lea County, New Mexico, to-wit:

Section 32, Township 20 South, Range 32 East, N.M.P.M. in Lea County, New Mexico. 100 acres, more or less, in the Southwest Quarter Section Beginning at the Southwest Corner, Glo B.C. "1916", of Section 32, thence North 1640 feet, thence East 2646.41 feet, thence 1640 feet South to the ¼ corner, Glo B.C. "1916". Next, west 2646.41 feet, N89°43'34" East, to the Southwest corner, Glo B.C. "1916", being the same land referred as Tract 2 in Book 1435, Page 485 in the deeds records of Lea County, NM.

together with all improvements thereon and appurtenances thereto belonging and warranty the title to same.

TO HAVE AND TO HOLD said described premises unto the said grantee, forever free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and encumbrances of whatsoever nature, EXCEPT subject to outstanding oil, gas and other minerals and mineral rights of record, and also subject to easements of records, as well as visible easements, if any.

Signed and delivered this 4th day of April, 2008.

23850

Lea Land, Inc.

By: _____
Robert G. Hall

Title: President

State of Oklahoma)
)ss:
County of Oklahoma)

Before me, the undersigned, a Notary Public in and for the County and State on this 4 day of April, 2008, personally appeared Robert G. Hall, to me known to be the identical person who subscribed his name and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth, and in the capacity therein stated. Given under my hand and seal the day and year last written above.

NOTARY PUBLIC STATE OF OKLAHOMA KINGFISHER COUNTY

My Commission Expires: 3-17-2010

_____
Notary Public

53920

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

APR 07 2008

at 8:58 o'clock A M
and recorded in Book
Page
Melinda Hughes, Lea County Clerk
By Deputy

Clay Kilmer, LLC
Environmental Geoscience
Water Resources

May 24, 2021

Mr. Andy Morley
Supervisor, District 2
New Mexico Office of the State Engineer
1900 West 2nd Street
Roswell, NM 88201-1712

RE: APPLICATION FOR ENVIRONMENTAL MONITORING WELLS, LEA LAND LLC FACILITY

Dear Mr. Morley:

Thank you very much for your effort to evaluate the enclosed application to install a shallow vadose zone monitoring well at the Lea Land LLC. Surface Waste Management Facility, located in western Lea County. I am transmitting three original copies of completed NMOSE form WR-07 and supporting documents for permitting the monitoring well at the facility, which comes under the regulatory purview of the New Mexico Oil Conservation Division (NMOCD). The proposed well is being installed to comply with a facility operations and monitoring plan which includes commitments for vadose zone monitoring well placement, completion and monitoring. The monitoring well will be completed to monitor shallow subsurface perching horizons at the interface of the Santa Rosa Sandstone and the Dewey Lake Redbeds below. Attached are a facility map showing the facility property, location of the proposed monitoring well, and a well design schematic showing proposed well construction. Also attached are a copy of the Warranty Deed and Lea County property plat map showing the property owned by Lea Land LLC., as well as a letter from Ms. Stephanie Grantham, President of Lea Land LLC, appointing me as the Lea Land LLC's agent to acquire NMOSE permits for the new well.

I appreciate your effort to process this application. If you have any questions or comments, please do not hesitate to contact me. Thanks again for your help with this.

Sincerely,

Clay Kilmer, P.G.
Senior Hydrogeologist

Attachments: Completed NMOSE Form WR-07; Application for permit to drill wells with no water right
Lea Land LLC facility map, general well completion schematic
Lea County Assessor and plat maps and Warranty Deed showing ownership of land tract
Letter of Authorized Agent Appointment
Check for $5 to the NMOSE

cc: Stephanie Grantham, Lea Land LLC
Keith Gordon, IKG, LLC

Clay Kilmer LLC
3312 June Street, Northeast
Albuquerque, NM 87111
(505) 235-4482
claykilmer@gmail.com

LEA LAND, LLC
1300 West Main Street
Oklahoma City, OK 73106
405-236-4257
lealandllc@gmail.com

May 12, 2021

Mr. Andy Morley
Supervisor, District 2
New Mexico Office of the State Engineer
1900 West 2nd Street
Roswell, NM 88201-1712

RE: LEA LAND LLC. WASTE MANAGEMENT FACILITY – DESIGNATION OF AUTHORIZED AGENT

Dear Mr. Morley:

Please consider this transmittal to be Lea Land LLC's authorization appointing Mr. Clay Kilmer, P.G. as Lea Land LLC's agent empowered to act on Lea Land LLC's behalf to file an "Application for Permit to Drill a Well With No Consumptive Use of Water" (Form WR-07). We anticipate that Mr. Kilmer will submit an application to the New Mexico Office of the State Engineer (NMOSE) for permits to drill three vadose zone monitoring wells at the Lea Land LLCs, surface waste management facility which is owned by Lea Land LLC. and is located on a Lea County property identified as UPC Parcel 4990610083207.

Thank you for your consideration in this matter. If you have any questions or comments, please contact me at 405-236-4257, or Mr. Kilmer at (505) 235-4482.

Sincerely,

Stephanie Grantham

Stephanie Grantham
Manager

John R. D Antonio, Jr., P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 698732
File Nbr: CP 01874

Jun. 25, 2021

CLAY KILMER
ENVIRO-AMERICAN, INC
3312 JUNE ST NE
ALBUQUERQUE, NM 87111

Greetings:

Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

* If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.

* If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.

* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.

* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us.

Sincerely,

Claudia Guillen
(575)622-6521

Enclosure

explore

File No. CP-1874

NEW MEXICO OFFICE OF THE STATE ENGINEER

WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And/Or Recovery	☐ Ground Source Heat Pump
☐ Exploratory Well (Pump test)	☐ Construction Site/Public Works Dewatering	☐ Other(Describe):
☒ Monitoring Well	☐ Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☐ Temporary Request - Requested Start Date: 5/15/2021 Requested End Date: 5/15/2041

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

1. APPLICANT(S)

Name: Enviro-American, Inc.	Name: Clay Kilmer
Contact or Agent: check here if Agent ☐ Stephanie Grantham	Contact or Agent: check here if Agent ☒
Mailing Address: 1300 West Main Street	Mailing Address: 3312 June Street NE
City: Oklahoma City	City: Albuquerque
State: OK Zip Code: 73106	State: NM Zip Code: 87111
Phone: 405-236-4257 ☐ Home ☐ Cell Phone (Work):	Phone: 505-235-4482 ☐ Home ☒ Cell Phone (Work):
E-mail (optional):	E-mail (optional): claykilmer@gmail.com

FOR OSE INTERNAL USE Application for Permit, Form WR-07, Rev 11/17/16

File No.: CP-1874	Trn. No.: 698732	Receipt No.: 243424
Trans Description (optional): MON		
Sub-Basin: CP	PCW/LOG Due Date: 6/25/2022	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

■ UTM (NAD83) (Meters)
☐ Zone 12N
■ Zone 13N

☐ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range*) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
LLC-VZ-1 CP-1874 POD1	613114.09	3599502.46	T.20S.R.32E.S.32 SWNWSW
LLC-VZ-3 CP-1874 POD2	613805.00	3599637.00	T.20S.R.32E.S.32 NWNWSE
LLC-VZ-4 CP-1874 POD3	613644.00	3599887.00	T.20S.R.32E.S.32 SWSENW

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☐ **Yes** ■ **No** **If yes, how many** _____

Other description relating well to common landmarks, streets, or other:
Monitor wells on Enviro-American Inc. property, 28 miles east of Carlsbad NM

Well is on land owned by: Lea Land LLC

Well Information: **NOTE: If more than one (1) well needs to be described, provide attachment.** **Attached?** ☐ **Yes** ■ **No**
If yes, how many _____

Approximate depth of well (feet): 55 ft	Outside diameter of well casing (inches): 2
Driller Name: Talon LPE	Driller License Number: 1800

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Proposed monitoring wells will be completed as Vadose Zone monitoring wells at the alluvium and bedrock contact. Depths will not exceed 100 feet.

FOR OSE INTERNAL USE — Application for Permit, Form WR-07

File No.: CP-1874 Trn No.: 698732

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application.

Exploratory:	**Pollution Control and/or Recovery:**	**Construction De-Watering:**	**Mine De-Watering:**
☐ Include a description of any proposed pump test, if applicable.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge. ☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ■ Include the reason for the monitoring well, and, ■ The duration of the planned monitoring.		**Ground Source Heat Pump:** ☐ Include a description of the geothermal heat exchange project, ☐ The number of boreholes for the completed project and required depths. ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Clay Kilmer (agent for Enviro-American, Inc.)
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Clay Kilmer
Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 25th day of June 20 21, for the State Engineer.

John R. D'Antonio Jr., P.E., State Engineer

By: Juan Hernandez
Signature Print

Title: Water Resources Manager I
Print

SEAL OF THE STATE OF NEW MEXICO · 1912 · GREAT SEAL

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: CP-1874 Trn No.: 698732

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL

17-1A Depth of the well shall not exceed the thickness of the valley fill.

17-4 No water shall be appropriated and beneficially used under this permit.

17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.

17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.

17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.

17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.

17-Q The State Engineer retains jurisdiction over this permit.

17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

LOG The Point of Diversion CP 01874 POD1 must be completed and the Well Log filed on or before 06/25/2021.

LOG The Point of Diversion CP 01874 POD2 must be completed and the Well Log filed on or before 06/25/2021.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion CP 01874 POD3 must be completed and the Well Log filed on or before 06/25/2021.

IT IS THE PERMITTEES RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 06/01/2021	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 25 day of Jun A.D., 2021

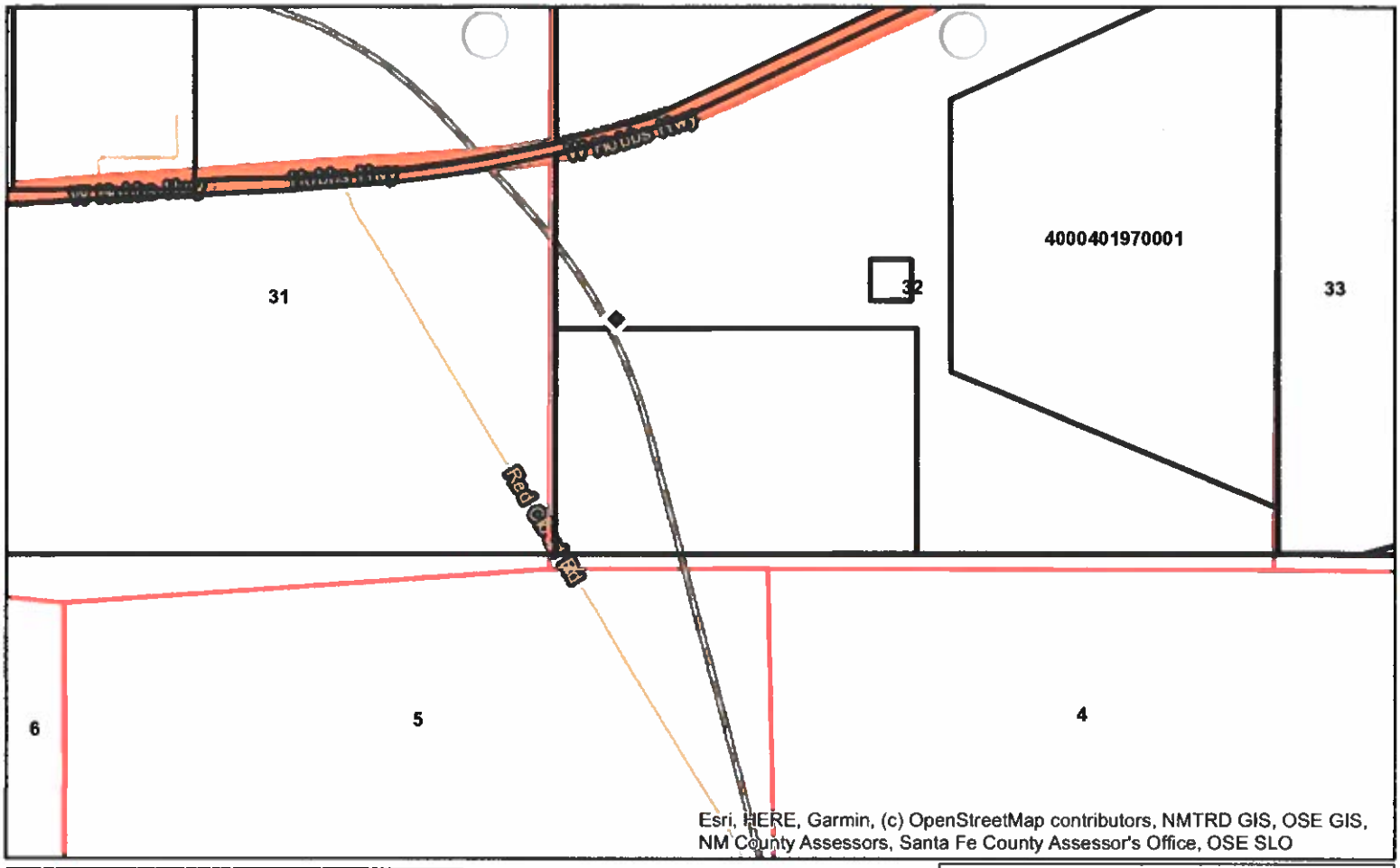
John R. D'Antonio, Jr., P.E., State Engineer

By: JUAN HERNANDEZ

GREAT SEAL OF THE STATE OF NEW MEXICO 1912

Trn Desc: CP 01874 POD1-3

File Number: CP 01874
Trn Number: 698732



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 613114.194

Northing 3599502.236

State Plane - NAD 83 (f) - Zone E

Easting 707082.761

Northing 555906.984

Degrees Minutes Seconds

Latitude 32 : 31 : 37.570000

Longitude -103 : 47 : 44.030000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

GUILLEN 6/25/2021

Office of the State Engineer

Interstate Stream Commission

Reasonable efforts have been made by the New Mexico Office of the State Engineer (OSE) to verify that these maps accurately interpret the source data used in their preparation, however, a degree of error is inherent in all maps, and these maps may contain omissions and errors in scale, resolution, rectification, positional accuracy, development methodology, interpretation of source data, and other circumstances. These maps are distributed "as is" without warranty of any kind.

Spatial Information

County: Lea

Groundwater Basin: Capitan

Abstract Area:CP

Land Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

NESWNWSW Qtr of Sec 32 of 020S 032E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum:

Parcel Owner: ENVIRO-AMERICAN INC

Address:null null null null null 33106-5224

Legal: UPC 4960818083325: Township 20 S Range 32 E Section 32 363.29 AC LOC NE4 ALL OF SEC 32 *LESS TR BEG S33D35'43E 2453.59' FROM NW COR SEC 32, TH NE ALONG CURVE TO LEFT (RA

POD Information

Owner: ENVIRO-AMERICAN INC

File Number: CP-1874 POD1

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

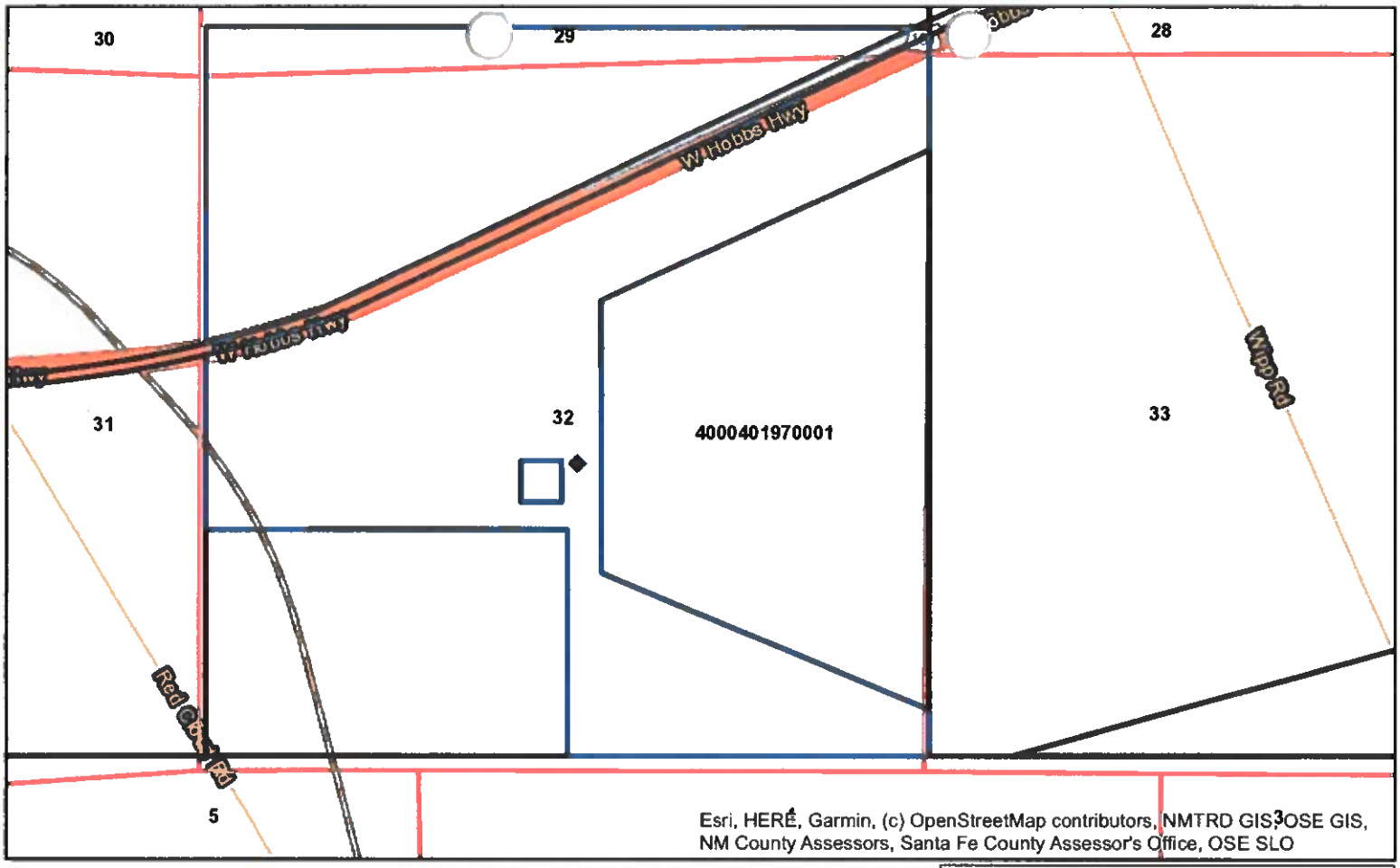
Purpose: MON

◆ Coord Search Location

☐ Chaves County Parcels 2020

☐ Lea County Parcels 2020

☐ Sections



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 613805.149

Northing 3599636.963

State Plane - NAD 83 (f) - Zone E

Easting 709352.804

Northing 556334.886

Degrees Minutes Seconds

Latitude 32 : 31 : 41.690000

Longitude -103 : 47 : 17.490000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

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GUILLEN 6/25/2021

Office of the State Engineer

Interstate Stream Commission

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Spatial Information

County: Lea

Groundwater Basin: Capitan

Abstract Area:CP

Land Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

SWNWNWSE Qtr of Sec 32 of 020S 032E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum:

Parcel Owner: ENVIRO-AMERICAN INC

Address:null null null null null 33106-5224

Legal: UPC 4960818083325: Township 20 S Range 32 E Section 32 363.29 AC LOC NE4 ALL OF SEC 32 *LESS TR BEG S33D35'43E 2453.59' FROM NW COR SEC 32, TH NE ALONG CURVE TO LEFT (RA

POD Information

Owner: ENVIRO-AMERICAN INC

File Number: CP-1874 POD2

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

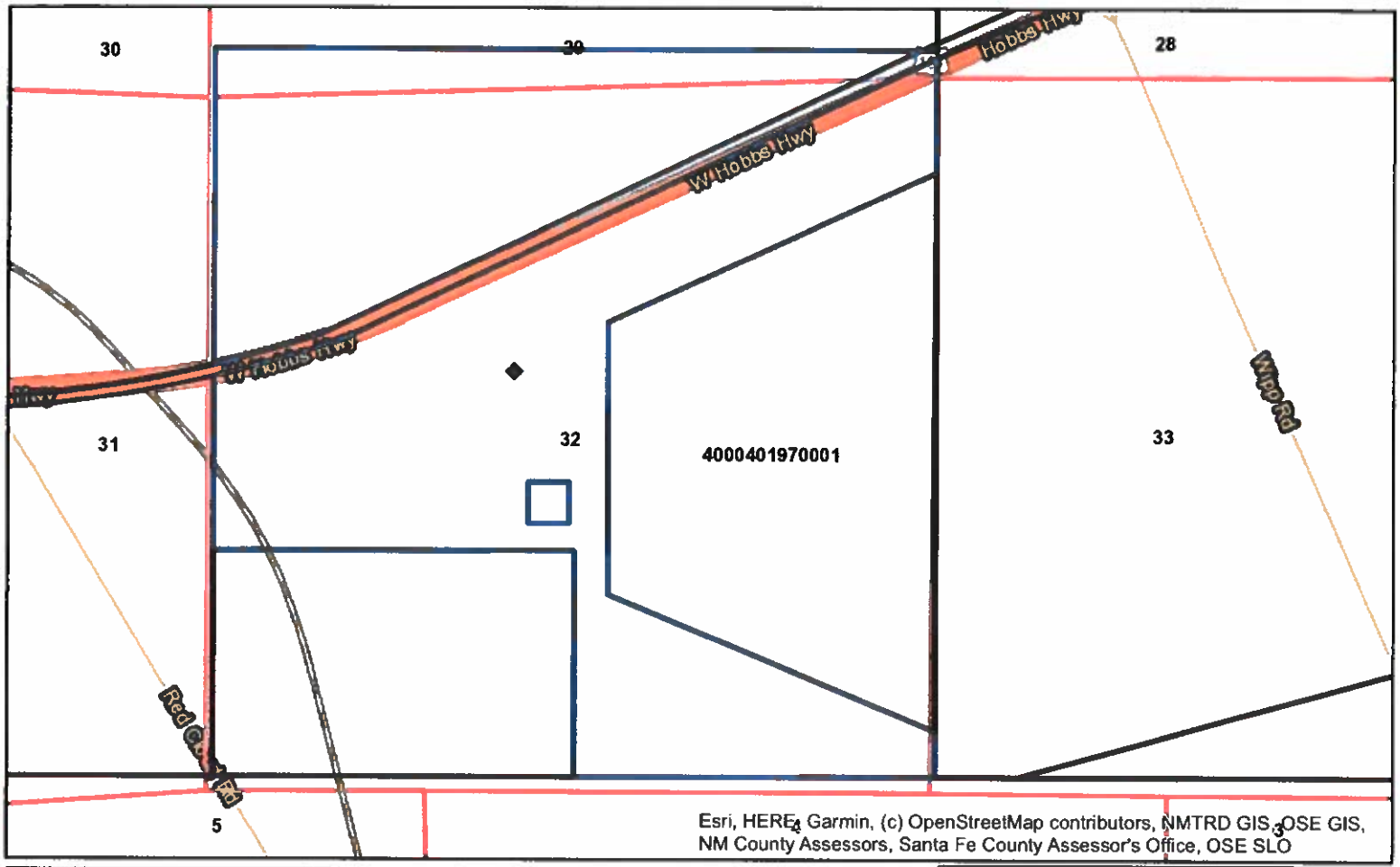
Purpose: MON

◆ Coord Search Location

☐ Chaves County Parcels 2020

☐ Lea County Parcels 2020

☐ Sections



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 613644.194

Northing 3599886.762

State Plane - NAD 83 (f) - Zone E

Easting 708829.784

Northing 557157.872

Degrees Minutes Seconds

Latitude 32 : 31 : 49.860000

Longitude -103 : 47 : 23.550000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

GUILLEN 6/25/2021

Office of the State Engineer

Interstate Stream Commission

Spatial Information

County: Lea

Groundwater Basin: Capitan

Abstract Area:CP

Land Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

SWSESENW Qtr of Sec 32 of 020S 032E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum:

Parcel Owner: ENVIRO-AMERICAN INC

Address:null null null null null 33106-5224

Legal: UPC 4960818083325: Township 20 S Range 32 E Section 32 363.29 AC LOC NE4 ALL OF SEC 32 *LESS TR BEG S33D35'43E 2453.59' FROM NW COR SEC 32, TH NE ALONG CURVE TO LEFT (RA

POD Information

Owner: ENVIRO-AMERICAN INC

File Number: CP-1874 POD3

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: MON

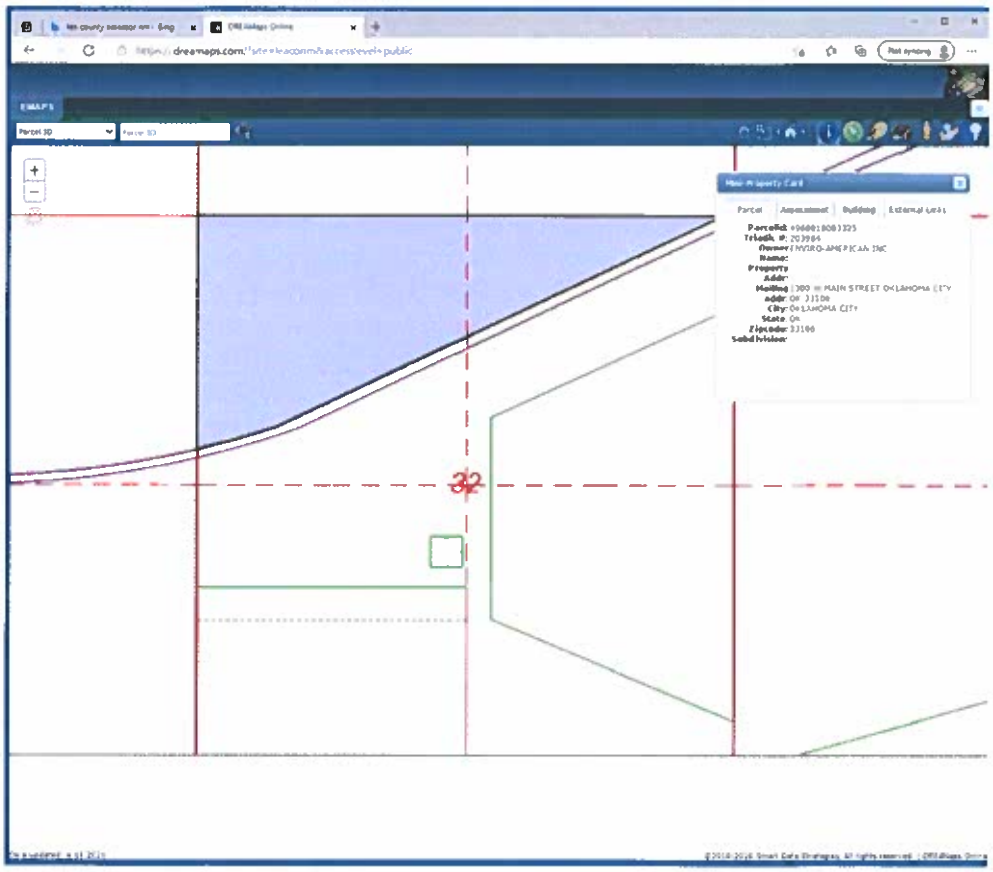
◆ Coord Search Location

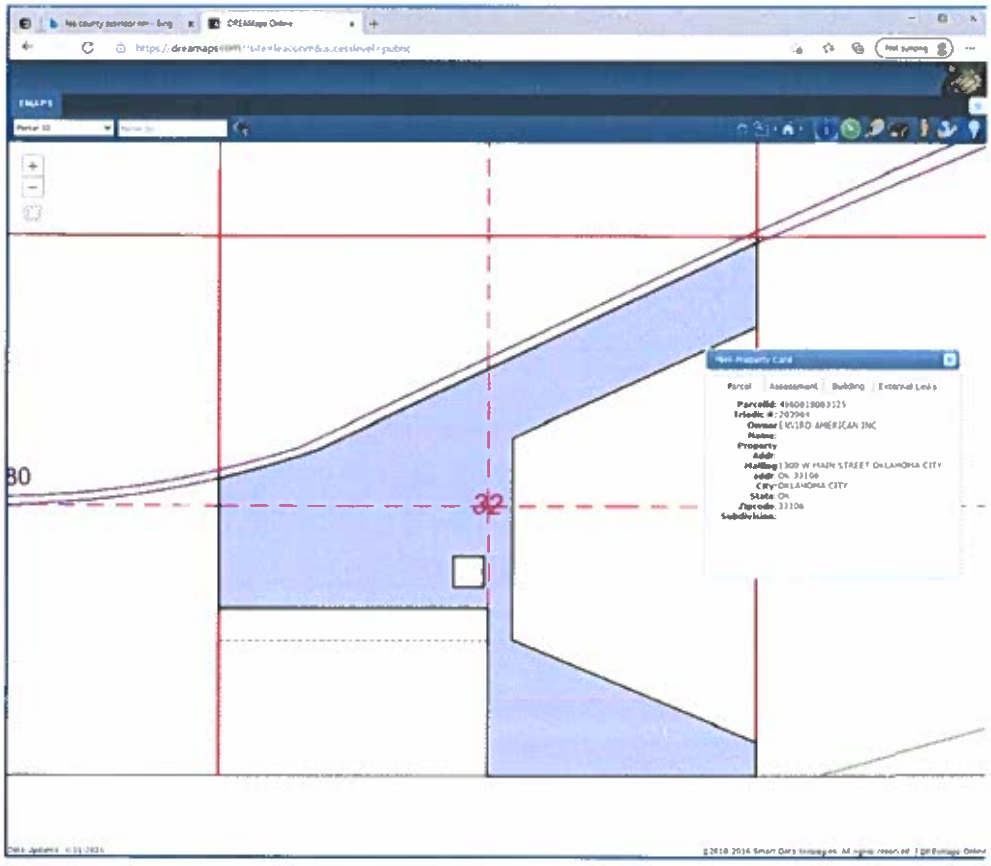
☐ Chaves County Parcels 2020

☐ Lea County Parcels 2020

☐ Sections

Lea County Assessor maps of Enviro-American tracts north and south of US-62





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(3)

20069

WARRANTY DEED

Know All Men by these Presents: That **Lea Land, Inc.**, grantor, in consideration of the sum of ten and no/100 dollars and other valuable consideration in hand paid, does hereby grant, bargain, sell and convey unto **Enviro-American, Inc.** an Oklahoma Corporation, the following described real property and premises situate in Lea County, New Mexico, to-wit:

TRACT 1

FOR SURFACE TITLE ONLY:
All of Section 32, Township 20 South, Range 32 East, N.M.P.M., Lea County, New Mexico, LESS AND EXCEPT a certain tract or parcel of land lying and being situate in the Northwest Quarter and the Northeast Quarter of Section 32, Township 20 South, Range 32 East, N.M.P.M., Lea County, New Mexico, being more particularly described as follows:
Beginning at a point where the southerly right of way line of NMP F-022-2(9), County of Lea, State of New Mexico, intersects the southerly right of way line of NMP F-022-2(15), County of Lea, State of New Mexico, and point on curve, said point bears 833°35'43"E, a distance of 2453.59 feet from the northwesterly corner of Section 32; thence northeasterly along the said southerly right of way line of NMP F-022-2(9) on a 0.987° curve (radius = 5804.58 feet) through an arc of 6°47'36" to the left a distance of 688.23 feet to a point of tangent; thence N58°27'51"E, a distance of 149.00 feet to a point of curve; thence northeasterly on a 1.013° curve (radius = 5654.58 feet) through an arc of 6°52' to the right a distance of 677.59 feet to a point of tangent; thence N65°19'51"E a distance of 2866.42 feet to a point on the easterly line of the property of the Grantor (Warranty Deed dated ----, filed 12-6-82, in Book 401, Page 350, Deed Records, Lea County, New Mexico, executed by Barber Oil, Inc., Kenneth W. Hayes and Loretta B. Hayes, husband and wife and W. R. Williamson, Jr. and Mary M. Williamson, husband and wife to State Highway Department of New Mexico) and point on the easterly line of said Section 32, said point bears S0°19'16"E, a distance of 147.07 feet from the northeasterly corner of said Section 32; thence S0°19'16"E, along the said easterly line of the property of the Grantor (Warranty Deed dated ----, filed 12-6-82, in Book 401, Page 350, Deed Records, Lea County, New Mexico, executed by Barber Oil, Inc., Kenneth W. Hayes and Loretta B. Hayes, husband and wife and W. R. Williamson, Jr. and Mary M. Williamson, husband and wife to State Highway Department of New Mexico) a distance of 109.76 feet to a point on the said southerly right of way line of NMP F-022-2(15); thence S65°19'51"W, along the said southerly right of way line of NMP F-022-2(15) a distance of 4328.93 feet to the point and place of beginning.

LESS AND EXCEPT and reserving unto the grantor the following tracts which are a part of **TRACT 1**, as well as a right of ingress and egress to each, which shall be a covenant running with the land:

TRACT 2
Section 32, Township 20 South, Range 32 East, N.M.P.M. in Lea County, New Mexico.
100 acres, more or less, in the Southwest Quarter Section Beginning at the Southwest Corner, Glo B.C. "1916", of Section 32, thence North 1640 feet, thence East 2646.41 feet, thence 1640 feet South to the 1/4 corner, Glo B.C. "1916". Next, west 2646.41 feet, N89°43'34" East, to the Southwest corner, Glo B.C. "1916".

TRACT 3
A tract of land located in Section 32, Township 20 South, Range 32 East, N.M.P.M., Lea County, New Mexico, more particularly described as follows:
Beginning at a point being the East Quarter corner of said Section 32, thence S00°03'00" E along the east section line, 2307.65 feet to a point 333.33 feet north of the southeast section corner. Thence N67°32'54"W, 2600.00 feet; thence N00°03'00"W, 1977.00 feet; thence N65°34'08" E, 2637.81 feet to a point on the east section line; thence S00°02'00"E, 1753.35 feet to the point of beginning. Said tract contains 166.4812 acres, more or less.

TRACT 4
Section 32, Township 20 South, Range 32 East, N.M.P.M., Lea County, New Mexico.
2 acres, more or less, in the Southwest Quarter Section, beginning at a point 1840 feet North, 40 feet West of the South 1/4 corner Glo B.C. "1916", thence, 300 feet west, thence 300 feet North, thence 300 feet East, and 300 feet South, to the point of the beginning, P.O.B.

together with all improvements thereon and appurtenances thereto belonging and warranty the title to same.

TO HAVE AND TO HOLD said described premises unto the said grantee, forever free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and encumbrances of whatsoever nature, EXCEPT subject to outstanding oil, gas and other minerals and mineral rights of record, and also subject to easements of records, as well as visible easements, if any.

Signed and delivered this 10th day of February, 2006.

Lea Land, Inc.

By: Robert A. Hall

Title: President

State of Oklahoma)
County of Oklahoma)ss:
)

Before me, the undersigned, a Notary Public in and for the County and State on this 10th day of February, 2006, personally appeared Robert A. Hall, to me known to be the identical person who subscribed his name and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth, and in the capacity therein stated. Given under my hand and seal the day and year last written above.

ALLYN G. HURST
NOTARY PUBLIC
STATE OF OKLAHOMA
OKLAHOMA COUNTY

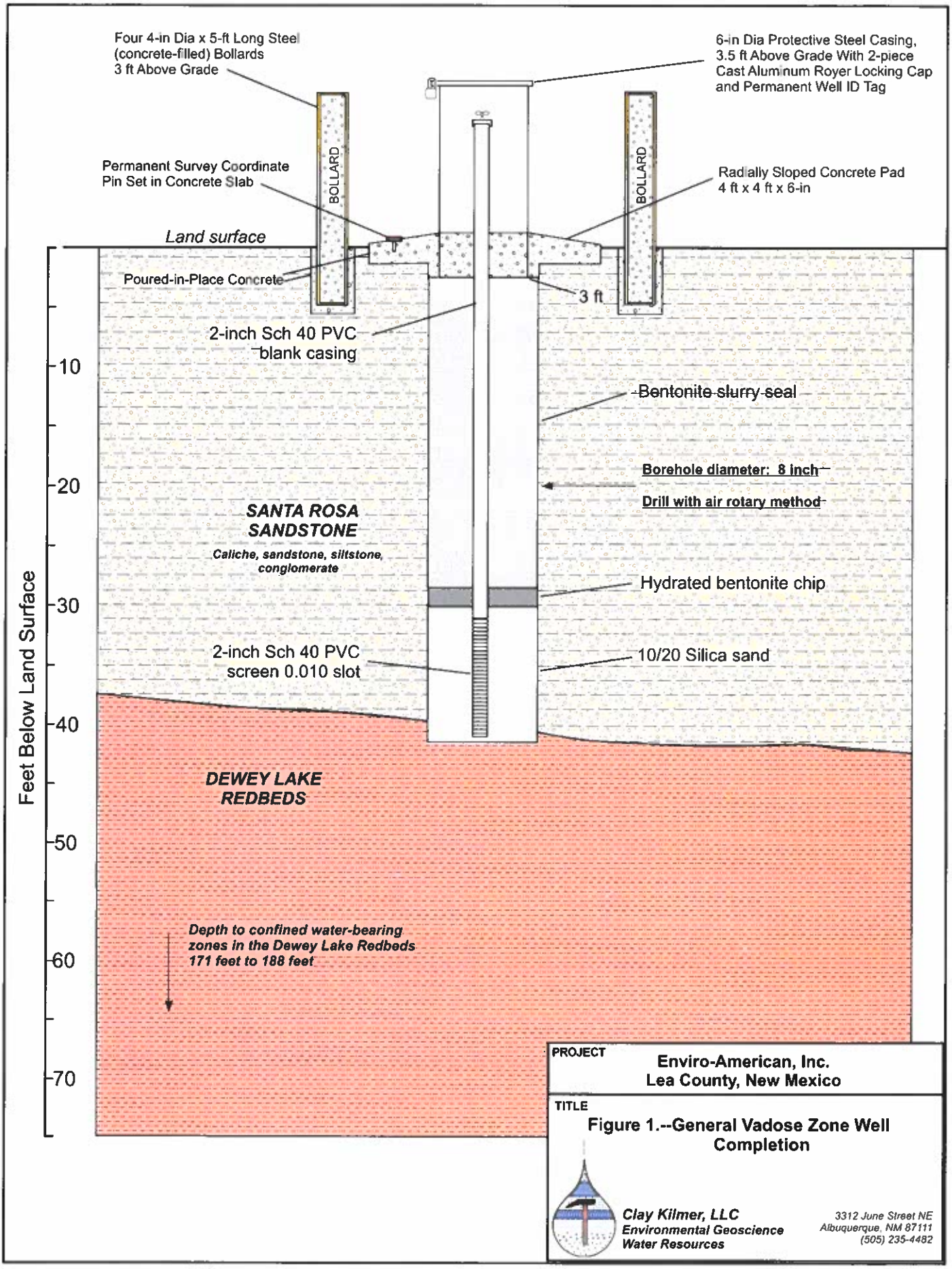
Allyn G. Hurst
Notary Public

My commission expires: 3/17/2006

20069

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

APR 03 2006
at 11:30 o'clock A M
and recorded in Book
Page
Melinda Hughes, Lea County Clerk
By Deputy


Four 4-in Dia x 5-ft Long Steel (concrete-filled) Bollards 3 ft Above Grade
6-in Dia Protective Steel Casing, 3.5 ft Above Grade With 2-piece Cast Aluminum Royer Locking Cap and Permanent Well ID Tag
Permanent Survey Coordinate Pin Set in Concrete Slab
BOLLARD
BOLLARD
Radially Sloped Concrete Pad 4 ft x 4 ft x 6-in
Land surface
Poured-in-Place Concrete
3 ft
2-inch Sch 40 PVC blank casing
Bentonite slurry seal
Borehole diameter: 8 inch
Drill with air rotary method
SANTA ROSA SANDSTONE
Caliche, sandstone, siltstone, conglomerate
Hydrated bentonite chip
2-inch Sch 40 PVC screen 0.010 slot
10/20 Silica sand
DEWEY LAKE REDBEDS
Depth to confined water-bearing zones in the Dewey Lake Redbeds 171 feet to 188 feet
Feet Below Land Surface
10
20
30
40
50
60
70
PROJECT
Enviro-American, Inc.
Lea County, New Mexico
TITLE
Figure 1.--General Vadose Zone Well Completion
Clay Kilmer, LLC
Environmental Geoscience
Water Resources
3312 June Street NE
Albuquerque, NM 87111
(505) 235-4482

Clay Kilmer, LLC
Environmental Geoscience
Water Resources

May 24, 2021

Mr. Andy Morley
Supervisor, District 2
New Mexico Office of the State Engineer
1900 West 2nd Street
Roswell, NM 88201-1712

RE: APPLICATION FOR ENVIRONMENTAL MONITORING WELLS, ENVIRO-AMERICAN, INC.

Dear Mr. Morley:

Thank you very much for your effort to evaluate the enclosed application to install three shallow vadose zone monitoring wells on Enviro-American property, located in western Lea County. I am transmitting three original copies of completed NMOSE form WR-07 and supporting documents for permitting the monitoring wells at the property. The monitoring wells will be completed to monitor shallow subsurface perching horizons at the interface of the Santa Rosa Sandstone and the Dewey Lake Redbeds below. Attached are a map showing the property, locations of the proposed monitoring wells, and a well design schematic showing proposed well construction. Also attached is a copy of the Lea County property plat map showing the landfill is on property owned Enviro-American Inc. and a letter from Ms. Stephanie Grantham, President of Enviro-American, Inc., appointing me as Enviro-American Inc's agent to acquire NMOSE permits for the new wells.

I appreciate your effort to process this application. If you have any questions or comments, please do not hesitate to contact me. Thanks again for your help with this.

Sincerely,

Clay Kilmer

Clay Kilmer, P.G.
Senior Hydrogeologist

Attachments: Completed NMOSE Form WR-07; Application for permit to drill wells with no water right
Enviro-American property map, general well completion schematic
Lea County Assessor and plat maps and Warranty Deed showing ownership of land tract
Letter of Authorized Agent Appointment
Check for $15 to the NMOSE

cc: Stephanie Grantham, President, Enviro-American, Inc.
Keith Gordon, IKG, LLC

Clay Kilmer LLC
3312 June Street, Northeast
Albuquerque, NM 87111
(505) 235-4482
claykilmer@gmail.com

ENVIRO-AMERICAN, INC.
1300 West Main Street
Oklahoma City, OK 73106
405-236-4257
lealandllc@gmail.com

May 12, 2021

Mr. Andy Morley
Supervisor, District 2
New Mexico Office of the State Engineer
1900 West 2nd Street
Roswell, NM 88201-1712

RE: ENVIRO-AMERICAN INC. – DESIGNATION OF AUTHORIZED AGENT

Dear Mr. Morley:

Please consider this transmittal to be Enviro-American Inc's authorization appointing Mr. Clay Kilmer, P.G. as Enviro-American Inc's agent empowered to act on Enviro-American Inc's behalf to file an "Application for Permit to Drill a Well With No Consumptive Use of Water" (Form WR-07). We anticipate that Mr. Kilmer will submit an application to the New Mexico Office of the State Engineer (NMOSE) for permits to drill three vadose zone monitoring wells at Enviro-American Inc's property located in Lea County and identified as UPC Parcel 4960818083325.

Thank you for your consideration in this matter. If you have any questions or comments, please contact me at 405-236-4257, or Mr. Kilmer at (505) 235-4482.

Sincerely,

Stephanie Grantham

Stephanie Grantham
President