Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
June 19, 2008

WELL API NO. 30-019-20138

5. Indicate Type of Lease STATE ☐ FEE ☒

6. State Oil & Gas Lease No. **NA**

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: **Singleton Properties LLC**

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

8. Well Number: **Latigo Ranch 3-3**

2. Name of Operator: **SWEPI LP**

9. OGRID Number: **250036**

3. Address of Operator: **P.O. Box 576 Houston, TX**

10. Pool name or Wildcat: **Wildcat**

4. Well Location
Unit Letter K : 1177 +/- feet from the **South** line and 1666 +/- feet from the **West** line
Section **3** Township **10 N** Range **23 E** NMPM County **Guadalupe**

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
+/- **graded** 4640.8

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS X	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
OTHER: ☐		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

SWEPI LP proposes to change the surface location of the well from that indicated on the pending APD to the location indicated above, at the following coordinates: Latitude 35-07-0430035 North and Longitude 104-29-27.44109 West (WGS84 HH-MM-SS.ss). Setback footages from the South and West projected section lines and estimated graded elevation will be provided under separate cover. Location Photos, Well Location Map, Location Layout Map and Topographic Maps A and B will be provided under separate cover..

SWEPI LP proposes to change the estimated total depth indicated on the pending APD to 14,500 feet.

Spud Date: April 1, 2009 (est.) Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE: Michael L. Bergstrom TITLE: Regulatory Coordinator DATE: March 12, 2009

Type or print name: Michael L. Bergstrom E-mail address: michael.bergstrom@shell.com PHONE: (303) 222-6347

For State Use Only

APPROVED BY: Ed Martin TITLE DISTRICT SUPERVISOR DATE 3/16/09

Conditions of Approval (if any):

Shell Exploration & Production

State of New Mexico
Energy, Minerals and Natural Resources Dept.
Oil Conservation Division-District 4
1220 South St. Francis Drive
Sante Fe, New Mexico 87505
Attn.: Ed Martin, District Supervisor

Shell Exploration & Production Co.
Regulatory Affairs-EP Americas
4582 S. Ulster Street Parkway
Suite 1400
Denver, Colorado 80237

March 12, 2009

Subject: Notice of Intention to Change Plans
Shell Exploration & Production Co., Latigo Ranch 3-~~6~~ 3 (APD Pending)
Guadalupe County, New Mexico

Dear Mr. Martin:

Shell Exploration & Production Company, dba SWEPI LP (Shell) is submitting our Notice of Intention (Form C-103) to change plans (well location and estimated total depth) and additional supporting information for the subject well to New Mexico Oil Conservation Division-District 4 (OCD) for your review. Shell has agreed with the surface owner representative on an alternate access route to this well location, as described herein. Shell will provide Location Photos, Well Location Map, Location Layout Map and Topographic Maps A and B under separate cover.

Shell requests that OCD review the new information for our pending APD and approve the APD for the subject well. Shell requests that OCD hold any information regarding this well confidential for the period designated under NMOCD rules. All documents submitted are clearly marked as "confidential". Shell anticipates beginning drilling, completion and testing activities for this well, on or shortly after April 1, 2009.

If you have any questions or require any additional information regarding these reports, please contact me at (303) 222-6347, or David Janney at Kleinfelder in Albuquerque at (505) 344-7373.

Regards,

Michael L. Bergstrom

Michael L. Bergstrom
Regulatory Coordinator
Shell Exploration & Production Company

Attachments: Form C-103
Drilling and Completion Plan (revised)
Surface Use Plan (revised)
Form C-144 (revised) w/attachments

Latigo Ranch 3-3 Drilling and Completion Plan (Revised)

The well will be drilled with potable (TDS<3,000 ppm) water–based fluids from surface to the bottom of the Santa Rosa Formation ("freshwater aquifer"). Surface conductor and intermediate casing strings will be installed and cemented. Below the Santa Rosa Formation, the well will be drilled with nonpotable (TDS>10,000 ppm) water-based fluids or oil-based mud (OBM), as necessary to minimize lost circulation and address difficult drilling conditions, to total vertical depth (TVD). Additional intermediate casing strings and production casing will be installed and cemented. Upon completion of drilling, the casing will be perforated in selected prospective zones. Hydraulic fracturing will be performed in the prospective zones, and gas and water flow testing will be conducted in individual and/or commingled zones.

Drilling Program

- Lithology
  - Tucumcari Basin
    - This area has been the subject of limited oil & gas exploration activity
  - Prospective formations are in the Pennsylvanian section
- Fluid Bearing Formations
  - Potable water (Surface – 1500 feet below ground surface)
  - Brackish water (1500+ feet below ground surface)
  - Natural gas/condensate (~8000+ feet below ground surface)
- Drilling Fluids
  - Freshwater drilling fluids
    - Potable (TDS< 3,000 ppm) water-based, 8.3-8.6 ppg, viscosifiers and LCM additives
  - Brackish water drilling fluids
    - Non-potable (TDS>10,000 ppm) water-based fluids, 8.6-10.0 ppg, salt, lime, caustic soda, viscosifiers and LCM additives
  - Oil-based drilling fluids (OBM)
    - As needed in non-potable zones otherwise drilled with brackish water
  - Lost Circulation Materials (LCM)
    - As needed, LCM consisting of, but not limited to, cedar fibers, mica, drilling paper, graphite, walnut plug, cottonseed hulls and calcium carbonate may be introduced into the well bore to address any lost circulation zones encountered during drilling
- Wellhead Pressure Control (Blowout Prevention [BOP])
  - Wellhead BOP equipment is standard design for "tight gas" wells, as shown on Attachment A1
    - Maximum pressures for equipment (wellhead A section to be 11" 5,000 psi; wellhead B section to be 11" 10,000 psi; BOP with 11" 5,000 psi annular preventer; and Ram preventers with 11" 10,000 psi)
    - Maximum downhole pressures anticipated ~6500 psi
  - BOP testing procedures conducted by third party contractor upon installation

- Ram preventers to 10,000 psi and 250 psi; Annular preventer to 2500 psi and 250 psi, for 10 minutes and 5 minutes, respectively

Casing and Cementing Program

- All casing run and set will be new and unused.
- Surface Casing
  - 14.75-inch diameter well bore, drilled to 1300 feet.
  - 10.75-inch diameter casing installed and cemented to surface
- Intermediate Casing
  - 9.875-inch diameter well bore, drilled to 5900 feet.
  - 7.625-inch diameter casing installed and cemented to 1000 feet
- Production Casing
  - 6.5-inch diameter well bore, drilled to 14500 feet.
  - 4.5-inch diameter casing installed and cemented to 5400 feet

Well Completion

- Casing Perforation
  - Perforate casing in prospective sand zones, using three shots per foot (spf), 120 degree, phased perforating guns
- Hydraulic Fracturing
  - Treat prospective sand zones with ceramic and/or sand proppant materials during hydraulic fracturing

Logging and Testing

- Lithologic Logging
  - Mudlogging (to TVD); Selective coring (whole and/or rotary sidewall)
- Wireline-Logging, including but not limited to:
  - Gamma Ray, Resistivity, Porosity, Neutron and Sonic data collection
- Flow Testing
  - Flow individual production zones for up to 14 days
  - Flow entire well for up to 120 days
  - Total flow testing period not to exceed 120 days, without additional approval

Water Supply for Drilling and Completions

- One water well (minimum 5 ½-inch and maximum 7-inch diameter casing) will be drilled on-site about 500 feet west of the well location, on the edge of the well site
  - A temporary appropriation of up to 3 acre feet (AF) of potable water will be obtained from the Office of State Engineer-District 7 (OSE) for production of potable water from the Santa Rosa aquifer
- Potable groundwater will also be available from the Webb CD-1 water well located on the Webb Ranch, about 3 miles from the well site
  - A temporary appropriation of up to 3 acre feet (AF) of potable water was previously approved by the Office of State Engineer-District 6 (OSE) for production of potable water from the Santa Rosa aquifer. This appropriation will expire in September 2009.
- Potable groundwater will be available from wells located on the Pajarito Ranch, about 22 miles from the well site
  - Parajito Creek Ranch holds appropriations for more than 500 acre feet (AF) of potable groundwater, which may be sold for any and all uses.

Latigo Ranch 3-3 Surface Use Plan (revised)

The well location, associated facilities and access roads will be constructed on fee surface, upon approval of the surface owner. Well site and access roads will be constructed to withstand the loads occurring during mobilization, placement and operation of drilling, completion and testing equipment. Construction activities will be conducted to minimize surface disturbances and to readily accommodate closure and reclamation activities on disturbed areas. Closed loop and temporary pit design, operation and maintenance, closure and reclamation will be conducted according to the protocol presented below.

Existing Roads

- Access to Location
    - From the town of Cuervo, New Mexico
        - Drive north on County Road (Gato Del Mesa Road), about 5.9 miles (Topographic Map A)
        - Enter improved road north of pipeline corridor road and travel west toward Webb CD-1 well location, about 3.8 miles (Topographic Map A)
        - Turn north on improved Webb Ranch road toward Webb CD-1 well location, about 1.8 miles (Topographic Map A)
        - From Webb Ranch road, turn west, follow improved road west, northwest and south up the hill, about 3.1 miles, to Latigo 2-34 well location
        - From Latigo Ranch 2-34 well location go south on new improved road, about 1.3 miles, to Latigo 3-3 (Topographic Map B). Latigo Ranch 3-3 is southeast of Cuervo Hill, north of the pipeline corridor road

Roads to be Constructed/Maintained

- Improved Roads
    - County Road (maintained by Guadalupe County)
        - Constructed of compacted crushed aggregate and fill
- Two-Track Roads
    - Latigo Ranch and Webb Ranch Roads
        - Existing improved 2-Track road extends to Latigo 2-34 well location
            - Constructed of compacted crushed aggregate and fill
            - Culverts and/or rock-filled, low water crossings installed
        - Construct improved 2-Track road segment: south approximately 1.3 miles along the east side of Cuervo Hill to Latigo Ranch 3-3 well location
            - Grade/crown road, placing crushed aggregate, as needed
            - Install culverts and/or rock-filled, low water crossings, as needed

Well Site Layout

- Well pad location and associated facilities are shown on Well Location, Latigo Ranch 3-3, Topographic Map A, and Topographic Map B
    - The staked well location and proposed access road are shown on Location Photos
    - Well location, water well, access roads, lined pits, above-ground tanks and temporary buildings, and storage areas are shown on Location Layout for Latigo Ranch 3-3

Water Supply

- Water well will be drilled at a location about 500 feet south of the well location, on the edge of the well site (Location Layout for Latigo Ranch 3-3)

Existing Oil & Gas Wells

- Webb CD-1 well, Webb Ranch 3-23 well, and Latigo Ranch 2-34 and 3-5 wells are nearby

Existing and/or Proposed Facilities

- Well Site Facilities
    - Located at well site at approximate locations shown on Location Layout for Latigo Ranch 3-3
- Temporary living quarters
    - Located at well site initially, possibly moved to other, more centrally located area in the near future

Storm Water Management Plan

- Stormwater management and erosion control practices will be implemented during construction, operations and reclamation (Storm Water Prevention Plan [SWPP])

Waste Management and Disposal

- Water-based drilling fluids (WBM), cuttings and other solids will be processed in a closed loop system; fluids will be re-used, solids will be transported for off-site disposal
- Oil-based drilling fluids (OBM), cuttings and other solids will be processed in a closed loop system; fluids will be re-used, solids will be transported for off-site disposal
- Oil-based drilling fluids (OBM) remaining after drilling will be shipped to the vendor, re-processed, and then used on subsequent drilling projects
- Other solid wastes will be accumulated and dispose of off-site at permitted landfill

Produced Water Management and Disposal

- Produced water, and hydraulic fracturing fluids will be managed in a temporary pit as described below. Produced water and hydraulic fracturing water will be evaporated on-site; some fluids may be treated and re-used on-site or at other well locations. Concentrated waste fluids will be disposed of off-site at an OCD-approved disposal facility

Construction Materials

- Fill material and Aggregate - obtained from local sources
- Top Soil - temporarily stockpiled at perimeter of well pad and along construction corridors for subsequent use during reclamation

Other Information

- Construction and operation of an oil & gas well in Guadalupe County, New Mexico does not require a special use permit or waiver from the County

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action: ☒ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Modification to an existing permit
☐ Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

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

1.
Operator: SWEPI LP OGRID #: 250036
Address: P.O. Box 567, Houston, TX 77001 (Local contact: Shell Explor. & Prod. Co. 4582 S. Ulster St. Pkwy., Suite 1400, Denver, CO 80237)
Facility or well name: Latigo Ranch 3-3
API Number: 30-019-20138 OCD Permit Number:
U/L or Qtr/Qtr K N Section 3 Township 10N Range 23E County: Guadalupe
Center of Proposed Design: Latitude 35-07-04.30035 N Longitude 104-29-27.44109 W NAD: ☐1927 ☒ 1983
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Pit:** Subsection F or G of 19.15.17.11 NMAC
Temporary: ☐ Drilling ☒ Temporary Completions ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other
☒ String-Reinforced
Liner Seams: ☒ Welded ☐ Factory ☐ Other Volume: 84,430 bbl Dimensions: L 225ft x W 220ft x D 10ft

3.
☒ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC
Type of Operation: ☐ P&A ☒ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
☐ Drying Pad ☐ Above Ground Steel Tanks ☒ Haul-off Bins ☐ Other
☐ Lined ☐ Unlined Liner type: Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
Liner Seams: ☐ Welded ☐ Factory ☐ Other

4.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: bbl Type of fluid:
Tank Construction material:
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other
Liner type: Thickness mil ☐ HDPE ☐ PVC ☐ Other

5.
☐ **Alternative Method:**
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

6.

Fencing: Subsection D of 19.15.17.11 NMAC *(Applies to permanent pits, temporary pits, and below-grade tanks)*

☐ Chain link, six feet in height, two strands of barbed wire at top *(Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)*

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

☒ Alternate. Please specify: Four foot height woven wire with up to two strands of barbed wire above woven wire

7.

Netting: Subsection E of 19.15.17.11 NMAC *(Applies to permanent pits and permanent open top tanks)*

☐ Screen ☐ Netting ☐ Other_____

☐ Monthly inspections (If netting or screening is not physically feasible)

8.

Signs: Subsection C of 19.15.17.11 NMAC

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

☒ Signed in compliance with 19.15.3.103 NMAC

9.

Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

☐ Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

10.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. **Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.**

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

11.
Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- ☒ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC
- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☒ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

12.
Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9
- ☐ Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☒ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____

☐ Previously Approved Operating and Maintenance Plan API Number: _____ *(Applies only to closed-loop system that use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)*

13.
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H_2S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

14.
Proposed Closure: 19.15.17.13 NMAC
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

Type: ☐ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☐ Permanent Pit ☐ Below-grade Tank ☒ Closed-loop System ☐ Alternative ☒ Temporary Completions

Proposed Closure Method:
- ☒ Waste Excavation and Removal (Temporary Completions Pit)
- ☒ Waste Removal (Closed-loop systems only)
- ☐ On-site Closure Method (Only for temporary pits and closed-loop systems)
  - ☐ In-place Burial ☐ On-site Trench Burial
- ☐ Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

15.
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- ☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☒ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

16.
Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC)
Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.

Disposal Facility Name: Gandy Marley, Tatum, NM Disposal Facility Permit Number: NM-711-1-0020

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Will any of the proposed closed-loop system operations and associated activities occur on or in areas that *will not* be used for future service and operations?
☐ Yes (If yes, please provide the information below) ☒ No

Required for impacted areas which will not be used for future service and operations:
☐ Soil Backfill and Cover Design Specifications - - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

17.
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC
Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

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

18.
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***
☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
☐ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☐ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
☐ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19.
Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Michael L. Bergstrom Title: Regulatory Coordinator

Signature: Michael L Bergstrom Date: 3/12/09

e-mail address: Michael.Bergstrom@shell.com Telephone: 303.222.6347

20.
OCD Approval: ☐ Permit Application (including closure plan) ☐ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: Ed Martin **Approval Date:** 3/16/09

Title: DISTRICT SUPERVISOR **OCD Permit Number:**

21.
Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ **Closure Completion Date:**

22.
Closure Method:

☒ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☒ Waste Removal (Closed-loop systems only)

☐ If different from approved plan, please explain.

23.
Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name: Disposal Facility Permit Number:

Disposal Facility Name: Disposal Facility Permit Number:

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations:

☐ Site Reclamation (Photo Documentation)
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique

24.
Closure Report Attachment Checklist: ***Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.***

☐ Proof of Closure Notice (surface owner and division)
☐ Proof of Deed Notice (required for on-site closure)
☐ Plot Plan (for on-site closures and temporary pits)
☐ Confirmation Sampling Analytical Results (if applicable)
☐ Waste Material Sampling Analytical Results (required for on-site closure)
☐ Disposal Facility Name and Permit Number
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique
☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude Longitude NAD: ☐1927 ☐ 1983

25.
Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): Title:

Signature: Date:

e-mail address: Telephone:

SWEPI, LP Latigo Ranch 3-3, Section 3; Twp 10N; Rng 23E, Guadalupe County, NM
Responses for FORM C-144 Section 10

GROUNDWATER

Groundwater is more than 100 feet below the bottom of the proposed temporary pit. A search was conducted of the iWATERS on-line database maintained by the Office of the New Mexico State Engineer in Twp 10N and Twp 11N; Rng 23E, Guadalupe County, NM. Two wells were identified in the search area. Well records from the database indicate that each of these wells is screened in excess of 500 feet below ground level. There is one stock well within 1,800 feet of the proposed Latigo Ranch 3-3 natural gas exploration well, but it is not listed in the database and its depth and construction details are not known. A copy of the composite iWATERS search page and individual well pages are included as Attachments 1.0, 1.1, and 1.2.

In addition, SWEPI drilled the Latigo Ranch 3-5 water well approximately 1.4 miles west of the proposed well location. Groundwater was encountered at approximately 985 feet below the surface in the upper sandstone of the Triassic Santa Rosa Formation. The log for this well are on file with the Office of the New Mexico State Engineer and provided here as Attachment 1.3.

A search for nearby water wells was also conducted in New Mexico State Bureau of Mines and Mineral Resources, Hydrologic Report No. 3, The Water Resources of Guadalupe County, New Mexico. None were identified within one mile of the proposed well location.

A search was conducted of the iWATERS on-line data base maintained by the Office of the New Mexico State Engineer in Sections 3 and 4; Twp 10N; Rng 23E, Guadalupe County, NM. No private, domestic wells, springs, were identified within 1,000 feet of the proposed well location. A copy of the composite iWATERS search page is included as Attachment 1.0.

SURFACE WATER

A review was conducted of the USGS 7.5 minute topographic quadrangle maps for Cuervo, Sacaton Draw, Cherisco, and Mesita Del Gato to assess the distance to the nearest continuously flowing stream. None were identified from the review. In addition, Mr. Marco Wikstrom of Kleinfelder conducted a field reconnaissance on February 3, 2009. No continuously flowing streams we identified with 300 feet of the proposed well location. A copy of the composite topographic map and verification certificate are included as Attachments 2 and 2.1.

RESIDENCES OR INSTITUTIONS

A review was conducted on a Google Earth aerial photographic image of the area to assess the distance to the nearest residence. No residences were identified within 300 feet of the proposed drilling location. A copy of the Google Earth image showing the area within 1,700 feet of the proposed well location is included as Attachment 3.0.

MUNICIPAL BOUNDARIES

A review was conducted on a Google Earth aerial photographic image of the area to assess the distance to the nearest municipal boundary or municipal fresh water well field. The nearest municipality is Santa Rosa, New Mexico, which is located approximately 14 miles to the southwest. In addition, Mr. Marco Wikstrom of Kleinfelder conducted a field reconnaissance on February 3, 2009. No municipalities were identified within more than 10 miles of the proposed well location. A copy of the verification certificate is included as Attachment 2.1.

WETLANDS
A search was conducted of the US Fish and Wildlife Wetland Identification Map on-line system. No wetlands were identified within 500 feet of the proposed drill location. In addition, Mr. Marco Wikstrom of Kleinfelder conducted a field reconnaissance on February 3, 2009. No wetlands were identified with 500 feet of the proposed well location. A copy of the US Fish and Wildlife wetlands search page and the verification certificate are included as Attachments 4.0 and 2.1.

SUBSURFACE MINES
A request was made to the New Mexico Energy Minerals and Natural Resources Department (EMNRD) to assess the potential for the proposed well location to be overlying a subsurface mine. An email was received from EMNRD that indicated there are no subsurface mines near the proposed well location. A copy of the EMNRD email is included as Attachments 5.0.

GEOLOGIC STABILITY
A review was conducted of New Mexico Geologic Society Guidebook 23 East-Central New Mexico (1972); New Mexico Geologic Society Special Publication No.4 Subsurface Geology of East-Central New Mexico (1972); and Tectonics and Mineral Resources of Southwestern North America (1976) to assess the geologic or tectonic stability of the vicinity of the proposed well location.

Historical earthquakes in northeastern New Mexico are recorded for the period between 1978 and 1971. During this period of time there were 21 earthquakes were observed. One of these occurred in 1878 and the remainder occurred between 1924 and 1971. Seven were in the Tucumcari-Santa Rosa-Bell Ranch area. In addition, this part of New Mexico has felt earthquakes originating in the Texas Panhandle and southeastern Colorado (NMGS Guidebook, 1972). Magnitudes are known for shocks beginning in 1962, most ranged from 3.0 to 3.9 but two were recorded at magnitudes 4.5 and 4.8. The epicenter nearest the proposed well location was located in northeastern Guadalupe County approximately 25 miles northeast of Santa Rosa. Richter's seismic regionalization map of the United States show that the northeastern New Mexico might occasionally expect earthquakes of intensity VIII but this study also shows that no shock of intensity VII for the area. An earthquake of this magnitude would cause negligible damage to buildings of good design and construction (NMGS Guidebook, 1972). Therefore the proposed well location is within a geologically stable area.

FLOODPLAIN
A search was conducted of the Federal Emergency management Administration web page for a 100-year flood plain designation for the proposed well location. There results of the search indicated that the area had not been mapped by FEMA. There are no continuously flowing streams or rivers within three miles of the proposed well location. Therefore the proposed well location is not within a 100-year flood plain. A copy of the FEMA web site search is included as Attachments 6.0.

ATTACHED IMAGES: Images: DJanney.JPG Images: EMNRD Abandoned mine status.JPG Images: Fema search.JPG Images: FISH_WILD.JPG Images: Google_aerial.jpg Images: I Waters 04512.JPG
ATTACHED XREFS:
ALBUQUERQUE, NM CAD FILE: G:\Environ\CURRENT WORK FOLDER PROJECTS\94663-Shell E&P\4.0 Technical Information\Figures\Latigo Ranch 3-3 Revised Location\ LAYOUT:

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 10N Range: 23E Sections:

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) C Non-Domestic C Domestic C All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

POD / SURFACE DATA REPORT 02/18/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest

DB File Nbr	Use	(acre ft per annum) Diversion	Owner	POD Number	Source	Tws	Rng	Sec	q	q	q	X Y are in Feet Zone	X	Y	UTM are in Mete UTM_Zone	Easti
RG 20167	DOM	3	CLOVIS J. ROMERO	RG 20167 POD1	Shallow	10N	23E	19	4	1						

Record Count: 1

iWATERS WELL SEARCH T10N R23E

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 11N Range: 23E Sections:

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) C Non-Domestic C Domestic C All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | iWATERS Menu | Help

POD / SURFACE DATA REPORT 02/18/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest

B File Nbr	Use	(acre ft per annum) Diversion	Owner	POD Number	Source	Tws	Rng	Sec	q	q	q	X Y are in Feet Zone	X	Y	UTM are in Mete UTM_Zone	Eastin
R 04512	PRO	0	HAGE & WEBB LAND & CATTLE CO.	CR 04512	Shallow	11N	23E	26	4	4	2	461575	1508779		13	5565

ecord Count: 1

iWATERS WELL SEARCH T11N R23E

KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

PROJECT NO.	94663
DRAWN:	FEB 2009
DRAWN BY:	PD
CHECKED BY:	JD
FILE NAME:	94663_01_0.dwg

iWATERS WELL SEARCH RESULTS

SWEPI LP
LATIGO RANCH 3-3
GUADALUPE COUNTY, NEW MEXICO

ORIGINATOR: J. DIETRICH
APPROVED BY:

DRAWING CATEGORY: 1

ATTACHMENT 1.0

ATTACHMENT 1.1

New Mexico Office of the State Engineer

Point of Diversion Summary

Back

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Twn	Rng	Sec	q	q	q	Zone	X	Y
RG 20167 POD1	16N	23E	19	4	1				

Driller Licence: 514 STEVENS WELL DRILLING
Driller Name: G P STEVENS
Source: Shallow
Drill Start Date: 03/04/1972
Drill Finish Date: 03/07/1972
Log File Date: 03/13/1972
PCW Received Date:
Pump Type:
Pipe Discharge Size:
Casing Size: 6.63
Estimated Yield:
Depth Well: 22
Depth Water: 10

ATTACHMENT 1.2

New Mexico Office of the State Engineer
Point of Diversion Summary

Back

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y
CR 04612	11N	23E	26	4	4	2		461875	1636779

Driller Licence: 1613 ROCKY ROAD
Driller Name: MATHEWS, OREN
Drill Start Date: 03/06/2006
Log File Date: 04/19/2006
Pump Type:
Casing Size: 5
Depth Well: 1120.

Source: Shallow
Drill Finish Date: 03/11/2006
PCW Received Date:
Pipe Discharge Size:
Estimated Yield: 30
Depth Water: 900

Water Bearing Stratifications:	Top	Bottom	Description
	940	1060	Sandstone/Gravel/Conglomerate
Casing Perforations:	**Top**	**Bottom**	
	930	120	

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 1 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
0	4684	MUDSTONE- red-orange, dry, strong HCl reaction, <5% very fine grained sandstone, strongly oxidized						
25	4660	25.0 El. 4659.0'						
25	4660	SILTSTONE- red-brown, strong HCl reaction, <5% very fine grained sandstone, strongly oxidized, more competant than previous layer						
50	4640	Red-brown to maroon from 50 to 75 ft bgs		Chinle		C	Neat cement	
75	4610	75.0 El. 4609.0'						
75	4610	MUDSTONE- dark-red-brown, locally green in reduced splotches						
100	4590	100.0 El. 4584.0'						

Groundwater Measurements

Depth (ft)	Hour	Date

Approved by: David W. Janney Date: 08/11/2008

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 2 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
100		SANDSTONE- dark-red-brown locally gray/green in reduced splotches, moderate HCl reaction, muddy/silty matrix between sand grains, more competent, chips upto 1"						
105	4580							
110								
115	4570							
120								
125	4560	125.0 El. 4559.0'						
		MUDSTONE/SILTSTONE- dark-red/orange-red, <5% very fine grained sandstone						
130								
135	4550							
140								
145	4540							
150				Chinle		C	Neat cement	
155	4530							
160								
165	4520							
170								
175	4510							
180		180.0 El. 4504.0'						
		SANDSTONE- very fine grained, dark-red/maroon, moderate HCl reaction, muddy matrix, chips up to 1", strongly oxidized, strongly weathered, sand is dominantly quartz						
185	4500							
190								
195	4490							
200								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 3 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
200		SANDSTONE- very fine grained, dark-red/maroon, moderate HCl reaction, muddy matrix, chips up to 1", strongly oxidized, strongly weathered, sand is dominantly quartz		Chinle		C	Neat cement	
205	4480							
210								
215	4470							
220								
225	4460							
230								
235	4450							
240								
245	4440							
250								
255	4430							
260								
265	4420							
270								
275	4410							
280								
285	4400							
290								
295	4390							
300								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 4 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
300		SANDSTONE- very fine grained, dark-red/maroon, moderate HCl reaction, muddy matrix, chips up to 1", strongly oxidized, strongly weathered, sand is dominantly quartz						
305	4380							
310								
315	4370							
320								
325	4360							
330								
335	4350							
340								
345	4340							
350				Chinle		C	Neat cement	
355	4330							
360								
365	4320							
370								
375	4310							
380								
385	4300							
390								
395	4290							
400								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 5 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
400		SANDSTONE- very fine grained, dark-red/maroon, moderate HCl reaction, muddy matrix, chips up to 1", strongly oxidized, strongly weathered, sand is dominantly quartz		Chinle		C	Neat cement	
405	4280							
410								
415	4270							
420								
425	4260							
430								
435	4250							
440								
445	4240							
450								
455	4230							
460								
465	4220							
470								
475	4210							
480								
485	4200							
490								
495	4190							
500								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 6 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
500		SANDSTONE- very fine grained, dark-red/maroon, moderate HCl reaction, muddy matrix, chips up to 1", strongly oxidized, strongly weathered, sand is dominantly quartz						
505	4180							
510								
515	4170							
520								
525	4160							
530								
535	4150							
540								
545	4140							
550				Chinle		C	Neat cement	
555	4130							
560								
565	4120							
570								
575	4110							
580								
585	4100							
590								
595	4090							
600		600.0		El. 4084.0'				

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 7 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
600								
605	4080	SILTSTONE- red-brown, locally grey, <5 % very fine grained standstone						
610								
615	4070	615.0 EL 4069.0'						
620		SANDSTONE- very fine grained, sub-angular to round, poorly cemented, whitish gray, strong HCl reaction, well sorted						
625	4060							
630								
635	4050							
640								
645	4040							
650				Chinle		C	Neat cement	
655	4030							
660		660.0 EL 4024.0'						
665	4020	MUDSTONE- dark-red-brown, locally green in reduced splotches						
670								
675	4010							
680								
685	4000							
690								
695	3990							
700								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 8 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
700								
705	3980	MUDSTONE- dark-red-brown, locally green in reduced splotches 705.0 El. 3979.0'						
710		SANDSTONE- very fine grained, angular to round, poorly to not cemented, gray, strong HCl reaction, friable, muddy, well sorted						
715	3970							
720								
725	3960							
730								
735	3950							
740								
745	3940							
750				Chinle		C	Neat cement	
755	3930							
760								
765	3920							
770								
775	3910							
780								
785	3900							
790		Mudstone lenses around 795 ft bgs						
795	3890							
800								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
1) Borehole coordinates are shown in State Plane, Colorado South Zone, NAD 83 datum.
2) AR = Air Rotary
3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 9 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
800		SANDSTONE- very fine grained, angular to round, poorly to not cemented, gray, strong HCl reaction, friable, muddy, well sorted		Chinle		C	Neat cement	
805	3880							
810								
815	3870							
820								
825	3860							
830								
835	3850							
840								
845	3840							
850								
855	3830							
860								
865	3820							
870								
875	3810							
880								
885	3800							
890								
895	3790							
900								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
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2) AR = Air Rotary.
3) C = Chips from Cuttings

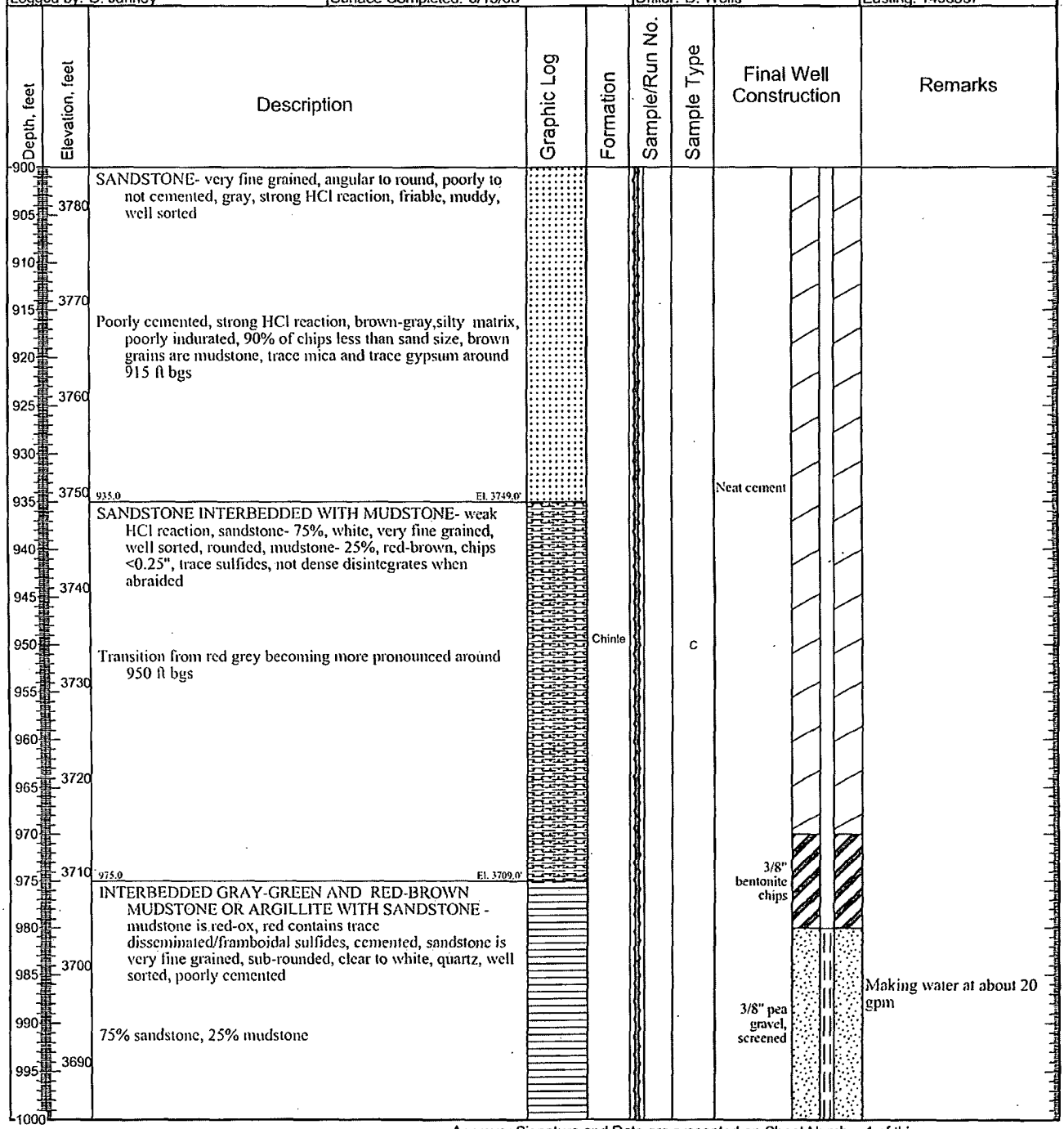
ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 10 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857



Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
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ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 11 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
1000								
1005	3680	INTERBEDDED GRAY-GREEN AND RED-BROWN MUDSTONE OR ARGILLITE WITH SANDSTONE - mudstone is red-ox, red contains trace disseminated/framboidal sulfides, cemented, sandstone is very fine grained, sub-rounded, clear to white, quartz, well sorted, poorly cemented					3/8" pea gravel, screened	
1010		35% sandstone, 65% mudstone, dominately dark gray with sulfides						
1015	3670							Increased water to 35 gpm
1020		80% mudstone, 20% sandstone, mudstone is dark gray to red brown						
1025	3660							
1030								
1035	3650	10% sandstone, 90% mudstone, mudstone is gray-red-brown, dominantly gray with sulfides, disseminated/framboidal, sandstone is gray-white-clear, very fined grained, subrounded, quartz, well sorted, poorly cemented						
1040								
1045	3640							
1050		65% sandstone, 35% mudstone		Santa Rosa		C		
1055	3630							
1060								
1065	3620	1065.0 El. 3619.0'						
1070		SANDSTONE INTERBEDDED WITH MUDSTONE - very fine grained, sub-rounded, gray-white-clear, quartz, cemented, 80% sandstone, 20% mudstone						
1075	3610						3/8" pea gravel, screened	
1080								
1085	3600	75% sandstone, 25% mudstone, sandstone is gray-white-clear, very fine grained, sub-rounded, quartz, weak HCl reaction, moderately cemented, mudstone is gray, sandy, trace disseminated/framboidal sulfides						Increasing water to 75 gpm
1090								
1095	3590	75% sandstone, 25% mudstone, sandstone is white-gray-clear, very fine grained, well sorted, sub-rounded to rounded,						
1100								

Groundwater Measurements

Depth (ft)	Hour	Date

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3) C = Chips from Cuttings

ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 12 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
1100		weak HCl reaction, mudstone is dominantly gray with trace sulfides, framboidal/disseminated						
1105	3580	SANDSTONE INTERBEDDED WITH MUDSTONE - very fine grained, sub-rounded, gray-white-clear, quartz, cemented, 80% sandstone, 20% mudstone						
1110		75% sandstone, 25% mudstone, sandstone is gray-white-clear, sub-rounded to well rounded, well sorted, quartz, mudstone is red-brown to gray at 1110 ft bgs						
1115	3570							
1120								
1125	3560	75% sandstone, 25% mudstone, sandstone is white-gray-clear, very fine grained, quartz, well sorted, sub-rounded, trace sulfide, mica						
1130								
1135	3550						3/8" pea gravel, screened	
1140		1140.0 El. 3544.0' MUDSTONE INTERBEDDED WITH SANDSTONE - 75% mudstone, 25% sandstone, mudstone is red-brown to gray, dominantly gray, with trace sulfides, sandstone is white-gray-clear, very fine grained, quartz, well sorted, trace sulfide, mica						Water increased to 125 gpm
1145	3540							
1150								
1155	3530	85% mudstone, 15% sandstone, trace black glassy grain-obsidian?						
1160								
1165	3520							
1170		90% mudstone, 10% sandstone						
1175	3510							
1180								
1185	3500							
1190								
1195	3490							
1200								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

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ATTACHMENT 1.3

WELL LOG

Well # Latigo 3-5B
Sheet 13 of 13
Revision:

KLEINFELDER

Project Name: Shell E&P	Drilling Started: 7/24/2008	Groundwater: See below	Total Depth (ft.): 1260.0
Project Number: 94663	Drilling Completed: 7/27/2008	Drilling Co.: White Mountain	Surface Elevation: 4684.0
Location: Guadalupe County, NM	Well Completed: 7/30/08	Rig Type: Atlas Copco RD-20	Northing: 484207
Logged by: D. Janney	Surface Completed: 8/13/08	Driller: D. Wells	Easting: 1498857

Depth, feet	Elevation, feet	Description	Graphic Log	Formation	Sample/Run No.	Sample Type	Final Well Construction	Remarks
1200		MUDSTONE INTERBEDDED WITH SANDSTONE - 75% mudstone, 25% sandstone, mudstone is red-brown to gray, dominantly gray, with trace sulfides, sandstone is white-gray-clear, very fine grained, quartz, well sorted, trace sulfide, mica						
1205	3480							
1210								
1215	3470							
1220								
1225	3460							
1230				Santa Rosa		C	3/8" pea gravel	
1235	3450							
1240								
1245	3440							
1250								
1255	3430							
1260		1260.0 EL 3424.0'						
1265	3420	Bottom of Borehole at 1260.0 feet.						
1270								
1275	3410							
1280								
1285	3400							
1290								
1295	3390							
1300								

Groundwater Measurements

Depth (ft)	Hour	Date

Approver Signature and Date are presented on Sheet Number 1 of this Borehole Log.

Notes:
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2) AR = Air Rotary
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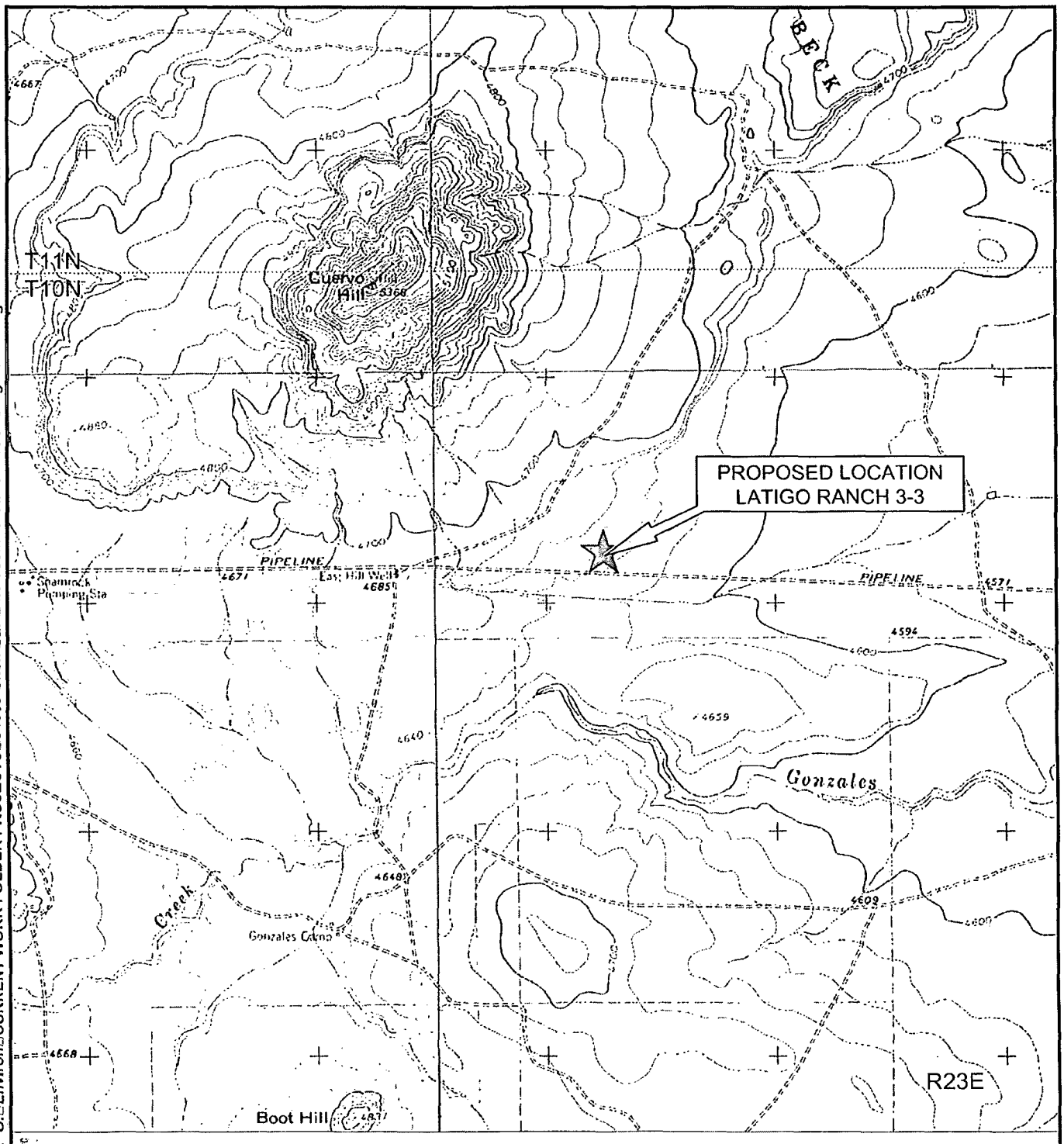

SOURCES: TOPO MAP CREATED FROM MAPCARD.COM
REFERENCES: USGS QUAD MAPS MESA CHERISCO, MESITA DEL GATO, SACATON DRAW AND CUERVO.

N

2000 0 1000 2000 ft

SCALE: 1 inch = 2000 feet

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PROJECT NO.	94663
DRAWN:	FEB 2009
DRAWN BY:	PD
CHECKED BY:	JD
FILE NAME:	94663_01_0.dwg

USGS TOPOGRAPHIC MAP OF WELL SITE

SWEPI LP
LATIGO RANCH 3-3
GUADALUPE COUNTY, NEW MEXICO

ORIGINATOR: J. DIETRICH
APPROVED BY:
DRAWING CATEGORY: 1

ATTACHMENT 2.0

ATTACHED IMAGES: Images: DJanney.JPG Images: EMNRD Abandoned mine status.JPG Images: Fema search.JPG Images: FISH_WILD.JPG Images: Google_aerial.jpg Images: I Waters 04512.JP
ATTACHED XREFS:
ALBUQUERQUE, NM CAD FILE: G:\Environ\CURRENT WORK FOLDER PROJECTS\94663-Shell E&P\4.0 Technical Information\Figures\Latigo Ranch 3-3 Revised Location\ LAYOUT

ATTACHEMENT 2.1

Certification of Siting Criteria, Latigo 3-3 Gas Well, Sec 3; Twp 10; Rng 23E, Guadalupe County, New Mexico

I, Marco Wikstrom, have performed a site visit and visual inspection to look for the presence of continuously flowing watercourses, lakebeds, playa lakes, sink holes, residences, schools, hospitals, churches, evidence of underground mines, water wells, institutions, and incorporated municipal boundaries within the specified distances (listed below) of the proposed gas well location in Section 3, Township 10 North, Range 23 East, Guadalupe County, New Mexico. I did not observe any of these features within the proposed well area or within the distances indicated in the items listed below (items i. through v.). Drilling will not take place within any of the restricted distances.

Marco Wikstrom
Staff Geologist

3-9-2009
Date

i. ***Within 200 feet of a continuously flowing watercourse, lakebed, sinkhole, or playa lake;***

ii. ***Within 500 feet of a private domestic fresh water well or spring;***

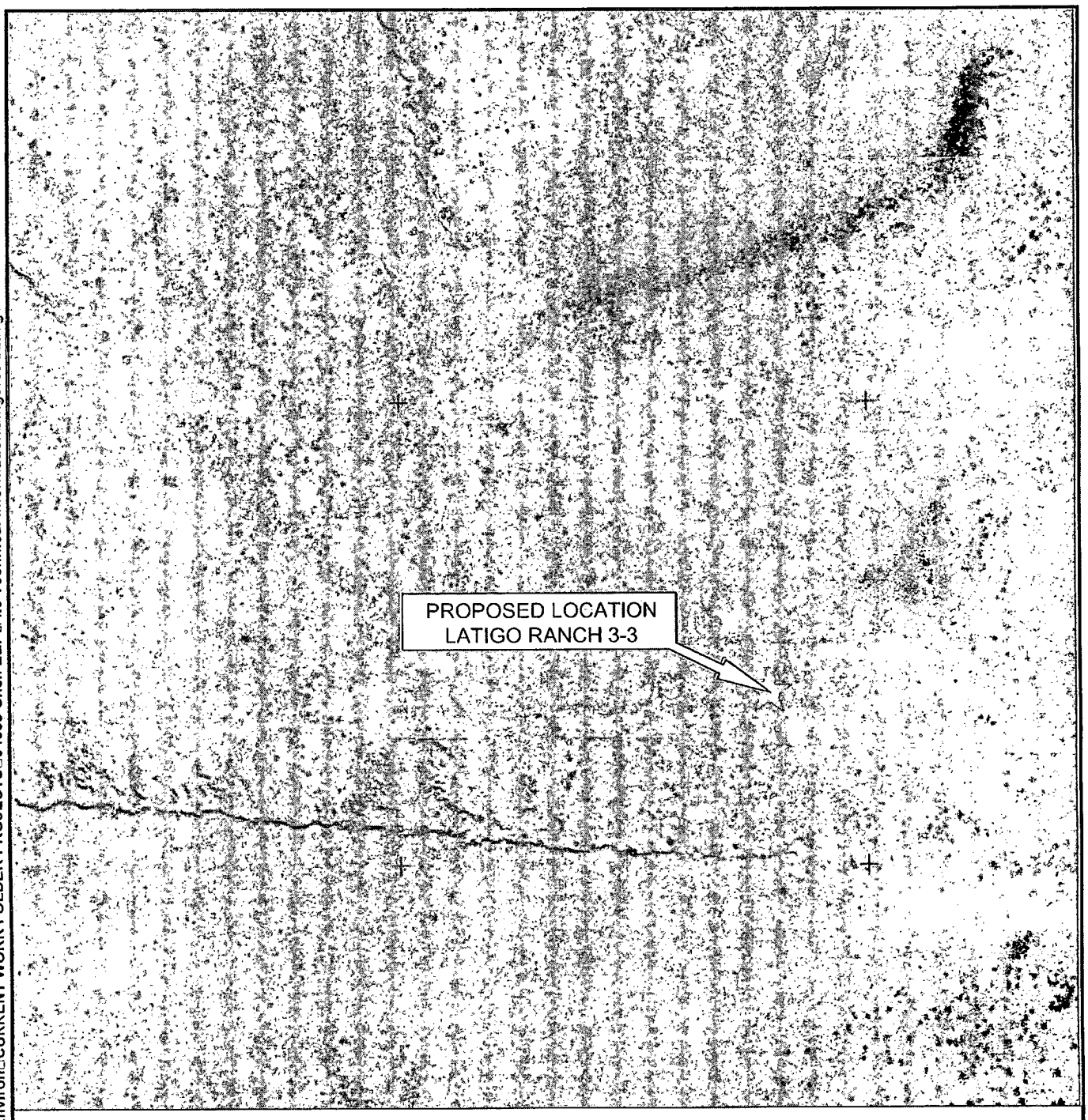
iii. ***Within, or within 500 feet of, a wetland;***

iv. ***Within the area overlying a subsurface mine;***

v. ***Within 300 feet from the nearest permanent residence, school, hospital, institution or church; or.***

vi. ***Within an incorporated municipality or municipal fresh water well field.***

ATTACHED IMAGES: Images: Aerial_mapcard.JPG Images: DJanney.JPG Images: EMNRD Abandoned mine status.JPG Images: Fema search.JPG Images: FISH_WILD.JPG Images: Google_aerial.j
ATTACHED XREFS:
ALBUQUERQUE, NM CAD FILE: G:□Environ□CURRENT WORK FOLDER PROJECTS□94663-Shell E&P□4.0 Technical Information□Figures□Latigo Ranch 3-3 Revised Location□ LAYOUT



SOURCES: AERIAL MAP CREATED FROM MAPCARD.COM
(ACCESSED FEBRUARY 19,2009).

N

-500 0 250 500 ft
SCALE: 1 inch = 500 feet

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PROJECT NO.	94663
DRAWN:	FEB 2009
DRAWN BY:	PD
CHECKED BY:	JD
FILE NAME:	LATIGO.dwg

AERIAL VIEW OF WELL SITE

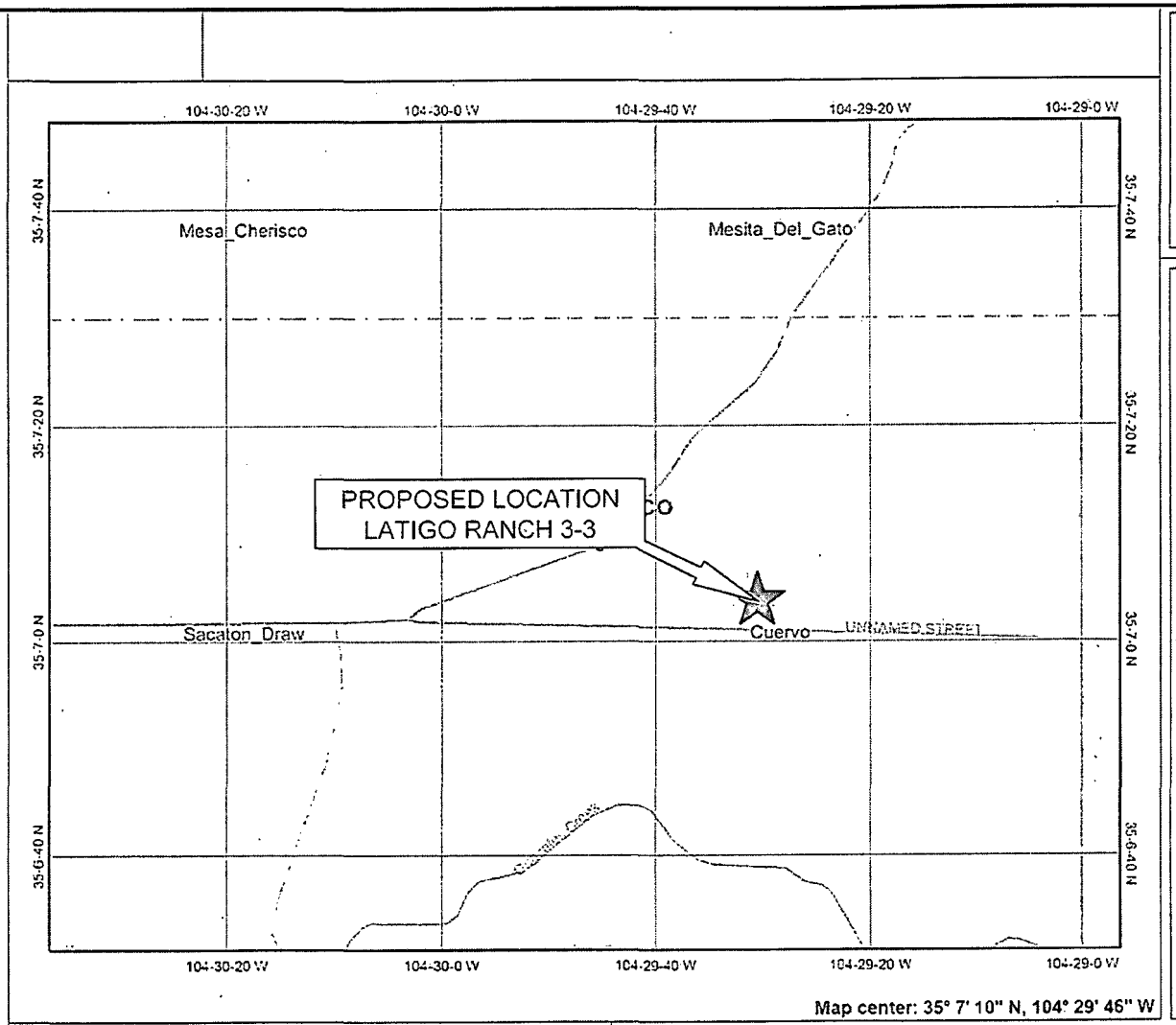
SWEPI LP
LATIGO RANCH 3-3
GUADALUPE COUNTY, NEW MEXICO

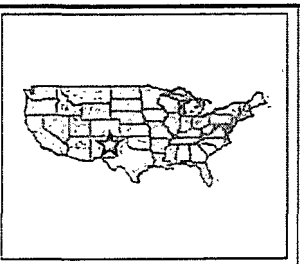
ORIGINATOR: J. DIETRICH
APPROVED BY:

DRAWING CATEGORY: 1

ATTACHMENT
3.0

ATTACHED IMAGES: Images: DJanney.JPG Images: EMNRD Abandoned mine status.JPG Images: Fema search.JPG Images: FISH_WILD.JPG Images: Google_aerial.jpg Images: I Waters 04512.JPG
ATTACHED XREFS:
ALBUQUERQUE, NM
CAD FILE: G:\Environ\CURRENT WORK FOLDER PROJECTS\94663-Shell E&P\4.0 Technical Information\Figures\Latigo Ranch 3-3 Revised Location\ LAYOUT: LAYOUT1 42 Mar 2009, 10:49am, PDan





Legend

Ohio_wet_scan
0
1
Out of range
Interstate
Major Roads
Other Road
Interstate
State highway
US highway
Roads
Cities
USGS Quad Index 24K
Lower 48 Wetland Polygons
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
Lower 48 Available Wetland Data
Non-Digital
Digital
No Data
Scan
NHD Streams
Counties 100K
States 100K
South America
North America

Scale: 1:16,653

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

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PROJECT NO.	94663
DRAWN:	FEB 2009
DRAWN BY:	PD
CHECKED BY:	JD
FILE NAME:	94663_01_0.dwg

US FISH & WILDLIFE WETLANDS IDENTIFICATION MAP

SWEPI LP
LATIGO RANCH 3-3
GUADULUPE COUNTY, NEW MEXICO

ORIGINATOR: J. DIETRICH
APPROVED BY:
DRAWING CATEGORY: 1

ATTACHMENT 4.0

ATTACHED IMAGES: Images: DJanney.JPG Images: EMNRD Abandoned mine status.JPG Images: Fema search.JPG Images: FISH_WILD.JPG Images: Google_aerial.jpg Images: I Waters 04512.JP
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ALBUQUERQUE, NM CAD FILE: G:□Environ□CURRENT WORK FOLDER PROJECTS□94663-Shell E&P□4.0 Technical Information□Figures□Latigo Ranch 3-3 Revised Location□ LAYOUT

EMNRD RECORD OF EMAIL

From: "Tompson, Mike, EMNRD" <Mike.Tompson@state.nm.us>
To: John Dietrich
Subject: Abandoned Mine Status

2/16/2009 3:59 PM

John,

Our records do not show any abandoned mines in Sections 3 and 4, Township 10N, Range 23E. Our records are not exhaustive though, and mines can exist is such areas.

I hope this helps. Let me know if you have any questions.

Mike Tompson
New Mexico Abandoned Mine Land Program
505.476.3427

From: John Dietrich [mailto:JDietrich@KleinFelder.com]
Sent: Monday, February 16, 2009 3:51 PM
To: Tompson, Mike, EMNRD
Cc: David Janney
Subject:

Mike,

As I said in our phone conversation I am trying to determine weather there are any abandoned subsurface mines in the vicinity of our project. The project is located section 3 or section 4 of Township 10 North, Range 23 East.

Thank-you for your help, and have a nice day.

John Dietrich

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PROJECT NO.	94663
DRAWN:	FEB 2009
DRAWN BY:	PD
CHECKED BY:	JD
FILE NAME:	94663_01_0.dwg

EMNRD NO SUBSURFACE MINE CONFIRMATION

SWEPI LP
LATIGO RANCH 3-3
GUADALUPE COUNTY, NEW MEXICO

ORIGINATOR: J. DIETRICH
APPROVED BY:

DRAWING CATEGORY: 1

ATTACHMENT 5.0

FEMA MAP SEARCH RESULTS

FEMA Map Service Center

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Map Search Results

Unmapped Area(s)

Item ID	Community ID	Community Name
UNMAPPED_350023	350023	GUADALUPE COUNTY UNINCORPORATED AREAS

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FEMA MAP SEARCH RESULTS ON FEBRUARY 18, 2009.

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PROJECT NO.	94663
DRAWN:	FEB 2009
DRAWN BY:	PD
CHECKED BY:	JD
FILE NAME:	94663_01_0.dwg

FEMA MAP SEARCH RESULTS

SWEPI LP
LATIGO RANCH 3-3
GUADALUPE COUNTY, NEW MEXICO

ORIGINATOR: J. DIETRICH
APPROVED BY:

DRAWING CATEGORY: 1

ATTACHMENT 6.0

ATTACHED IMAGES: Images: DJanney.JPG Images: EMNRD Abandoned mine status.JPG Images: Fema search.JPG Images: FISH_WILD.JPG Images: Google_aerial.jpg Images: I Waters 04512.JP
ATTACHED XREFS:
ALBUQUERQUE, NM CAD FILE: G:□Environ□CURRENT WORK FOLDER PROJECTS□94663-Shell E&P□4.0 Technical Information□Figures□Latigo Ranch 3-3 Revised Location□ LAYOUT

Latigo Ranch 3-3

Temporary Completions Pit Design and Construction Specifications

- The temporary completions pit will be designed to ensure the confinement of liquids to prevent unauthorized releases.
    - Prior to pit excavation, topsoil will be removed and stockpiled for use as the final cover or fill at the time of closure.
    - Signs will be posted in a conspicuous place on the fence surrounding the pit, unless the pit is located on a site where there is an existing well. Signs will be posted in an upright position, and have dimensions not less than 12 inches by 24 inches with lettering not less than two inches in height. Site signage will provide the operator's name; the location of the site by quarter-quarter or unit letter, section, township and range; and emergency telephone numbers, and comply with 19.15.3.103 NMAC.
- The temporary completions pit will be fenced in a manner that prevents unauthorized access and the fences will be maintained in good repair. During drilling, completions, or work-over operations, fence may not be in place on the edge of the pit adjacent to the drilling, completions, or work-over rig.
    - The fence will be at least a four-foot woven wire fence with at least one strand of barbed wire within six-inches of the top of the woven wire.
    - The top of the temporary pit will be covered with at least four strands of multi-colored triangular plastic flags that are non-hazardous to wildlife, including migratory birds. In addition, the flagging and pit will be inspected on a monthly basis inspect for dead migratory birds or other wildlife, and within 30 days of discovery that discovery will be reported to the appropriate wildlife agency and to the appropriate division district office in order to facilitate assessment and implementation of measures to prevent incidents from reoccurring.
- The temporary completions pit will have a foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities. The slopes will be no steeper than two horizontal feet to one vertical foot (2H:1V).
    - The temporary completions pit will be constructed with a 20-mil string reinforced HDPE liner.
    - The liner will be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. The liner material shall be resistant to ultraviolet light and will comply with EPA SW-846 Method 9090A.
    - Liner seams will be minimized and oriented parallel to the line of maximum slope (i.e., running up or down, not across the slope). Seams will be factory welded where possible. Prior to field welding, seams will be overlapped four to six inches. The operator shall minimize the number of field seams in corners and irregularly shaped areas. Qualified personnel shall perform all field welding.
    - Construction shall avoid excessive stress-strain on the liner.
    - Geotextile may be placed under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity.
    - The edges of the liners will be anchored in the bottom of a compacted earth-filled trench at least 18 inches deep.

    - The liner will be protected from any fluid force or mechanical damage at any point of discharge into or suction from the lined temporary pit.
- The temporary completions pit will be designed to prevent run-on of surface water with a berm, ditch, proper sloping or other surrounding diversion. During drilling, completions, or work-over operations, the edge of the temporary pit adjacent to the rig may not have run-on protection if the operator is using the temporary pit to collect liquids escaping from the drilling, completions, or work-over operations and this run-on will not result in a breach of the temporary pit
    - The volume of a temporary completions pit shall not exceed 10 acre-feet, including freeboard.
- The temporary flare pit used to vent or flare gas during a drilling or work-over operation will be designed to allow liquids to drain to this separate temporary pit and will not require a liner, unless the appropriate division district office requires an alternative design in order to protect surface water, groundwater, and the environment. Freestanding liquids will not be allowed to remain on the unlined portion of a temporary pit used to vent or flare gas.

Closed-Loop System Design and Construction Specifications

- The closed loop system will be designed and constructed to ensure the confinement of oil, gas or water to prevent uncontrolled releases and comply with the requirements for temporary pits specified in 19.15.17 NMAC.
    - Drying pads are not anticipated with this closed-loop system. However, if they are constructed, they will be designed and constructed with appropriate liners that prevent the contamination of fresh water, and protect public health and the environment; with sumps to facilitate the collection of liquids derived from drill cuttings; and with berms that prevent run-on of surface water or fluids.

Latigo Ranch 3-3
Temporary Completions Pit and Closed-Loop System Operations and Maintenance Plan

- The temporary completions pit and closed-loop system will be maintained in accordance with the following:
    - It will contain liquids and solids and the integrity of the liner, liner system, or secondary containment system will be maintained to prevent contamination of fresh water and protect public health.
    - All drilling fluids will be recycled, reused, reclaimed or disposed of in a manner approved by the OCD district office, to prevent the contamination of fresh water and protect public health and the environment.
    - A tank made of steel or other material, which the OCD district office approves, will be used to contain hydrocarbon-based drilling fluids.
    - Hazardous waste will not be discharged into or stored in the pit or closed-loop system.
    - If any pit liner's integrity is compromised, or if any penetration of the liner occurs above the liquid's surface, then the operator shall notify OCD district office within 48 hours of the discovery and repair the damage or replace the liner.
    - If the pit or closed-loop system develops a leak, or if any penetration of the pit liner or closed-loop system occurs below the liquid's surface, all liquid above the damage or leak line will be removed within 48 hours, and the appropriate OCD district office will be notified within 48 hours of the discovery and the damage will be repaired or the pit liner or closed-loop system will be replaced as needed.
    - The injection or withdrawal of liquids from the pit shall be accomplished through a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
    - The temporary pit will be installed and operated to prevent the collection of surface water run-on.
    - An oil absorbent boom or other device will be installed and maintained on site to contain and remove oil from the pit's surface.
- The temporary completion pit will be maintained and operated in accordance with the following additional requirements.
    - Only fluids used or generated during the completions or work-over process, and other well activities will be discharged into the temporary completion pit. The temporary pit will be maintained free of miscellaneous solid waste or debris.
    - Immediately after cessation of completions or work-over operations, any visible or measurable layer of oil from will be removed from the surface of the temporary completions pit.
    - Only in an emergency will fluids used or generated during the drilling process be discharged into the temporary completions pit.
    - At least two feet of freeboard will be maintained for a temporary completions pit.
    - The temporary completions pit containing drilling fluids will be inspected at least daily while the drilling, completions, or work-over rig is on-site. Thereafter, weekly inspections will be conducted so long as liquids remain in the temporary completions pit. An inspection log will be maintained and the log will be available for review by

the OCD district office upon request. A copy of the log will be filed with the OCD district office when the temporary pit is closed.

- All free liquids will be evaporated from the temporary completions pit for up to 90 days from the date that the drilling, completions, or work-over rig is released from the site and final production flow testing is completed. Any remaining fluids will be removed within 120 days from the date that the drilling, completions, or work-over rig is released from the site and final production flow testing is completed. The drilling, completions or work-over rig's release will be noted on Form C-105 or C-103 upon well or work-over completion.
- Any liquids will be removed from the temporary pit used for cavitation within 48 hours after completing cavitation. If required, a petition may be made to the OCD district office to request additional time to remove the liquids from the temporary pit used for cavitation if it is demonstrated to the OCD district office's satisfaction that it is not feasible to access the location with 48 hours.

Latigo Ranch 3-3
Temporary Completions Pit Closure Plan

The temporary completions pit will be closed in accordance with the provisions in 19.15.17.13 NMAC, since ground water is more than 100 feet below the bottom of the temporary pit. All liquids will be removed from the temporary pit prior to closure. The liquids will be disposed of in a OCD-approved facility or recycled, reused or reclaimed in a manner that the appropriate OCD district office approves.

Following removal and disposal of liquids, the pit will be closed according to the following protocol.

- All contents and synthetic pit liners will be removed and transported to an OCD-approved facility for disposal and the area under the former liner will be inspected for evidence of a release from the liner.
- At a minimum, a five point composite sample composed of individual grab samples will be collected from any area that is wet, discolored or showing other evidence of a release. The sample will be analyzed for the following: benzene, total BTEX, TPH, the GRO and DRO combined fraction and chlorides to demonstrate that:
    - Benzene, as determined by EPA SW-846 method 8021B or 8260B or other EPA method approved by OCD, does not exceed 0.2 mg/kg;
    - Total BTEX, as determined by EPA SW-846 method 8021B or 8260B or other method approved by OCD, does not exceed 50 mg/kg;
    - The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed 500 mg/kg;
    - The TPH, as determined by EPA method 418.1 or other EPA method approved by OCD, does not exceed 2500 mg/kg; and
    - Chloride, as determined by EPA method 300.1, does not exceed 1000 mg/kg, or the background concentration, whichever is greater.
- OCD will be notified of the analytical results on Form C-141.
- If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified above the pit will be closed by the following:
    - The pit will be backfilled with compacted, non-waste containing, earthen material.
    - The surface of the disturbed areas will be substantially restored to the condition that existed prior to the oil and gas operations, with surface owner concurrence.
- Following backfill of the pit, an OCD-prescribed soil cover will be constructed in compliance with Subsection H of 19.15.17.13 NMAC including;
    - The soil cover will consist of a minimum of the background thickness of topsoil at the site.
    - The surface of the soil cover will be constructed to the site's existing grade and prevent ponding of water and erosion of the cover material.
- The site will be re-vegetated in compliance with Subsection I of 19.15.17.13 NMAC including:
    - The disturbed areas including access roads, no longer in use, will be seeded or planted in the first growing season after pit closure, with surface owner concurrence.
        - Seeding will be accomplished by drilling on the contour whenever practical or by other OCD district office-approved methods. Vegetative cover will be achieved that equals 70% of the native perennial vegetative cover (un-

impacted by overgrazing, fire or other intrusion damaging to native vegetation) consisting of a seed mixture approved by the surface owner and/or the local Soil Conservation District.
        - Cover will be maintained through two successive growing seasons, with no artificial irrigation of the vegetation.
        - Seeding or planting will be repeated until 70% of the required vegetative cover is achieved.
        - When conditions are not favorable for the establishment of vegetation, such as periods of drought, seeding or planting may be delayed until soil moisture conditions become favorable. A written request will be made to the OCD district office to delay seeding and planting.
    - The OCD district office will be notified when seeding or planting successfully achieves the required re-vegetation.
    - An alternative to the re-vegetation requirement may be proposed by demonstrating that the proposed alternative effectively prevents erosion, and protects fresh water, human health and the environment. The proposed alternative may be submitted to the appropriate OCD district office with written documentation that the surface owner agrees to the alternative.
- Upon closure, the following will take place:
    - The appropriate OCD district office will be notified verbally or by other means at least 72 hours, but not more than one week, prior to any closure operation. The notice shall include the operator's name and the location to be closed by unit letter, section, township and range. If the closure is associated with a particular well, then the notice shall also include the well's name, number and API number.
    - Within 60 days of temporary completions pit closure, a closure report will be submitted to the OCD district office on Form C-144, with necessary attachments to document all closure activities including: sampling results; information required by 19.15.17 NMAC; a plot plan; and details of back-filling, capping and covering, where applicable. A plat of the temporary completions pit location and Form C-105 will be submitted to OCD within 60 days of closing the temporary pit.
    - The report will certify that all information in the report and attachments is correct, and that all applicable closure requirements and conditions specified in the approved closure plan have been complied with.