



30-025-39922

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**SURFACE USE PLAN OF OPERATION**

**1. EXISTING ROADS**

**A) Proposed Well Site Location**

**a. Grama Ridge Morrow Unit Well #8 (GRMU-8)**

Unit O, Section 4, Township 22S, Range 34E

LAT. 32° 24' 49.7650"N / LONG. 103° 28' 11.0262"W

b. The Well Pad and Constructed Access Road plat for the proposed well are depicted on the attached Exhibit 1, titled "GRMU No. 8 Well Pad and Constructed Access Road", and on the attached Form C-102, titled "WELL LOCATION AND ACREAGE DEDICATION PLAT" (see attached Exhibit 2).

c. The well was staked by Wilson D. Watson, Jr., P.L.S. #3959.

**B) Existing Roads**

a. Existing roads accessing the GRMU-8 well pad area are depicted on the attached Exhibit 3, the *San Simon Ranch, N. Mex.* USGS 7.5-min. Quadrangle. According to the "Official Road Map, Lea County, New Mexico", Lea County Road 30 (CR30) extends south-southwest from its initiation at State Road 176, west of Eunice, New Mexico, to end approximately at its intersection with the south boundary of Section 3, T22S, R34E.

b. The Access Road to the GRMU-8 well pad commences at the termination of CR30, where CR30 intersects the south boundary of Section 3, T22S, R34E. The Access Road will follow an existing oilfield road (known locally as the "Ranch Road") generally in a southwest direction approximately 4,860 feet to an intersection with another existing oilfield road (known locally as the "Pipeline Road") that follows and parallels the Natural Gas Pipeline Company of America (NGPL) pipeline right-of-way (Right-of-Way Grant # NM-5637). At this intersection the Access Road corners to a northerly direction, following the Pipeline Road approximately 1,643 feet to the Grama Ridge Federal 8817 JVP #001 well pad (known as JVP #001) – operated by Enstor Grama Ridge Storage and Transportation, LLC (ENSTOR). At this point the Access Road corners to the northeast, traversing the JVP #001 well pad approximately 507 feet. The total distance the access road will coincide with existing roads and existing permitted well pad is approximately 7,010 feet (1.33 miles).

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20329 State Hwy 249, Suite 400  
Houston, TX 77070

Telephone (281) 374-3050  
www.enstorinc.com

- c. The total length of the Access Road (8,036 feet) -- including the new Constructed Access Road described below -- is contained within the boundaries of the Grama Ridge Morrow Storage Unit and area subject to the special project rules and operating procedures (Grama Ridge), that have been designated by the New Mexico Energy, Minerals and Natural Resources Department - Oil Conservation Division (OCD). (See attached Exhibit 3.)

**2. NEW OR RECONSTRUCTED ACCESS ROAD and COMPRESSED AIR LINE / FIBER OPTICS CABLE INSTALLATIONS**

**A) New or Reconstructed Access Road**

- a. Prior to any other construction activities on the New Access Road, woody vegetation will be removed from the right-of-way and stockpiled. Following this, topsoil will be salvaged in the right-of-way to a depth of 6 inches. The salvaged topsoil will be stockpiled in a low profile manner to minimize wind and water erosion (see attached Exhibit 1). The topsoil stockpile will be seeded with a BLM-approved seed mixture, and suitable cover will be maintained on the topsoil stockpile.
- b. Approximately 1,026 feet of the Access Road will be newly-constructed, extending across the span between the existing JVP #001 well pad and the new GRMU-8 well pad. In major part, this newly-constructed portion of the Access Road will abut and parallel an existing pipeline right-of-way (Right-of-Way Grant # NM-123895, issued to ENSTOR effective December, 2009). Routing of the full length of the Access Road is indicated on the attached Exhibit 4, an aerial image titled "GRMU-8 Access Road".
- c. The maximum width of the constructed portion of the Access Road will be 14 feet. An additional 8 feet of temporary right-of-way will be required for construction on each side of the permanent right-of-way (a total of 16 feet of temporary right-of-way for construction).
- d. The constructed portion of the Access Road will be surfaced with a minimum of 6 inches of rolled and compacted caliche. The road will be crowned and ditched, with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be one-foot-deep with 3:1 slopes. The surface of the road will be native caliche. Surface drainage will be controlled with water bars and diversions.
- e. The average grade of the constructed portion of the Access Road will be approximately 3%. No culverts, bridges, cattle guards, gates or fence-cuts will be required. No turnouts are planned. No significant cuts-and-fills will be required for this project.
- f. Caliche for road construction will be obtained from the nearest BLM-approved borrow pit or from commercial sources.

- g. The total length of the Access Road – including the portion coinciding with existing roads and well pads (7,010 feet) plus the portion that will be newly-constructed (1,026 feet) – will be 8,036 feet (1.5 miles).
- h. The Constructed Access Road will be constructed and maintained in accordance with road guidelines contained in the publication titled *Surface Operating Standards for Oil and Gas Exploration and Development, The Gold Book (Fourth Edition)*.

**B) Compressed Air Line / Fiber Optics Cable Installation**

- a. A 2-inch diameter, steel Compressed Air Line will be installed subsurface from the well pad for JVP #001 extending to the Permanent Well Pad for GRMU-8, via the Temporary Pipeline Construction Corridor. The Compressed Air Line will be installed in an excavated trench at a minimum depth of 3 feet bgs. (See attached Exhibit 5 titled *Installed Compressed 2" Air Pipeline & Fiber Optics Cable*.)
- b. Within the trenched excavated for the Compressed Air Line described above, a Fiber Optics Cable also will be installed subsurface from the well pad for JVP #001 extending to the Permanent Well Pad for GRMU-8, via the Temporary Pipeline Construction Corridor. (See attached Exhibit 5.)
- c. The Compressed Air Line and the Fiber Optics Cable will be installed in the right-of-way (NM-123895) for the 8-inch diameter flow line connecting the JVP #001 well with the Grama Ridge Compressor Station. The centerline for the Compressed Air Line and the Fiber Optics Cable trench will be positioned 8 feet from the 8-inch diameter flow line on the southerly side of the right-of-way. The Compressed Air Line and the Fiber Optics Cable will be buried a minimum of 3 feet below ground surface (bgs).

**3. LOCATION OF EXISTING WELLS**

Existing petroleum wells within a one-mile radius of the proposed new GRMU-8 well are depicted on the attached Exhibit 6 titled *Location of Existing Wells*. The nearest petroleum well to the proposed GRMU-8 well is Grama Ridge Federal 8817 JVP #001 (JVP #001), located approximately 1,080 feet to the west-southwest. ENSTOR is the owner/operator of JVP #001.

The nearest water supply well to the proposed GRMU-8 well is ENSTOR's WW-1 water well, located topographically up-gradient to the northeast approximately 3,870 feet from GRMU-8, within the fenced Grama Ridge Compressor Station. The nearest topographically down-gradient water supply well is the Hamilton Well, located approximately 5,570 feet to the southwest from GRMU-8. (See attached Exhibit 6.)

**4. LOCATION OF EXISTING AND/OR PROPOSED PRODUCTION FACILITIES**

- A) The Well Site Layout on the Temporary Well Pad during drilling operations is depicted on the attached Exhibit 7 titled *Well Site Layout, Temporary Well Pad (Drilling Operations)*. The Well Site Layout on the Permanent Well Pad is depicted on the attached Exhibit 8 titled *Well Site Layout – Permanent Well Pad*.
- B) The intended use of the proposed GRMU-8 well is for injection and withdrawal of natural gas into/from a depleted reservoir permitted by the OCD for natural gas storage, and designated Grama Ridge.
- C) Prior to any other construction activities on the Well Pad, woody vegetation will be removed from the area and stockpiled. Following this, topsoil will be salvaged to a depth of 6 inches and stockpiled. The salvaged topsoil will be stockpiled in a low profile manner to minimize wind and water erosion. (See attached Exhibit 1.)
- D) The Temporary Well Pad will be constructed in a near-square pattern, dimensioned 400 feet by 400 feet. The main portion of the contained Permanent Well Pad will be in a rectangular pattern dimensioned 200 feet by 300 feet. Plus a Temporary Pipeline Construction Corridor will be constructed connecting the main portion of the Permanent Well Pad with BLM Right-of-Way Grant # NM-123895. The total width of the Temporary Pipeline Construction Corridor will be 60 feet, and the total length will be 101 feet. (See attached Exhibit 1.)
- E) ENSTOR operates an 8-inch-diameter natural gas flow line – installed in BLM Right-of-Way Grant # NM-123895 -- connecting the JVP #001 well with the Grama Ridge Compressor Station. A new 8-inch-diameter natural gas flow line will be constructed from the new GRMU-8 well to a tap into this existing 8-inch flow line. As shown on the attached Exhibit 1, the new 8-inch flow line will be installed through the Temporary Pipeline Construction Corridor. The new 8-inch flow line will be buried a minimum of 3 feet below ground surface (bgs).
- F) An above-ground 8-inch diameter steel ball valve and associated piping will be installed at the junction of the JVP #001 and GRMU-8 flow lines. This valve will provide the means to isolate the new GRMU-8 8-inch flow line from the existing JVP #001 8-inch flow line – an essential safety feature. Bollards will be installed around the portion of the valve assembly extending above-ground to protect it from vehicle traffic, such as right-of-way maintenance tractors.
- G) In addition to the existing 8-inch-diameter natural gas flow line described in "E" above, the BLM Right-of-Way Grant # NM-123895 also contains a buried 480-volt electric power line. Connection will be made to the buried 480-volt electric power line via the Temporary Pipeline Construction Corridor. The new electric power line will be installed in the Temporary

Pipeline Construction Corridor in a separate trench excavated approximately 10 feet north of the flow line trench.

- H) Equipment necessary to facilitate, regulate and monitor natural gas injection/withdrawal will be installed on the Permanent Well Pad, along with pipeline "pigging" facilities, air compressor, and lighting tower -- as depicted in the attached Exhibit 8.
- I) All permanent aboveground structures constructed or installed on location -- and not subject to controlling safety requirements -- will be painted to BLM specifications.

## **5. LOCATION AND TYPE OF WATER SUPPLY**

Water for drilling operations will be obtained from commercial water stations as near as possible to the location. The water will be transported by commercial trucks. Water hauling will be over state and county roads until the Access Road is reached. The final water hauling leg to the Well Pad will be via the Access Road. No pipeline will be used to transport water for drilling purposes.

## **6. CONSTRUCTION MATERIALS**

Caliche utilized for the proposed Well Pad and Constructed Access Road will be obtained from an existing BLM-approved borrow pit and/or from commercial sources. A minimum depth of 6 inches of caliche will be rolled and compacted on the Well Pad and Constructed Access Road areas.

## **7. METHODS OF HANDLING WASTE MATERIALS**

- A) A closed-loop drilling system will be employed. Drill cuttings will be collected in steel cuttings bins (catch tanks) on the Well Pad. Utilizing the bins for transport, the cuttings will be hauled to an approved cuttings dump site for disposal.
- B) All trash, refuse and other waste material will be contained in trash cages and/or trash bins to prevent wind scattering. Periodically the contents of the cages and bins will be collected for transport to an approved landfill. No trash, refuse or other waste material will remain at the Well Pad following completion of drilling activities.
- C) No materials used in the drilling operations -- including sacks or partial sacks of salts -- will remain at the Well Pad following completion of well drilling operations.
- D) Portable self-contained chemical toilets will be provided at the Well Pad during well drilling operations. They will be properly maintained, and will be removed following completion of well drilling operations.
- E) Unused drilling fluids remaining at the site will be pumped into tanker trucks for transport and disposal at a state-approved disposal facility. Any produced water will be collected in storage tanks and will be pumped into tanker trucks

for transport and disposal at a state-approved disposal facility. Any produced oil or condensate will be collected in storage tanks and will be pumped into tanker trucks for transport for sale.

**8. ANCILLARY FACILITIES**

No airstrip, camp, or other ancillary facilities will be built. No separate staging areas will be required.

**9. WELL SITE LAYOUT**

**A) Temporary Well Pad Configuration – Drilling Operations**

- i. The attached Exhibit 7 depicts the layout of the Well Pad during active drilling operations. Natural drainage areas were avoided in the location of the Well Pad. The Well Pad was laid out to minimize surface disturbance, with leveling by cut-and-fill conducted only where necessary for safe operations and erosion control.
- j. To accommodate safe and efficient operations for drilling this natural gas injection/withdrawal well, the temporary Well Pad configuration will be 400 feet X 400 feet, with a Temporary Pipeline Construction Corridor 101 feet in length to accommodate the flowline, electrical powerline, compressed air line and fiber optics cable.
- k. No in-ground pits will be constructed. Steel mud pits will be utilized in the active circulating system. Steel catch tanks will be set in shallow sumps behind the circulating tanks.
- l. Following conclusion of the drilling operations, the "temporary" portions of the Well Pad will be fully reclaimed according to BLM requirements -- back to the configuration of the Permanent Well Pad described below. The area where the catch tanks were placed also will be reclaimed.

**B) Permanent Well Pad Configuration – Injection/Withdrawal Operations**

- a. The attached Exhibit 7 depicts the layout of the Permanent Well Pad following drilling operations.
- b. The Permanent Well Pad configuration is designed to accommodate the use of a work-over rig from time-to-time for well maintenance and safety.

**10. PLANS FOR SURFACE RECLAMATION**

**A) Reclamation of temporary work areas**

- a. Following well drilling and flow line, compressed air line, electric power line and fiber optics cable construction activities, all temporary work spaces that are part of the Temporary Well Pad configuration (see

attached Exhibits 1 and 7), as well as the Temporary Pipeline Construction Corridor, will be reclaimed according to BLM requirements. Where used, the caliche will be removed and returned to the caliche pit of origin and/or transported from the site for use at other drilling operations or on roads. Approximate original contours of the reclaimed areas will be re-established, and salvaged depths of topsoil will be replaced. Surface vegetation will be restored – according to BLM stipulations.

- b. Reclaimed areas will be monitored – according to BLM requirements – and areas failing reclamation will be restored, as needed.

**B) Final reclamation**

- a. When circumstances dictate that the GRMU-8 well will be plugged and abandoned, all areas of the Constructed Access Road and the Well Pad will be reclaimed – according to BLM requirements.
- b. For both the Constructed Access Road and the Well Pad, the caliche will be removed and returned to the caliche pit of origin and/or transported from the site for use at other drilling operations or on roads. Approximate original contours of the reclaimed areas will be re-established, and salvaged depths of topsoil will be replaced. Surface vegetation will be restored – again according to BLM stipulations.
- c. Reclaimed areas will be monitored – according to BLM requirements – and areas failing reclamation will be restored, as needed.

**11. SURFACE OWNERSHIP**

The surface estate is owned by the United States Government, and it is managed by the BLM. As mandated by the Federal Land Policy and Management Act of 1976 (FLPMA), BLM manages this property under a multiple use policy. The principal use rights administered by the BLM on the property are livestock grazing and petroleum exploration and production.

**12. OTHER INFORMATION**

- A) ENSTOR's consultant, Parametrix, Inc., under direction by Conestoga-Rovers & Associates (CRA), completed a cultural resources inventory and assessment to identify, record and evaluate any archeological, pre-historic or historic period resources along the proposed Constructed Access Road right-of-way and at the Well Pad -- along with a minimum 200-foot buffer around the perimeter. The findings of these investigations were detailed in a report produced by Parametrix stating that no archeological sites, historic buildings, isolated manifestations (IMs), acequias, cultural landscapes, or historic districts were identified during this investigation that were deemed eligible by the State Historic Preservation Officer (SHPO) for listing. Also included in the report was a New Mexico Cultural Resources Inventory System (NMCRIS) form titled "*NMCRIS Investigation Abstract Form (NIAF)*"; and on this form the "Type of Report" was marked as Negative. In summary, the

overall findings of these investigations were the identification of no significant cultural resources within the project area, nor in a significant buffer area beyond. A copy of the report has been provided to BLM with submission of this SUPO.

- B) The majority of the site vegetation is sparse upland shrub/scrub desert vegetation with some cactus. Much of the site exhibits the effects of cattle grazing, likely contributing to the transition of historical plant communities dominated by black grama (*Bouteloua eriopoda*) and other grasses, to a community consisting of shrub-dominated to grass-dominated plant communities. Dominant shrubs include mesquite (*Prosopis glandulosa*), creosotebush (*Larrea tridentata*), shinners oak (*Quercus harvardii*), and sand sagebrush (*Artemisia*). Grasses consist mostly of needle and thread grass (*Hesperostipa comata*), threeawns (*Aristida sp.*), soapweed yucca (*Yucca glauca*), dropseeds (*Sporobolus sp.*) and black grama.
- C) CRA field personnel inspected the Site on November 12, 2009. Observations were made and data were collected throughout the Site to identify habitat features, determine the presence or absence of wetlands, and determine if state- or federally-listed threatened, endangered, and other special-status species, or habitats for these species, are present at the Site. During the Site inspection, wildlife observed included a loggerhead shrike (*Lanius ludovicianus*), eastern meadowlark (*Sturnella magna*), sage sparrow (*Amphispiza belli*), and lesser earless lizard (*Holbrookia maculata*). Indications of other wildlife were observed and include active burrows of varying sizes, tracks, and coyote and deer scat.

Mammals that may inhabit the Site include pronghorn antelope (*Antilocapra americana*), desert cottontail (*Sylvilagus audubonii*), spotted ground squirrel (*Spermophilus spilosoma*), black-tailed prairie dog (*Cynomys ludovicianus*), yellow-faced pocket gopher (*Cratogeomys castanops*), Ord's kangaroo rat (*Dipodomys ordii*), northern grasshopper mouse (*Onychomys leucogaster*), southern plains woodrat (*Neotoma micropus*), badger (*Taxidea taxus*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), mountain lion (*Felis concolor*), coyote (*Canis latrans*), swift fox (*Vulpes velox*), gray fox (*Urocyon cinereoargenteus*), and bobcat (*Felis rufus*). Birds may include scaled quail (*Callipepla squamata*), mourning dove (*Zenaida macroura*), roadrunner (*Geococcyx californianus*), burrowing owl (*Athene cunicularia*), Chihuahuan raven (*Corvus cryptoleucus*), and lesser prairie chicken (*Tympanuchus pallidicinctus*). Reptiles may include sand dune lizard (*Sceloporus arenicolus*), six-lined racerunner (*Aspidoscelis sexlineata*), Texas spotted whiptail (*Aspidoscelis gularis*), checkered whiptail (*Aspidoscelis tessellata*), western whiptail (*Aspidoscelis tigris*), Texas horned lizard (*Phrynosoma cornutum*), western diamondback rattlesnake (*Crotalus atrox*), western hog-nosed snake (*Heterodon nasicus*), and ornate box turtle (*Terrapene ornata*). Amphibians may include green toad (*Anaxyrus debilis*), red-spotted toad (*Anaxyrus punctatus*), and Couch's spadefoot toad (*Scaphiopus couchii*). No fish are present at the Site due to the absence of aquatic features.

- D) No dwellings are present within a 2-mile radius of the site.



- E) No permanent or live surface water is present within the general proximity of the site.

**13. BOND COVERAGE**

Bond coverage: Bond No. NM-104395912.

**OPERATOR'S REPRESENTATIVE:**

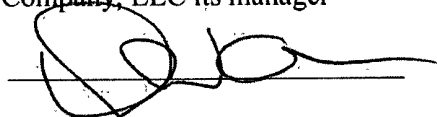
**Certification**

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 20th day of July, 2010.

ENSTOR GRAMA RIDGE STORAGE AND TRANSPORTATION, LLC  
By: Enstor Operating Company, LLC its manager

Signed:



Name:

Daryl W. Gee

Position Title:

Director Regulatory Affairs & Land Management

Address:

Enstor Grama Ridge Storage and Transportation, LLC  
c/o Enstor Operating Company, LLC  
20329 State Highway 249, Suite 400  
Houston, Texas 77070

Telephone:

(281) 374-3062

Field Representative:

Jim McCallister

Address:

223 Grama Ridge Lane  
Eunice, New Mexico 88231

Telephone:

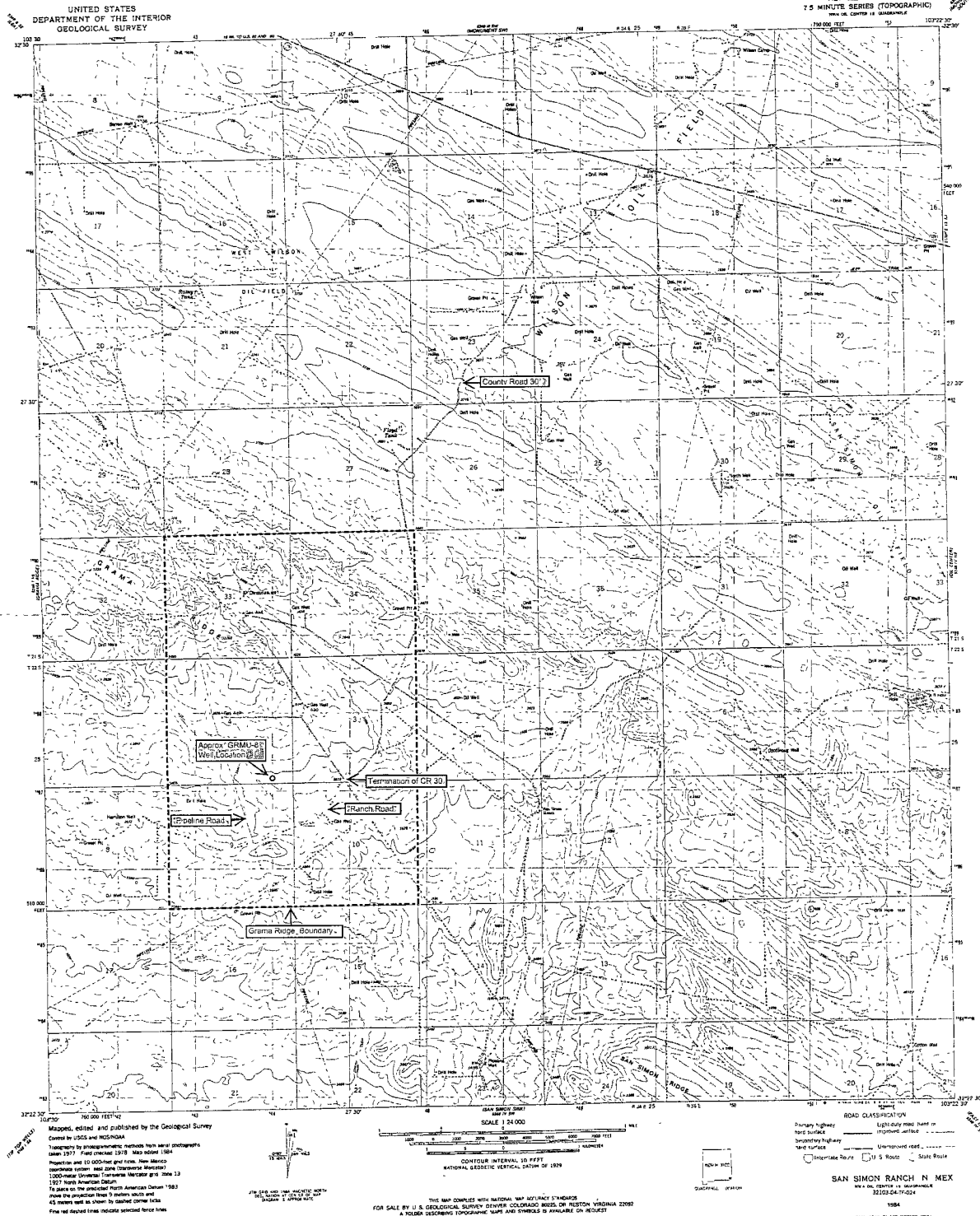
(575) 394-0127

E-mail:

Daryl.Gee@Enstorinc.com

# Exhibit 3

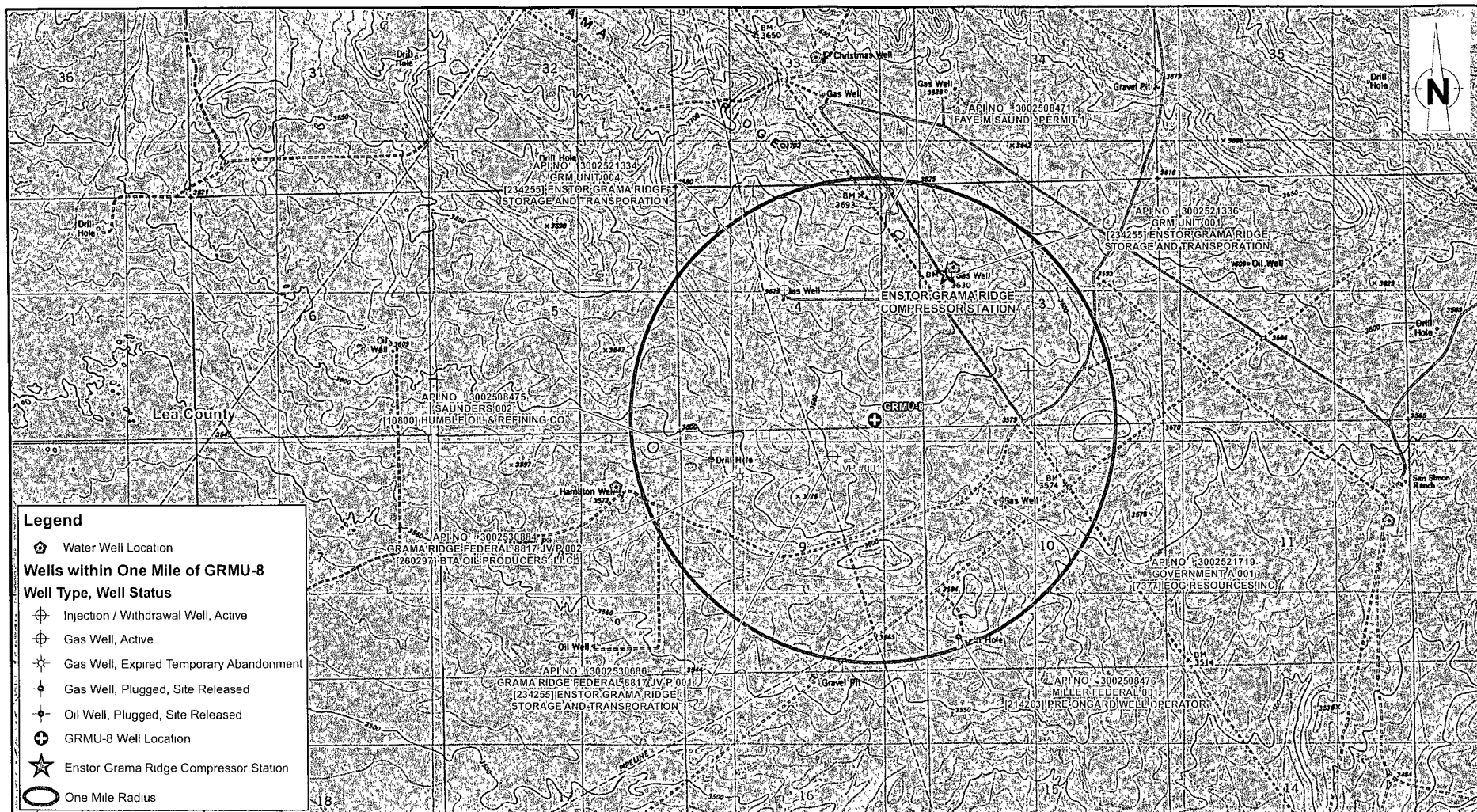
SAN SIMON RANCH QUADRANGLE  
NEW MEXICO-LEA CO  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
1:50,000 SCALE



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EXHIBIT 4  
GRMU-8 ACCESS ROAD  
GRAMA RIDGE  
LEA COUNTY, NEW MEXICO  
Enstor Gama Ridge Storage and Transportation, LLC