

## Form 15-Additional Information

### Raton Basin

#### *1. Contacts*

##### Primary Contact Person:

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*2. Purpose of this application.* Pioneer has submitted this application to convert the existing drilling reserve pit on the wellsite to an unlined earthen pit for the storage, evaporation and disposal of produced groundwater. Produced water will be piped directly from the wellhead to the converted reserve pits via a surface line. This unlined earthen pit is located within the confines of the existing wellsite. The reserve pit proposed for use as an unlined earthen pit is constructed such that the water level will not be above the elevation of the original ground level, thereby reducing the possibility of seepage through the berm. Any excess water production will be trucked or piped to the nearest permitted multi-well unlined earthen pit or disposed of in an existing Class II injection well. In the future, Pioneer could discharge from this unlined earthen pit under a CDPHE surface discharge permit.

*3. Sensitive area determination.* This area has been determined to be located in a non-sensitive area because the proposed unlined earthen pit is located in an upland area outside of any arroyos or drainage. Depth to groundwater is shown on the attached Form 15.

*4. Well site survey and color map.* The proposed pit is located on the well site and is shown on the attached color map.

*5. Water quality testing.* Pioneer typically collects a representative water sample from the wellhead approximately 60 to 90 days after first gas sales. If final water quality results are available, they shall be submitted with this pit permit application. If final water quality results are not available at the time of pit permit application submittal, results shall be submitted to the Commission as soon as final reports are received by Pioneer.

6. *Calculations:*

Surface area = length x width = 75 feet x 40 feet = 3000 sq. feet

Storage capacity = length x width x depth = 75 feet x 40 feet x 6 feet = 18000 cubic feet. 18000 cubic feet x 1 barrel/5.615 cubic feet = 3205 barrels

**Daily evaporative loss.** Based on climatic data and a conversion table provided by COGCC, evaporation loss for this area (Las Animas County) averages 45 pan inches/year = 4.2 barrel(s)/day for 3000 square feet of pit surface.

**Percolation rate.** Based on soil survey data and maps provided by the United States Department of Agriculture, the soil type/series found at/near this location has an unknown permeability at the depth of the pit bottom. Rates from shallower soils range from 0.00 to 2 inches per hour. This calculation assumes a lower range permeability of 0.2 inch/hour. Given this already low rate and the presence of clays in this soil at depths below 14 inches, no additional reduction in permeability due to siltation of the pit bottom, clay swelling or inclusions of less permeable soils is assumed.

Soil percolation rate at pit bottom = 0.017 ft/hr

Estimated percolation rate for pit = 0.017 ft/hr (3000 ft<sup>2</sup>) (1 bbl/5.615 ft<sup>3</sup>) = 9.08 bbl(s)/hr (24hr/day) = 217 bbls/day. Therefore the pit should be able to contain expected inflow.

7. *Water wells within 1/8 mile* Known, permitted water wells (based on State records) within a one-mile radius are shown on the attached map.

8. *Inspection and reporting.* Typically, water production and/or the unlined earthen pit is monitored at least once a day by Pioneer field personnel. All spills and/or releases will be reported in accordance with COGCC and CDPHE regulations.

PIONEER NATURAL RESOURCES USA, INC.  
UNLINED EARTHEN PIT APPLICATION

WELL/LOCATION: Left Field 31-29 7r

Scale: 1" = 5'

