Response to ENMRD-OCD Request for Additional Information

Prepared by Mike Eide, PG (4/15/19)

The request, as transmitted by email, reads as follows:

- The OCD is also concerned because the bottom of the proposed injection interval is near the Ellenburger. Therefore, the OCD will require you to provide the projected top of Montoya

The expected top of the Ellenburger Group (lower Ordovician) is projected to occur at an elevation of approximately 13,200 feet relative to mean sea level (MSL) at the Queen Lake Federal 19 no. 1 well site as indicated on Figure 1. The ground level elevation at the well site is 2,956 feet MSL as indicated by the available open-hole log for the well. This results in an expected depth to the top of the Ellenburger Group of approximately 16,156 feet below ground level (BGL) at the well site. Based on thickness information derived from maps provided in Figure 2 (see Figures 2a and 2b), which were extrapolated into the subject well site area (as indicated by dashed lines); the combined thickness of the middle Ordovician Simpson Group (325 feet) and upper Ordovician Montoya Formation (325 feet) is expected to be 650 feet. Based on this information, the projected top of the Montoya Formation occurs at an approximate depth of 15,506 feet BGL.

Proposed Approach

It is proposed that, during the well construction phase, the wellbore will be drilled to the Montoya Formation, and then confirmed via open-hole logging. The well will then be plugged back to ensure that only the Devonian / Silurian Formation is completed for injection operations.

References:

Ruppel, S. C., Jones, R. H., Breton, C. L., and Kane, J. A., 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: The University of Texas at Austin, Bureau of Economic Geology, contract report prepared for the U.S. Geological Survey under order no. 04CRSA0834 and requisition no. 04CRPR01474, 23 p. + CD-ROM

Texas Water Development Board, 1972, A Survey of the Subsurface Saline Water of Texas, Report 157, vol. 1, 118 p. (Prepared by Core Laboratories, Inc., Consulting and Engineering Department).