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September 28, 1989

Environmental Protection Agency
1445 Ross Avenue
UIC Permits and Enforcement Section (6W-SE)
Dallas, TX 75202-2733

Attention: Mr. Gus Chavarria, Section Chief

Gentlemen;

UIC Class II Well Permit Application - Jicarilla 30 No 1

Conoco Inc. requests a UIC permit for the injection of produced water into the Mesa Verde formation of our Jicarilla 30 No 1 well, at a maximum pressure of 1800 psig and maximum volume of 150 barrels per day. Attached is the Permit Application Checklist along with supporting data for this application.

Conoco began injecting water from the Pictured Cliffs, Chacra, Gallup Dakota, and Mesa Verde formations produced from the Conoco operated leases in the area in 1973, after receiving approval from the New Mexico Oil Conservation Commission on May 25, 1972. The Conservation Commission's approval was for injecting water into the Mesa Verde formation from approximately 5171 feet to approximately 5432 feet. The order granting this approval is enclosed as Exhibit A. Since the authority for the UIC Program on Indian Lands is now with EPA and this well is operating above .2 psig per foot of depth pressure limit set forth in your UIC program, this well must be permitted for the increased injection pressure prior to November 25, 1989.

The data enclosed will demonstrate protection of the USDW(s) in the well as follows:

1. Construction Requirements. Exhibit E page 1, the wellbore diagram and Exhibit G, Geologic Data, demonstrate the injection formation, the Mesa Verde, is separated by 1991 feet of thickness from the Ojo Alamo which is the deepest USDW formation. This 1991 feet is primarily shale with the thickest shale interval being 790 feet. Exhibit E, pages 2 through 5, outline the well's history and casing and cementing records. These records, along with the tests outlined in item 2 demonstrate no fluid movement into or between USDW's.

2. Mechanical Integrity. This well has no significant leak in the casing, tubing or packer as demonstrated by a pressure test(Water) and radioactive tracer survey performed on the well on August 17, 1989. Absence of significant fluid movement into or between an USDW

through vertical channels adjacent to the wellbore was demonstrated by the radioactive tracer survey and temperature log performed on that same date. The results of these tests are outlined on Exhibit F page 14. The injection log is included in Exhibit I which is the log package.

The pressure test run on August 17, was not witnessed by a representative from the State. However, we will run a second pressure test and will notify both the State and EPA prior to the date, giving each an opportunity to witness the test.

Although, the UIC program stipulates that mechanical integrity must be demonstrated at a minimum once every five (5) years for the life of the well, Conoco will perform a pressure test, using water, once every two years as further assurance that injection at 1800 psig is not causing fluid movement into the USDW.

3. Operating, Monitoring and Reporting Requirements. Based on our evaluation, the requested injection pressure limit of 1800 psig will not initiate new fractures or propagate existing fractures in the confining zone. Attached, as Exhibit O, is a graph depicting the results of our step-rate test run on August 17, 1989. Data supporting this graph is included in the Log package, Exhibit I. The step-rate test measured rates and pressures, up to approximately 2.6 bpm with a pressure of 1880 psi. The consistently increasing curve, without a pressure break-over point, indicates that even at the maximum rate and pressure new fractures are not being created and existing fractures are not being propagated.

As stated previously, Conoco has injected in the Mesa Verde since 1972 without a pressure limit. This fact, along with the lack of fluid movement demonstrated by the tracer survey and temperature log indicate a higher injection pressure will not endanger the USDW's. Also supporting a pressure limit higher than .2 psi per foot of depth is the thickness of the confining zone.

The State of New Mexico requires that injection wells be equipped so that injection pressure and annular pressure may be determined at the wellhead and the injected volume may be determined at least monthly. In addition, injection volumes must be reported monthly to the State. We will continue to satisfy these requirements of the State and we request the same monitoring and reporting requirements under the EPA UIC permit. An example of the form submitted to the State is enclosed as Exhibit M.