Application for Authorization to Inject
New Mexico Oil Conservation Division
Energy and Minerals Department
Form C-108

I. Purpose : ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage

Application Qualifies for Administrative Approval? Yes ☐ No ☒

II. Operator : **Santa Fe Energy Resources, Inc.**

Address : **550 W. Texas, Suite 1330, Midland, Texas 79701**

Contact Party : **Don Rogers - Project Manager** Phone : **915-686-6709**

III. The Jones Canyon "4" Federal #2 is located 1,505' FSL & 2,381' FEL, Section 4, T22S-R24E, Eddy Co., N.M. It is currently drilled and cased through the Cisco-Canyon formation (± 7,950' to 8,300'), but has never been completed due to facilities limitations at our Indian Basin Central Battery. Santa Fe Energy proposes to deepen the well to the Devonian-Montoya, run and cement a 4½" liner, and install a Reda AQWANOT® downhole oil, water, and gas separation system. This unit, as designed, should allow us to produce approximately 6,000 BPD of total fluid, separate 90+% of the produced water and inject it simultaneously into the Devonian-Montoya formation. The remainder of the produced water, along with oil and gas production will be lifted to the surface.

Attached are well data sheets detailing the proposed design and specifications for the casing, tubing, and injection packer on the subject well. In addition,

IV. Is this an expansion of an existing project? ☐ Yes ☒ No

If yes, give the Division Order number authorizing the project. N/A

V. Attached is a map identifying the proposed well's area of review. This map identifies all wells and leases within two miles of the proposed disposal well and a one-half mile radius circle has been drawn around the proposed disposal well.

VI. There are no wells within the area of review which penetrated the proposed Devonian-Montoya injection zone.

VII. 1. Based on the Reda AQWANOT® design, the produced water injection rate will be ± 5,300 BWPD.

2. The system will be closed, as 90+% of the produced water will be separated and re-injected downhole.

3. The average injection pressure at the disposal zone depth of 11,000 ft is estimated at 4,100 psi. Maximum injection pressure at that depth will be approximately 5,800 psi (±1000 psi @ surface)

4. The subject well has not been deepened yet, therefore we do not have disposal zone water for compatibility tests. However, the Devonian formation is widely used in the area for the disposal of Cisco-Canyon produced water.

5. No known samples of Devonian-Montoya produced water exist from the immediate area.

NEW MEXICO
OIL CONSERVATION DIVISION

EXHIBIT 1

CASE NO. 11848

VIII. The proposed injection zone for the Cisco-Canyon produced water is the Devonian-Montoya at 11,000'. Lithologically, these two zones are similar, consisting of dolomite and cherty dolomites characterized by intercrystalline to vuggy porosity. The proposed injection zone will be selected porous intervals across an 800 foot thick Devonian-Montoya section. In October, 1994, Santa Fe drilled a fresh water supply well approximately 1½ miles to the southwest (NE/4 SW/4 of Section 8). The well was drilled to a depth of 190 feet, but did not encounter any water bearing formations. It was plugged and abandoned. There are no known sources of drinking water in the immediate area.

IX. After running open hole logs over the Devonian-Montoya formation, porous intervals will be perforated through the 4½" liner and acidized with 20% HCl to optimize injectivity.

X. We plan to run porosity and resistivity logs across the entire Devonian-Montoya interval.

XI. There are no known fresh water wells within one mile of the proposed well.

XII. Santa Fe Energy has examined available geologic and engineering data and has concluded that there is no known underground source of drinking water with open faults or other hydrologic connection which could communicate with the disposed water.

XIII. Proof of Notice

Surface owner of proposed well :

Department of the Interior
Bureau of Land Management
P. O. Box 27115
Santa Fe, New Mexico 87502-7115

Leasehold owners or operators on adjacent property within one-half mile of the proposed disposal well location :

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

Attached is an Affidavit of Publication to verify that a legal advertisement was published on August 13th and 20th, 1997, per the requirements of this application. Verification of certified letter delivery to the parties listed above are also included.

XIV. Certification

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

Name : **Don Rogers** Title : **Project Manager**

Signature : Don Rogers Date : 8/8/97

XC : NMOCD - Santa Fe
NMOCD - Artesia
BLM - Carlsbad
Yates Petroleum - Artesia
James Bruce - Santa Fe

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Santa Fe Energy Resources, Inc.
Jones Canyon "4" Federal #2
Application for Authorization to Inject
Well Data for NMOCD Form C-108

III. A. (1) Name and Location

Federal Lse : NM-83037
Well Name : Jones Canyon "4" Federal #2
Location : 04J-T22S-R24E (1,505' FSL & 2,381' FEL)

III. A. (2) Casing and Cement

Surface Casing : 9-5/8" 36# K-55 ST&C csg, set @ 1,600', Float Collar 1,519'. Cmt w/200 sx Class H + 10% D53 + 2% $CaCl_2$ + 600 sx Class C Lite (35:65:6) + 2% $CaCl_2$, 200 sx Cl-C 2% $CaCl_2$. Circ out 505 sx.

Production Casing : 7" 26.0# K-55 LT&C csg, set @ 8,565', Float Collar @ 8,477'. Cmt w/480sx Class H + 0.8% D59 + 5% salt + 0.2% TIC + 0.2% anti-foam. TOC to be determined, but volumes and yield designed to circulate cement to ± 6,000'.

Injection Liner : Drill 6-1/8" hole from 8,565' to ± 11,300'. Run 4½" 11.6# N-80 LT&C liner with hanger and set @ 8,500' to 11,300'. Cmt w/300 sx and circulate.

III. A. (3) Injection Tubing : 3½" 9.3# L-80, internally plastic coated tubing, attached to AQWANOT® unit discharge and set in seal assembly at ± 8,500'.

III. A. (4) Injection Packer : 20 ft polished bore receptacle and seal assembly attached to liner hanger @ 8,500'.

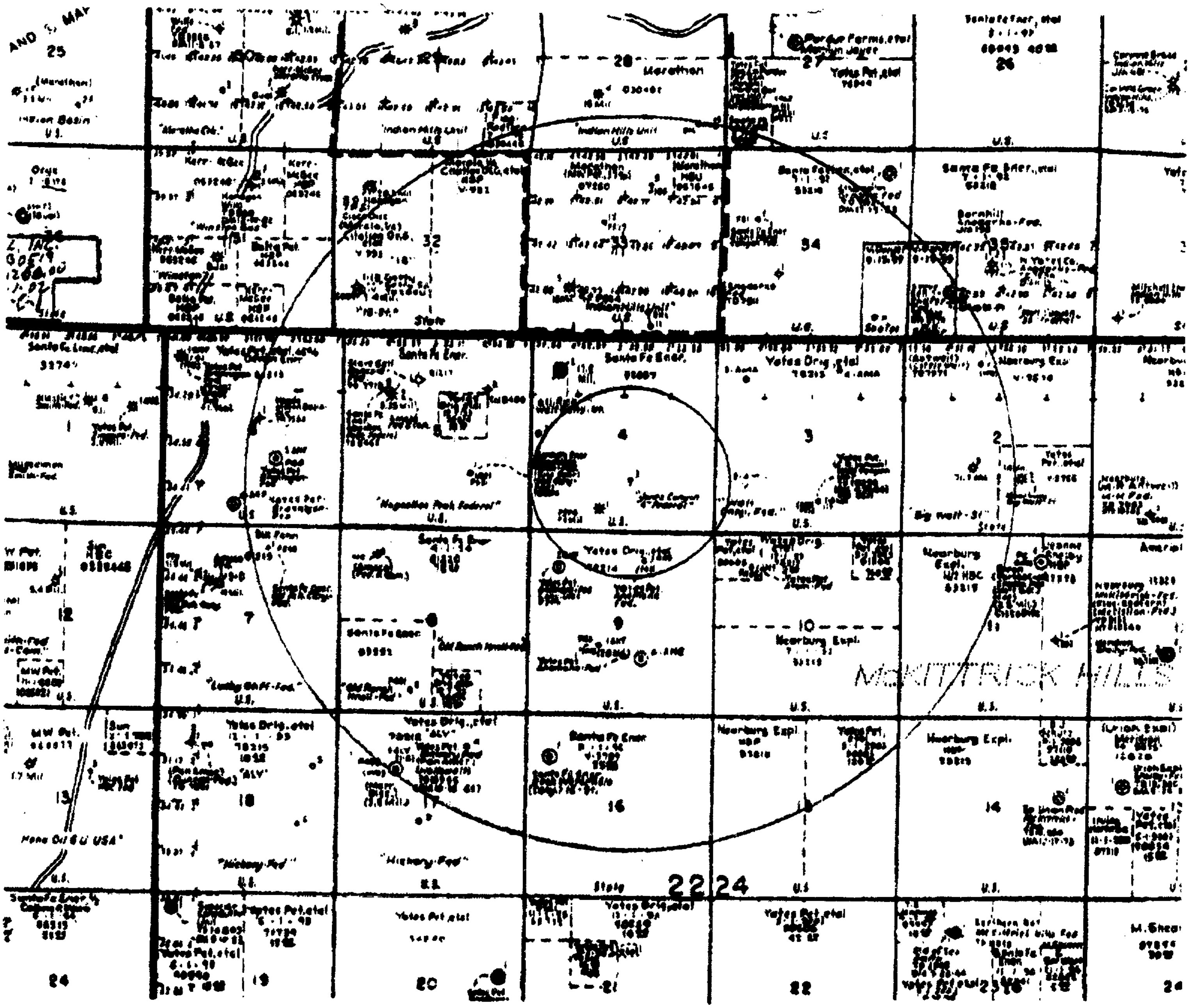
III. B. (1) Injection Formation : Devonian and Montoya

III. B. (2) Injection Interval : Selected porous intervals within the Devonian-Montoya formation from 10,600'-11,400' which will be perforated through the 4½" liner.

III. B. (3) The proposed deepening of the referenced well is strictly for the purpose of water disposal, although we intend to produce simultaneously from the Cisco-Canyon.

III. B. (4) We do not plan to test any other intervals in this wellbore.

III. B. (5) Morrow Sands have produced in the area between 9,700'-10,000'. No formations below the Devonian-Montoya are productive in the area



Santa Fe Energy Resources, Inc.
Central Division
Midland, Texas

EDDY COUNTY, NEW MEXICO

JONES CANYON "4" FED #2
AREA OF REVIEW
SEC. 4, T22S, R24E

DATE: [illegible]

SCALE: 1":4000'

FILE: