

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE HEARING CALLED  
BY THE OIL CONSERVATION DIVISION FOR  
THE PURPOSE OF CONSIDERING:**

*CASE NO. 13170  
ORDER NO. R-4417-B*

**APPLICATION OF ENERGEN RESOURCES CORPORATION FOR  
AUTHORIZATION TO EXPAND WATERFLOOD INJECTION OPERATIONS IN  
THE LANGLIE LYNN (QUEEN) UNIT, LEA COUNTY, NEW MEXICO.**

**ORDER OF THE DIVISION**

**BY THE DIVISION;**

This case came on for hearing at 8:15 a.m. on December 4, 2003 at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 9<sup>th</sup> day of August, 2004, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

**FINDS THAT:**

(1) Due public notice has been given, and the Division has jurisdiction of this case and its **subject** matter.

(2) By Order No. R-4416, issued in Case No. 4839 on October 10, 1972, the Division approved the application of Continental Oil Company for **unitization** of the following described 760.00 acres, more or less, of State and Federal lands in Lea County, New Mexico, also known as the **Langlie Lynn (Queen) Unit Area**:

**TOWNSHIP 23 SOUTH. RANGE 36 EAST. NMPM**

Section 22: SE/4  
Section 23: SW/4 and W/2 SE/4  
Section 26: W/2 NE/4, NW/4, and N/2 SW/4  
Section 27: NE/4 NE/4.

(3) By Order No. R-4417, issued in Case No. 4840 on October 10, 1972, the Division authorized Continental Oil Company to institute a **waterflood** project (therein designated the Continental **Langlie Lynn Waterflood Project**) by the **injection** of water into the Lower Seven Rivers and Queen formations of the **Langlie-Mattix (Seven Rivers-Queen-Grayburg) Pool (37240)** within the above-described unit, Lea County, New Mexico.

(4) By Division Administrative Orders WFX-521 dated December 1, 1983, WFX-581 dated May 16, 1989, and WFX-780 dated December 19, 2001, and Division Order No. R-4417-A, issued in Case No. 12614 on September 19, 2001, this waterflood project was expanded to include six additional water injection wells.

(5) Energen Resources Corporation (hereinafter referred to either as "**Energen**" or "Applicant") is the current operator of both the Langlie Lynn (Queen) Unit and the Continental Langlie Lynn Waterflood Project ("**waterflood project**").

(6) Applicant, pursuant to Division Rule 701 (G), seeks authority for an additional expansion of its **waterflood project** by converting the two following-described wells, both located in Township 23 South, Range 36 East, NMPM, Lea County, New Mexico, to water injectors:

(a) Langlie Lynn Queen Unit Well No. 3 (API No. **30-025-09388**), located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 23, with injection into perforations from 3,474 feet to 3,750 feet; and

(b) Langlie Lynn Queen Unit Well No. 9 (API No. **30-025-20049**), located 660 feet from the South line and 330 feet from the East line (Unit P) of Section 22, with injection into perforations from 3,504 feet to 3,776 feet.

(7) Applicant submitted data on the two proposed injection wells, other existing project wells (producers and injectors), water wells in the area, and all other wells (including plugged wells) which penetrate the zone of interest within the 1/2-mile "**area-of-review**" of the two **subject** injection wells. This data shows that wells in the area are cased and plugged so as to protect fresh water and prevent fluid migration from the injection zone, and includes testimony indicating no evidence of open faults or any other **hydrologic** connection between the injection zone and the fresh water resources in the area-of-review.

(8) The proposed waterflood expansion should result in the recovery of additional hydrocarbons from the Lower Seven Rivers and Queen formations of the Langlie-Mattix (Seven Rivers-Queen-Grayburg) Pool that may otherwise not be recovered.

(9) The operator should take all steps to ensure that the injected water from not only the two proposed water injection wells but all other project injection wells enters only the proposed injection interval and is not permitted to escape into other formations or onto the surface from injection, production or plugged and abandoned wells.

(10) The proposed waterflood expansion should be approved and governed by the provisions of Rules 702 through 708 of the Division Rules and Regulations.

**IT IS THEREFORE ORDERED THAT ;**

(1) Energen Resources Corporation (hereinafter referred to either as "Energen" or "Applicant") is hereby authorized to expand its Continental Langlie Lynn Waterflood Project within the Langlie Lynn (Queen) Unit Area by converting the two following-described wells, both located in Township 23 South, Range 36 East, NMPM, Lea County, New Mexico, to water injectors into the Lower Seven Rivers and Queen formations of the Langlie-Mattix (Seven Rivers-Queen-Grayburg) Pool (37240):

(a) Langlie Lynn Queen Unit Well No. 3 (API No. 30-025-09388), located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 23, with injection into perforations from 3,474 feet to 3,750 feet; and

(b) Langlie Lynn Queen Unit Well No. 9 (API No. 30-025-20049), located 660 feet from the South line and 330 feet from the East line (Unit P) of Section 22, with injection into perforations from 3,504 feet to 3,776 feet.

(2) The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(3) Injection shall be accomplished through 2-3/8 inch internally plastic-lined tubing installed in a packer set within 100 feet of the uppermost injection perforation in each well. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(4) The two injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the wellhead pressure to 0.2 psi per foot of depth to the uppermost injection perforation in each well (695 psi for the above-described Langlie Lynn Queen Unit Well No. 3 and 700 for the above-described Langlie Lynn Queen Unit Well No. 9).

(5) The Division Director may administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(6) Prior to commencing injection operations, the casing in each well shall be pressure tested throughout the interval from the surface down to the proposed packer setting depth to assure the integrity of such casing.

(7) The operator shall give advance notice to the supervisor of the Division's Hobbs district office of the date and time: (i) of the installation of injection equipment in each of the injection wells; and (ii) of the mechanical integrity pressure tests so that these operations may be inspected and witnessed.

(8) The operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer in the injection wells or the leakage of water, oil, or gas from or around any producing or plugged and abandoned well within the project area, and shall take all steps as **may be** timely and necessary to correct such failure or leakage.

(9) The two subject wells shall be governed by all applicable provisions of Division Rules No. 702 through 708.

(10) The injection authority granted herein for each well shall terminate one year after the date of this order if the operator has not commenced injection operations into the well; provided, however, the Division, upon written request by the operator, may grant an extension for good cause.

(11) Jurisdiction of this case is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



SEAL

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read "Mark E. Fesmire".

MARK E. FESMIRE, P.E.  
Director