

**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. 14356  
ORDER NO. R-10448-E**

**APPLICATION OF ENERGEN RESOURCES CORPORATION TO AMEND  
ORDER NO. R-10448 TO AUTHORIZE THE INJECTION OF WATER FOR  
PRESSURE MAINTENANCE OPERATIONS FOR THE WEST  
LOVINGTON-STRAWN UNIT, LEA COUNTY, NEW MEXICO**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came on for hearing at 8:15 a.m. on September 3, 2009, at Santa Fe, New Mexico, before Examiner Terry Warnell.

NOW, on this 9<sup>th</sup> day of October, 2009, 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 the subject matter thereof.

(2) By Order No. R-10448 issued in Case No. 11194 on August 29, 1995, the Division approved the injection of gas for pressure maintenance purposes into the Strawn formation, West Lovington-Strawn Pool, through perforations in the Speight Fee Well No. 1 from 11,424 feet to 11,434 feet.

(3) The applicant Energen Resources Corporation ("Energen" or "Applicant"), now seeks to amend Order No. R-10448, authorizing it to inject water instead of gas for pressure maintenance purposes into the Strawn formation through perforations in its West Lovington Strawn Unit Well No. 8-R (API No. 30-025-32291) from 11,520 feet to 11,592 feet.

(4) Energen Resources Corporation ("Energen" or "Applicant") is the current operator of the West Lovington Strawn Unit ("WLSU") in the West Lovington-Strawn Pool (40875) underlying the following lands in Lea County, New Mexico:

**TOWNSHIP 15 SOUTH, RANGE 35 EAST, NMPM**

Section 28: S/2 S/2  
Section 32: E/2 E/2  
Section 33: All  
Section 34: S/2 NE/4, W/2, and SE/4  
Section 35: W/2 SW/4

**TOWNSHIP 16 SOUTH, RANGE 35 EAST NMPM**

Section 1: Lots 1 through 11 and the N/2 and SE/4 equivalents of Lot 12  
Section 5: Lots 3, 4 and 5  
Section 6: Lots 1, 2, 6, 7 and 8

(5) The proposed vertical extent of the lease injection project is that productive interval underlying the West Lovington Strawn Unit within the Strawn formation of the West Lovington-Strawn Pool. The proposed injection well:

**West Lovington Strawn Unit (WLSU) Well No. 8R**

API No. 30-025-32291  
1980 feet from the South line and 660 feet from the West line  
(Unit L) Section 34, T-15-S, R-35-E, NMPM

penetrates the top of the Strawn porosity at a depth of 11,520 feet and the base is at 11,592 feet.

(6) No other parties appeared in this case or otherwise opposed this application.

(7) Energen presented testimony from geology and engineering witnesses at the hearings in support of the proposed waterflood project as follows:

(a) On August 29, 1995, the Division issued Order No. R-10448, in Case No. 11194, allowing the operator of the West Lovington Strawn Unit to inject gas for pressure maintenance operations which continued through 2002.

(b) The drive mechanism for the reservoir was a combination drive that included the solution gas and a partial water drive down-dip due to gravity drainage.

(c) The WLSU Well No. 8R (formerly the Snyder "S" Com Well No.1) is no longer producing hydrocarbons and is a good injection well candidate, as it has watered out.

(d) Conversion of the WLSU Well No. 8R from producer to produced water injector will be a closed system.

(e) All nine wells within the ½ mile area of review (AOR) of the WLSU Well No. 8R are adequately cased and cemented and/or plugged in a manner ensuring injection fluids will remain in the intended injection intervals.

(8) There are no faults or conduits which could transport injected waters out of the injection interval. The applicant prepared and submitted an adequate Form C-108 and included wellbore diagrams on the four plugged and abandoned wells in the AOR.

(9) There are five fresh Ogallala water wells in this vicinity, and the water sands in these wells are from 50 feet to 250 feet. All protectable water sands will be protected from this injection operation and will not be endangered.

(10) The estimated additional costs of the proposed waterflood operations will not exceed the estimated value of the additional oil and gas recovered plus a reasonable profit.

(11) The West Lovington Strawn Unit Well No. 8R should be approved for use as an injection well as this project is first implemented. Forest is currently in full compliance with the Division Rule 5.9 provisions as it relates to inactive wells and financial assurance.

(12) This application should be approved.

**IT IS THEREFORE ORDERED THAT:**

(1) The Division Order No. R-10448 is hereby amended, and the "Applicant", Energen Resources Corporation (OGRID 162928), is hereby authorized to inject water for pressure maintenance purposes in the West Lovington Strawn Unit (WLSU) Well No. 8R (API No. 30-025-32291) in the West Lovington-Strawn Pool (40875) underlying the following lands in Lea County, New Mexico:

**TOWNSHIP 15 SOUTH, RANGE 35 EAST NMPM**

Section 28: S/2 S/2  
Section 32: E/2 E/2  
Section 33: All  
Section 34: S/2 NE/4, W/2, and SE/4  
Section 35: W/2 SW/4

**TOWNSHIP 16 SOUTH, RANGE 35 EAST NMPM**

Section 1: Lots 1 through 11 and the N/2 and SE/4 equivalents of Lot 12  
Section 5: Lots 3, 4 and 5  
Section 6: Lots 1, 2, 6, 7 and 8

(2) Injection is permitted into the Strawn formation through the perforated interval from approximately 11,520 feet to 11, 592 feet.

(3) Injection into this well shall be accomplished through 2-7/8 inch plastic-lined tubing installed in a packer located within 100 feet of the uppermost injection perforation. 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 Division Director may administratively authorize additional injection wells within this West Lovington Strawn Unit Project as provided in Division Rule 26.8.

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

(6) The injection well or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to 1950 psi.

(7) 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 or damage to the reservoir.

(8) The unit operator shall give 72 hours advance notice to the supervisor of the Division's Hobbs District Office of the date and time (i) injection equipment will be

installed, and (ii) the mechanical integrity pressure test will be conducted on the approved injection well, so that these operations may be witnessed. Injection shall not commence until the Division's district office has approved the report on the mechanical integrity test.

(9) The unit operator shall immediately notify the supervisor of the Division's Hobbs District Office of any failure of the tubing, casing or packer in the injection well or the leakage of water, oil or gas from or around any nearby producing or plugged and abandoned well, and shall promptly take all steps necessary to correct such failure or leakage.

(10) The unit operator shall conduct injection operations in accordance with Division rules numbered 26.8 through 26.15, and shall submit monthly reports of the injection operations on Division Form C-115, in accordance with Division rules numbered 26.13 and 7.24.

(11) In accordance with Division Rule No 26.12.C., the injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request, mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

(12) Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

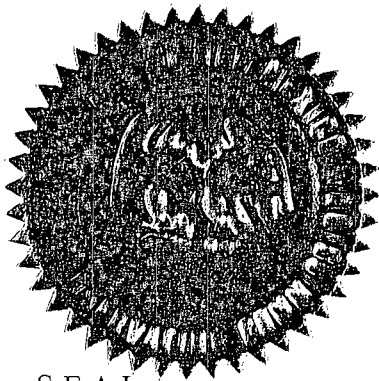
(13) This order supersedes Order No. R-10488.

(14) Jurisdiction of this case is retained by the Division for the entry of further orders as may be necessary for the prevention of waste and/or the protection of correlative rights or upon failure of the operator to conduct operations (i) to protect fresh water or (ii) consistent with the requirements in this order, whereupon the Division may, after notice and hearing (or without notice and hearing in the case of emergency, subject to NMSA 1978, Section 70-2-23), terminate the injection authority granted herein.

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



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STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

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

MARK E. FESMIRE, P.E.  
Director