



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505  
(505) 827-7131

January 16, 1997

Great Western Drilling Company  
P.O. Box 1659  
Midland, Texas 79702

Attn: Mr. Joe N. Clement

**RE: *Injection Pressure Increase South Carter (San Andres)  
Unit Waterflood Project, Lea County, New Mexico***

Dear Mr. Clement:

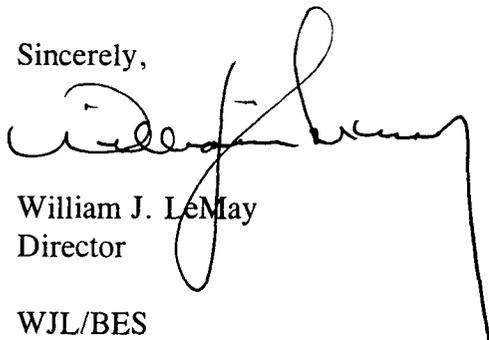
Reference is made to your request dated November 27, 1996 to increase the surface injection pressure on 1 well in the above referenced waterflood project. This request is based on a step rate test conducted on November 12, 1996. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	Maximum Surface Injection Pressure
South Carter (San Andres) Unit Well No.703	1660 PSIG
Unit 'M', Section 5, Township 18 South, Range 39 East, Lea County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. LeMay  
Director

WJL/BES

cc: Oil Conservation Division - Hobbs  
Files: WFX-688, EOR-21, PSI-X 2<sup>nd</sup> QTR97



*ADMINISTRATIVE ORDER NO. WFX-688*

***APPLICATION OF GREAT WESTERN DRILLING COMPANY TO EXPAND ITS  
WATERFLOOD PROJECT IN THE SOUTH CARTER-SAN ANDRES POOL IN LEA  
COUNTY, NEW MEXICO***

**ADMINISTRATIVE ORDER  
OF THE OIL CONSERVATION DIVISION**

Under the provisions of Division Order No. R-10251, Great Western Drilling Company has made application to the Division on July 5, 1996 for permission to expand its South Carter-San Andres Unit Waterflood Project in the South Carter-San Andres Pool in Lea County, New Mexico.

**THE DIVISION DIRECTOR FINDS THAT:**

- (1) The application has been filed in due form.
- (2) Satisfactory information has been provided that all offset operators have been duly notified of the application.
- (3) No objection has been received within the waiting period as prescribed by Rule 701(B).
- (4) The proposed expansion of the above referenced waterflood project will not cause waste nor impair correlative rights.
- (5) The proposed expansion is designated by the applicant as a replacement well for the South Carter-San Andres Unit Well No.702 and authority for injection into such is hereby terminated.
- (6)The subject well is located within an approved Enhanced Oil Recovery Project area and shall qualify for applicable tax credits under such project.
- (7) The application should be approved.

**IT IS THEREFORE ORDERED THAT:**

The applicant, Great Western Drilling Company, be and the same is hereby authorized to inject water into the San Andres formation at approximately 5150 feet to approximately 5350 feet through 2 3/8-inch plastic lined tubing set in a packer located at approximately 5100 feet in the following described well for purposes of secondary recovery to wit:

**South Carter-San Andres Unit Well No.703  
1190' FSL and 990' FWL - Unit Letter 'M',  
Section 5, Township 18 South, Range 39 East,  
Lea County, New Mexico  
Maximum Injection Pressure: 1030 psig**

**IT IS FURTHER ORDERED THAT:**

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.

Prior to commencing injection operations into the well, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing or packer.

The injection well or system shall be equipped with a pressure limiting device which will limit the wellhead pressure to no more than .2 psi per foot of depth to the uppermost injection interval.

The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the San Andres formation. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

The operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity tests so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Hobbs district office of the Division of the failure of the tubing, casing or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

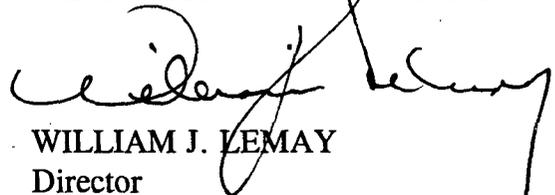
The subject well shall be governed by all provisions of Division Order No. R-10251, as amended and Rules 702-706 of the Division Rules and Regulations not inconsistent herewith.

PROVIDED FURTHER THAT, jurisdiction of this cause is hereby retained by the Division for the entry of such further order or orders as may be deemed necessary or convenient for the prevention of waste and/or protection of correlative rights; upon failure of the operator to conduct operations in a manner which will ensure the protection of fresh water or in a manner inconsistent with the requirements set forth in this order, the Division may, after notice and hearing, terminate the injection authority granted herein.

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 by the operator, may grant an extension thereof for good cause shown.

DONE at Santa Fe, New Mexico, on this 6th day of August, 1996.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
WILLIAM J. LEMAY  
Director

S E A L

WJL/BES

cc: Oil Conservation Division - Hobbs  
File: Case No.11113; EOR-21 ✓



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505  
(505) 827-7131

March 21, 1996

Great Western Drilling Company  
P.O. Box 1659  
Midland, Texas 79702

Attn: Mr. Joe N. Clement

**RE: *Injection Pressure Increase South Carter (San Andres)  
Unit Waterflood Project, Lea County, New Mexico***

Dear Mr. Clement:

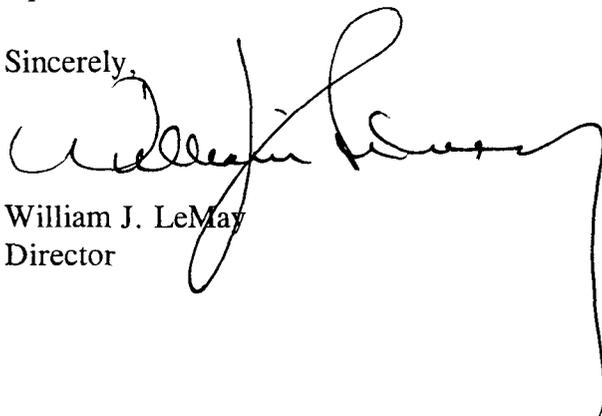
Reference is made to your request dated March 4, 1996 to increase the surface injection pressure on 4 wells in the above referenced waterflood project. This request is based on step rate tests conducted between February 1 and 19, 1996. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	Maximum Surface Injection Pressure
South Carter (San Andres) Unit Well No.102, 'N', Section 5	1280 PSIG
South Carter (San Andres) Unit Well No.103, 'K', Section 5	1790 PSIG
South Carter (San Andres) Unit Well No.303, 'D', Section 8	1640 PSIG
South Carter (San Andres) Unit Well No.402, 'F', Section 8	1240 PSIG
Located in Township 18 South, Range 39 East, Lea County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. LeMay  
Director

*Injection Pressure Increase*  
*Great Western Drilling Company*  
*March 21, 1996*  
*Page 2*

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WJL/BES

cc: Oil Conservation Division - Hobbs  
Files: Case No.11113; EOR-21; PSI-X 3rd QTR 96

Oil Conservation Division

July 21, 1995

Department of Taxation and Revenue  
P.O. Box 630  
Santa Fe, NM 87509-0630

Attention: Mr. John Chavez, Secretary

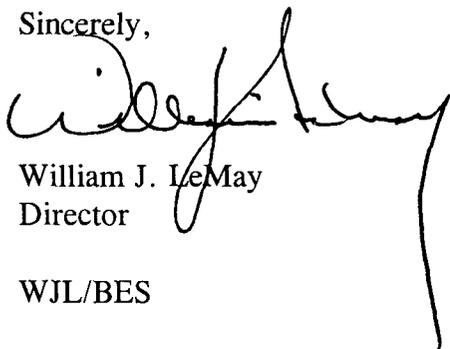
**RE: Certification of EOR Project  
Great Western Drilling Company  
South Carter (San Andres) Unit Waterflood Project**

Dear Secretary Chavez:

Enclosed is a copy of the certification issued to Great Western Drilling Company for their South Carter (San Andres) Unit Waterflood EOR project, certified by this Division on January 1, 1995, to be a qualified Enhanced Oil Recovery Project. If the operator applies for certification of positive production response within five years from that date, this project will be eligible for the *Recovered Oil Tax Rate* as provided in Laws of 1992, Chapter 38.

Only oil production from that portion of the lands identified in the certification which is actually developed for enhanced recovery will be eligible for the reduced tax rate. At the time positive production response is certified, we will identify for you the specific lands and wells within the project which qualify for the *Recovered Oil Tax Rate*.

Sincerely,



William J. LeMay  
Director

WJL/BES

Enclosures

Oil Conservation Division

July 21, 1995

Great Western Drilling Company  
700 West Louisiana  
Midland, Texas 79701

Attn: Mr. Mike Heathington

**CERTIFICATION OF ENHANCED OIL RECOVERY PROJECT  
FOR RECOVERED OIL TAX RATE**

The New Mexico Oil Conservation Division hereby certifies that the following Enhanced Oil Recovery Project has been approved by the Division as a project pursuant to the provisions of the New Mexico *Enhanced Oil Recovery Act* (Laws of 1992, Chapter 38). In order to qualify for the *Recovered Oil Tax Rate*, you must apply for certification of positive production response within from the date of this certification. Only production from that part of the project area identified herein which is actually developed for enhanced recovery will qualify for the reduced tax rate.

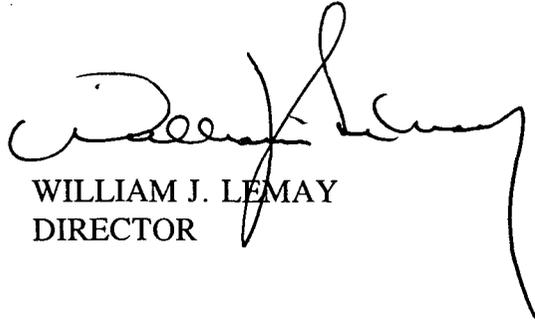
If operation of this project is terminated for any reason, the operator of the project must notify this division and the Secretary of Taxation and Revenue not later than the thirtieth day after termination.

NAME OF PROJECT:	South Carter (San Andres) Unit Waterflood
OCD ORDER NO.:	R-10251
OPERATOR:	Great Western Drilling Company
ADDRESS:	700 West Louisiana Midland, Texas 79701 Attn: Mr. Mike Heathington
CERTIFICATION DATE:	January 1, 1995

PROJECT AREA

<i>Township</i>	<i>Range</i>	<i>Section</i>
18 South	39 East	Section 5, lots 4,5 and 6, S/2NW/4, E/2SW/4, and W/2SW/4; Section 6, SE/4SE/4; Section 7, NE/4NE/4; Section 8, lots 1,2,3,and 4, S/2NW/4 and SW/4

APPROVED BY:



WILLIAM J. LEMAY  
DIRECTOR

S E A L

WJL/BES

cc: Secretary John Chavez, Taxation and Revenue Department  
Kellahin and Kellahin, Attn: W. Thomas Kellahin



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

December 6, 1994

Great Western Drilling Company

Midland, Texas

Attn: Mr.

**CERTIFICATION OF ENHANCED OIL RECOVERY PROJECT  
FOR RECOVERED OIL TAX RATE**

The New Mexico Oil Conservation Division hereby certifies that the following Enhanced Oil Recovery Project has been approved by the Division as a project pursuant to the provisions of the New Mexico *Enhanced Oil Recovery Act* (Laws of 1992, Chapter 38). In order to qualify for the *Recovered Oil Tax Rate*, you must apply for certification of positive production response within from the date of this certification. Only production from that part of the project area identified herein which is actually developed for enhanced recovery will qualify for the reduced tax rate.

If operation of this project is terminated for any reason, the operator of the project must notify this division and the Secretary of Taxation and Revenue not later than the thirtieth day after termination.

NAME OF PROJECT:	South Carter (San Andres) Unit Waterflood
OCD ORDER NO.:	R-10251
OPERATOR: ADDRESS:	Great Western Drilling Company
CERTIFICATION DATE:	NOT RECIEVED YET

1.1.95



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

PROJECT AREA

<i>Township</i>	<i>Range</i>	<i>Section</i>
18 South	39 East	Section 5, lots 4,5 and 6, S/2NW/4, E/2SW/4, and W/2SW/4; Section 6, SE/4SE/4; Section 7, NE/4NE/4; Section 8, lots 1,2,3,and 4, S/2NW/4 and SW/4

APPROVED BY:

WILLIAM J. LEMAY  
DIRECTOR

S E A L

**KELLAHIN AND KELLAHIN**

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

TELEPHONE (505) 982-4285  
TELEFAX (505) 982-2047

W. THOMAS KELLAHIN\*

\*NEW MEXICO BOARD OF LEGAL SPECIALIZATION  
RECOGNIZED SPECIALIST IN THE AREA OF  
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

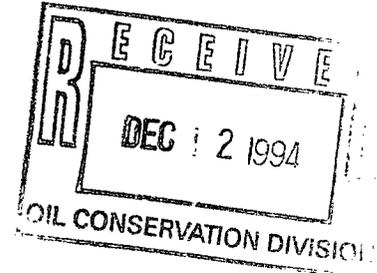
*December 12, 1994*

**HAND DELIVERED**

*Oil Conservation Division  
2040 South Pacheco  
Santa Fe, New Mexico 87505*

*Attn: Rand Carroll, Esq.*

*Re: Great Western Drilling Company  
Request for Certification of Qualification  
for an Enhanced Oil Recovery Project*



*Dear Mr. Carroll:*

*On behalf of Great Western Drilling Company and in accordance with  
Division Order R-10251 (copy enclosed), I hereby request from the Division a  
Certificate of Qualification for the following described project;*

**Project Name:**

*South Carter (San Andres) Unit Waterflood Project*

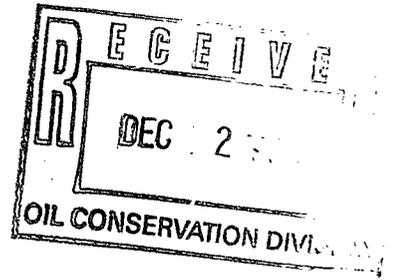
**Project Operator:**

*Great Western Drilling Company  
700 W. Louisiana  
Midland, Texas 79701*

**Project Area:**

*The San Andres formation of the South Carter-San Andres Pool  
within the following project area in Lea County, New Mexico, containing 624  
acres, more or less and described as follows:*

*Oil Conservation Division  
December 12, 1994  
Page 2.*



*Township 18 South, Range 39 East, NMPM*

*Section 5: (irregular sized section)*

*Lots 4, 5, & 6;  
S/2NW/4; E/2SW/4; and  
W/2SW/4*

*Section 6: SE/4SE/4*

*Section 7: NE/4NE/4*

*Section 8: (irregular sized section)*

*Lot 1; N/2NW/4; and  
North 120 acres of 318.7 acre tract; said  
318.7 acre tract being Lots 2,3,4, S/2NW/4  
& SW/4*

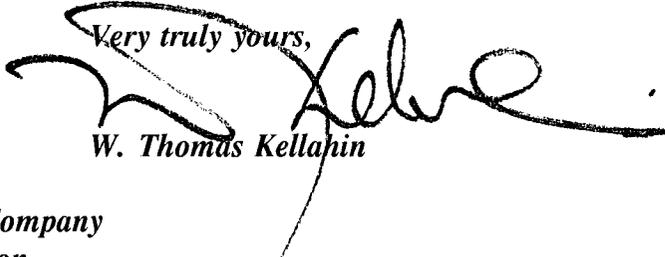
*Project wells eligible for credit:*

- 1. Effie Carter No. 3, (new drill) Unit N-5-18S-39E*
- 2. Burton Federal Well No. 1, Unit P-5-18S-39E*
- 3. Effie Carter Well No. 1, Unit O-5-18S-39E*
- 4. Sylvester Johnson Well No. 1, Unit A-8-18S-39E*
- 5. Carter Well 1-A, Unit A-7-18S-39E*
- 6. Sylvester Johnson Well No. 2, Unit C-8-18S-39E*

*Project injection wells:*

- 1. Effie Carter No. 2, Unit N-5-18S-39E*
- 2. Effie Carter No. 3, Unit K-5-18S-39E*
- 3. Dune-Johnson No. 2, Unit M-5-18S-39E*
- 4. McQueen No. 2, Unit F-8-18S-39E*
- 5. Sylvester-Johnson Well No. 3, Unit D-8-18S-39E*

*Please let me know if you require anything further.*

*Very truly yours,*  
  
*W. Thomas Kellahin*

*cc: Great Western Drilling Company  
Attn: Mike Heathington*

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. 11113  
ORDER NO. R-10251

APPLICATION OF GREAT WESTERN DRILLING COMPANY FOR A WATERFLOOD  
PROJECT AND TO QUALIFY FOR THE RECOVERED OIL TAX RATE, LEA  
COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on October 13, 1994 at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this 21st day of November, 1994 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) At the time of the hearing, this case was consolidated with Division Case No. 11114 for the purpose of testimony. Case No. 11114 is a companion case concerning statutory unitization.

(3) The applicant, Great Western Drilling Company (Great Western), seeks approval to institute a waterflood project in its proposed South Carter (San Andres) Unit comprising portions of Sections 5, 6, 7 and 8, Township 18 South, Range 39 East, by the injection of water into the South Carter-San Andres Pool, through five existing wells to be converted. The applicant also seeks to qualify this project for the recovered Oil Tax Rate pursuant to the New Mexico "Enhanced Oil Recovery Act" (Law 1992, Chapter 38, Sections 1 through 5).

(4) It is proposed that the waterflood project area coincide with the boundary of the South Carter (San Andres) Unit Area in Lea County, New Mexico, as further described below:

TOWNSHIP 18 SOUTH, RANGE 39 EAST, NMPM, LEA COUNTY, NEW MEXICO

- Section 5: (irregular sized section)  
Lots 4, 5 & 6;  
S/2NW/4; E/2SW/4; and  
W/2SW/4
- Section 6: SE/4SE/4
- Section 7: NE/4NE/4
- Section 8: (irregular sized section)  
Lot 1; N/2NW/4; and  
North 120 acres of 318.7 acre tract; said 318.7 acre tract being  
Lots 2, 3, 4, S/2NW/4 & SW/4

The above area includes 624 acres, more or less.

(5) The wells within the proposed waterflood area have reached an advanced stage of depletion. The eight active producers are currently producing a total of 60 barrels of oil and 60 barrels of water per day. Approximately 85% of the primary reserves has been recovered.

(6) The project is expected to recover 1,300,000 barrels of secondary oil and cost an estimated \$955,000. It would be developed in two stages. Initially there would be five injection wells injecting a total of 2,500 barrels of water per day. One new producing well would be drilled in stage one. In stage two, two additional producing wells would be converted to injection and two new injection wells would be drilled. Also five new producers would be drilled resulting in a total of nine injection and nine producing wells.

(7) Injection would be into the San Andres formation interval correlative to the interval between the depths of 4,820 feet and 5,610 feet as identified on the Halliburton Radioactivity Log for the Moore & Turner McQuein Well No. 1, dated January 5, 1955, located 1980 feet from the North line and 435 feet from the East line of Section 8, Township 18 South, Range 39 East, NMPM, Lea County, New Mexico.

(8) Great Western proposed a maximum injection pressure limitation of 0.2 psi per foot calculated on an individual well basis and requested an administrative procedure for increasing injection pressures based on step rate tests.

(9) An administrative procedure for amending well locations was also requested. Since Division General Rules currently authorize such administrative procedures, special rules are needed.

(10) Great Western plans to inject water through 2 3/8-inch PVC lined tubing set on a packer within 100 feet of the injection interval. Injection water would be San Andres produced water and Ogallala make up water. Compatibility studies indicate no problems as long as a closed system is maintained and oxygen is kept out of the system.

(11) Prior to commencing injection operations into the proposed injection wells, the casing in each well should be tested throughout the interval from the surface down to the proposed packer setting depth, to assure integrity of the casing.

(12) Great Western submitted data concerning water wells and ground water resources in the area. Information was also submitted to show that producing and plugged wells in the area are completed in a manner which will protect ground water.

(13) Data was submitted for each well within 1/2 mile of each of the proposed injection wells. Production casing is cemented and/or cement plugs are set in each of the wells to prevent migration of injection fluids out of the proposed injection interval.

(14) Great Western submitted a unit area production performance curve showing that oil production began in 1957 and peaked that year at approximately 15,000 barrels per month. Production decline has been fairly constant to the current rate of nearly 2000 barrels per month (60 barrels per day) for the eight wells currently producing. Based on the data submitted, the proposed project qualifies as an enhanced recovery project as defined in Division rules (Order No. R-9708) and the New Mexico Enhanced Oil Recovery Act. The project should be approved and should be designated the South Carter (San Andres) Unit Waterflood Project.

(15) To be eligible for the EOR tax credit, prior to commencing operations, the operator must request from the Division a Certificate of Qualification specifying the proposed project area as described in this order.

(16) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(17) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Great Western Drilling Company is hereby authorized to institute a waterflood project in its South Carter (San Andres) Unit Area (Division Case No. 11114), Lea County, New Mexico by the injection of water into a stratigraphic interval of the South Carter-San Andres Pool, equivalent to that interval between 4,820 feet and 5,610 feet as identified on the Halliburton Radioactive Log for the Moore & Turner McQueen Well No. 1, dated January 5, 1955, located 1980 feet from the North line and 435 feet from the East line of Section 8, Township 18 South, Range 39 East, NMPM, Lea County, New Mexico. Injection is authorized through five injection wells as further described in Exhibit "A" attached hereto and made a part hereof.

(2) The waterflood project area, hereby designated the South Carter (San Andres) Unit Waterflood Project, shall coincide with the boundary of the South Carter (San Andres) Unit Area as further described below:

TOWNSHIP 18 SOUTH, RANGE 39 EAST, NMPM, LEA COUNTY, NEW MEXICO

Section 5: (irregular sized section)  
Lots 4, 5 & 6;  
S/2NW/4; E/2SW/4; and  
W/2SW/4  
Section 6: SE/4SE/4  
Section 7: NE/4NE/4  
Section 8: (irregular sized section)  
Lot 1; N/2NW/4; and  
North 120 acres of 318.7 acre tract; said 318.7 acre tract being  
Lots 2, 3, 4, S/2NW/4 & SW/4

(3) The applicant must take all steps necessary to ensure that the injected water enters and remains confined to or produced from 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.

(4) Injection shall be accomplished through 2 3/8-inch PVC-lined tubing installed in a packer set approximately within 100 feet of the uppermost injection perforation or open hole interval, the casing-tubing annulus in each well shall be filled with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(5) The injection wells or pressurization system for each injection well shall be so equipped as to initially limit injection pressure at the wellhead to no more than 0.2 psi multiplied by the depth to the top of the injection interval.

(6) Any additional increase in the injection pressure for any well in the project area shall only be approved by the Santa Fe Office of the Division using the procedures set out in Division General Rule 704C.

(7) Prior to commencing injection operations, the casing in each injection 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.

(8) The operator shall give advance notification to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(9) The applicant shall immediately notify the supervisor of the Hobbs District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells, the leakage of water or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(10) The applicant shall conduct injection operations in accordance with Division Rule Nos. 701 through 708 and shall submit monthly progress reports in accordance with Division Rules.

(11) The subject waterflood project is hereby approved as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(12) The approved "project area" shall comprise that area described in Decretory Paragraph No. (2) above.

(13) To be eligible for the EOR credit, prior to commencing injection operations, the operator must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

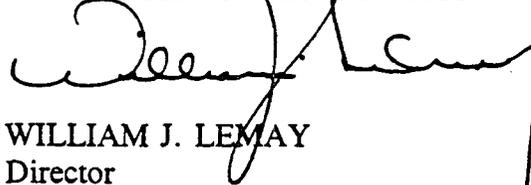
(14) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(15) The injection authority granted herein for the proposed injection wells shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(16) Jurisdiction of this cause 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.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY  
Director

S E A L

Exhibit "A"  
Case No. 11113  
Order No. R-10251  
Great Western Drilling Company  
State 1 Injection Wells  
South Carter (San Andres) Unit Waterflood Project  
Township 18 South, Range 39 East, NMPM  
Lea County, New Mexico

<u>Well Name and Number</u>	<u>Footage Location</u>	<u>Section</u>	<u>Proposed Injection Interval Feet</u>
Effie Carter No. 2	330' FSL & 2310' FWL	5	5129-5210
Effie Carter No. 3	1650' FSL & 1980' FWL	5	5094-5235
S.P. Johnson No. 2	990' FSL & 990' FWL	5	5097-5246
McQuein No. 2	1650' FNL & 2310' FWL	8	5046-5270
Sylvester-Johnson	330' FNL & 990' FWL	8	5108-5233

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. 11113*  
*ORDER NO. R-10251*

**APPLICATION OF GREAT WESTERN DRILLING COMPANY FOR A WATERFLOOD PROJECT AND TO QUALIFY FOR THE RECOVERED OIL TAX RATE, LEA COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on October 13, 1994 at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this 21st day of November, 1994 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

- (1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) At the time of the hearing, this case was consolidated with Division Case No. 11114 for the purpose of testimony. Case No. 11114 is a companion case concerning statutory unitization.
- (3) The applicant, Great Western Drilling Company (Great Western), seeks approval to institute a waterflood project in its proposed South Carter (San Andres) Unit comprising portions of Sections 5, 6, 7 and 8, Township 18 South, Range 39 East, by the injection of water into the South Carter-San Andres Pool, through five existing wells to be converted. The applicant also seeks to qualify this project for the recovered Oil Tax Rate pursuant to the New Mexico "Enhanced Oil Recovery Act" (Law 1992, Chapter 38, Sections 1 through 5).
- (4) It is proposed that the waterflood project area coincide with the boundary of the South Carter (San Andres) Unit Area in Lea County, New Mexico, as further described below:

TOWNSHIP 18 SOUTH, RANGE 39 EAST, NMPM, LEA COUNTY, NEW MEXICO

- Section 5: (irregular sized section)  
Lots 4, 5 & 6;  
S/2NW/4; E/2SW/4; and  
W/2SW/4
- Section 6: SE/4SE/4
- Section 7: NE/4NE/4
- Section 8: (irregular sized section)  
Lot 1; N/2NW/4; and  
North 120 acres of 318.7 acre tract; said 318.7 acre tract being  
Lots 2, 3, 4, S/2NW/4 & SW/4

The above area includes 624 acres, more or less.

(5) The wells within the proposed waterflood area have reached an advanced stage of depletion. The eight active producers are currently producing a total of 60 barrels of oil and 60 barrels of water per day. Approximately 85% of the primary reserves has been recovered.

(6) The project is expected to recover 1,300,000 barrels of secondary oil and cost an estimated \$955,000. It would be developed in two stages. Initially there would be five injection wells injecting a total of 2,500 barrels of water per day. One new producing well would be drilled in stage one. In stage two, two additional producing wells would be converted to injection and two new injection wells would be drilled. Also five new producers would be drilled resulting in a total of nine injection and nine producing wells.

(7) Injection would be into the San Andres formation interval correlative to the interval between the depths of 4,820 feet and 5,610 feet as identified on the Halliburton Radioactivity Log for the Moore & Turner McQueen Well No. 1, dated January 5, 1955, located 1980 feet from the North line and 435 feet from the East line of Section 8, Township 18 South, Range 39 East, NMPM, Lea County, New Mexico.

(8) Great Western proposed a maximum injection pressure limitation of 0.2 psi per foot calculated on an individual well basis and requested an administrative procedure for increasing injection pressures based on step rate tests.

(9) An administrative procedure for amending well locations was also requested. Since Division General Rules currently authorize such administrative procedures, special rules are <sup>not</sup> needed.

(10) Great Western plans to inject water through 2 3/8-inch PVC lined tubing set on a packer within 100 feet of the injection interval. Injection water would be San Andres produced water and Ogallala make up water. Compatibility studies indicate no problems as long as a closed system is maintained and oxygen is kept out of the system.

(11) Prior to commencing injection operations into the proposed injection wells, the casing in each well should be tested throughout the interval from the surface down to the proposed packer setting depth, to assure integrity of the casing.

(12) Great Western submitted data concerning water wells and ground water resources in the area. Information was also submitted to show that producing and plugged wells in the area are completed in a manner which will protect ground water.

(13) Data was submitted for each well within 1/2 mile of each of the proposed injection wells. Production casing is cemented and/or cement plugs are set in each of the wells to prevent migration of injection fluids out of the proposed injection interval.

(14) Great Western submitted a unit area production performance curve showing that oil production began in 1957 and peaked that year at approximately 15,000 barrels per month. Production decline has been fairly constant to the current rate of nearly 2000 barrels per month (60 barrels per day) for the eight wells currently producing. Based on the data submitted, the proposed project qualifies as an enhanced recovery project as defined in Division rules (Order No. R-9708) and the New Mexico Enhanced Oil Recovery Act. The project should be approved and should be designated the South Carter (San Andres) Unit Waterflood Project.

(15) To be eligible for the EOR tax credit, prior to commencing operations, the operator must request from the Division a Certificate of Qualification specifying the proposed project area as described in this order.

(16) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(17) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Great Western Drilling Company is hereby authorized to institute a waterflood project in its South Carter (San Andres) Unit Area (Division Case No. 11114), Lea County, New Mexico by the injection of water into a stratigraphic interval of the South Carter-San Andres Pool, equivalent to that interval between 4,820 feet and 5,610 feet as identified on the Halliburton Radioactive Log for the Moore & Turner McQueen Well No. 1, dated January 5, 1955, located 1980 feet from the North line and 435 feet from the East line of Section 8, Township 18 South, Range 39 East, NMPM, Lea County, New Mexico. Injection is authorized through five injection wells as further described in Exhibit "A" attached hereto and made a part hereof.

(2) The waterflood project area, hereby designated the South Carter (San Andres) Unit Waterflood Project, shall coincide with the boundary of the South Carter (San Andres) Unit Area as further described below:

TOWNSHIP 18 SOUTH, RANGE 39 EAST, NMPM, LEA COUNTY, NEW MEXICO

Section 5: (irregular sized section)  
Lots 4, 5 & 6;  
S/2NW/4; E/2SW/4; and  
W/2SW/4  
Section 6: SE/4SE/4  
Section 7: NE/4NE/4  
Section 8: (irregular sized section)  
Lot 1; N/2NW/4; and  
North 120 acres of 318.7 acre tract; said 318.7 acre tract being  
Lots 2, 3, 4, S/2NW/4 & SW/4

(3) The applicant must take all steps necessary to ensure that the injected water enters and remains confined to or produced from 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.

(4) Injection shall be accomplished through 2 3/8-inch PVC-lined tubing installed in a packer set approximately within 100 feet of the uppermost injection perforation or open hole interval, the casing-tubing annulus in each well shall be filled with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(5) The injection wells or pressurization system for each injection well shall be so equipped as to initially limit injection pressure at the wellhead to no more than 0.2 psi multiplied by the depth to the top of the injection interval.

(6) Any additional increase in the injection pressure for any well in the project area shall only be approved by the Santa Fe Office of the Division using the procedures set out in Division General Rule 704C.

(7) Prior to commencing injection operations, the casing in each injection 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.

(8) The operator shall give advance notification to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-test in order that the same may be witnessed.

(9) The applicant shall immediately notify the supervisor of the Hobbs District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells, the leakage of water or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(10) The applicant shall conduct injection operations in accordance with Division Rule Nos. 701 through 708 and shall submit monthly progress reports in accordance with Division Rules.

(11) The subject waterflood project is hereby approved as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(12) The approved "project area" shall comprise that area described in Secretary Paragraph No. (2) above.

(13) To be eligible for the EOR credit, prior to commencing injection operations, the operator must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

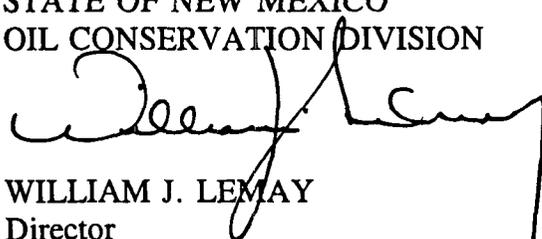
(14) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(15) The injection authority granted herein for the proposed injection wells shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(16) Jurisdiction of this cause 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.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
WILLIAM J. LEMAY  
Director

S E A L

Exhibit "A"  
Case No. 11113  
Order No. R-10251  
Great Western Drilling Company  
State 1 Injection Wells  
South Carter (San Andres) Unit Waterflood Project  
Township 18 South, Range 39 East, NMPM  
Lea County, New Mexico

<u>SCSAU</u>	<u>Well Name and Number</u>	<u>Footage Location</u>		<u>Section</u>	<u>Proposed Injection Interval Feet</u>
102	Effie Carter No. 2	330' FSL & 2310' FWL	N	5	5129-5210
103	Effie Carter No. 3	1650' FSL & 1980' FWL	K	5	5094-5235
	S.P. Johnson No. 2	990' FSL & 990' FWL		5	5097-5246
402	McQuein No. 2	1650' FNL & 2310' FWL	F	8	5046-5270
303	Sylvester-Johnson	330' FNL & 990' FWL	D	8	5108-5233