



New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

July 18, 2018

Attention: Mr. Phillip Goetze: Engineering Bureau

Dear Mr. Goetze,

In August 2016, Rover Operating, LLC (OGRID 371484), acquired the High Lonesome Queen Unit, located in Sections 15 & 16, Township 16 South, Range 29 East, NMPM, Eddy County, New Mexico. Several months later, in July 2017, Rover was made aware of a deadline of July 22, 2017 to commence injection within the unit. At that point, there was not sufficient time to file a C-108 to convert an existing well to injection, or to permit and drill a new water injection well, so Rover requested a one-year extension to begin injection and initiate the enhanced oil recovery project.

In February 2018, Rover submitted a C-108 application to convert the High Lonesome Queen Unit #3 (API # 30-015-02736) to injection. As of the writing of this letter, Rover has not received the reviewed application or been updated on the status of the application. The work on the well has been completed as of July 16, 2018, and the well is ready to begin injecting as soon as the injection permit is approved and an NM OCD Officer has witnessed a Mechanical Integrity Test.

With the deadline to commence injection within this unit only four days away, Rover would like to request an additional six-month extension to the deadline. This will allow additional time for the return of the C-108 permit and for Rover to make additional changes or updates that may be needed prior to being granted the authority to inject into this wellbore.

Any response on this matter will be greatly appreciated. Rover is happy to submit any additional permits, applications, or other paperwork that may be necessary in order to begin the development of this waterflood project.

Sincerely,

A handwritten signature in black ink, appearing to read "Brady Wilton". The signature is fluid and cursive, with a long horizontal stroke at the end.

Brady Wilton
Petroleum Engineer
Rover Operating, LLC

**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. 15116
ORDER NO. R-13864**

**APPLICATION OF ALAMO PERMIAN RESOURCES, LLC FOR APPROVAL OF
THE HIGH LONESOME QUEEN UNIT, ESTABLISHMENT OF A
WATERFLOOD PROJECT AND CERTIFICATION OF THE WATERFLOOD
PROJECT AS AN ENHANCED OIL RECOVERY PROJECT PURSUANT TO THE
ENHANCED OIL RECOVERY ACT, EDDY COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 am on May 1, 2014, at Santa Fe, New Mexico, before Examiner Phillip R. Goetze.

NOW, on this 22nd day of July, 2014, 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) The Applicant, Alamo Permian Resources, LLC ("Alamo Permian"), seeks approval for its High Lonesome Queen Unit ("Unit"), establishment of a of a waterflood project and to qualify the project for an incentive tax rate under the Enhanced Oil Recovery Act.

(3) The proposed Unit area for the High Lonesome Queen Unit consists of 680 acres, more or less, situated in Eddy County, New Mexico:

Township 16 South, Range 29 East, NMPM

Section 15: NW/4 SW/4

Section 16: All

(4) Applicant is proposing the completion of six new injection wells within the Unit for use in the waterflood operation:

- (a) **High Lonesome Queen Unit Well No. 1**
API No. 30-015-Pending
1310 FNL & 10 FWL
Unit letter D, Section 16-16S-29E
- (b) **High Lonesome Queen Unit Well No. 2**
API No. 30-015-Pending
1310 FNL & 1650 FEL
Unit letter B, Section 16-16S-29E
- (c) **High Lonesome Queen Unit Well No. 7**
API No. 30-015-Pending
1980 FNL & 330 FEL
Unit letter H, Section 16-16S-29E
- (d) **High Lonesome Queen Unit Well No. 8**
API No. 30-015-Pending
1980 FSL & 10 FWL
Unit letter L, Section 16-16S-29E
- (e) **High Lonesome Queen Unit Well No. 14**
API No. 30-015-Pending
660 FSL & 1980 FWL
Unit letter N, Section 16-16S-29E
- (f) **High Lonesome Queen Unit Well No. 16**
API No. 30-015-Pending
660 FSL & 660 FEL
Unit letter P, Section 16-16S-29E

(5) Applicant appeared at the hearing through counsel and presented the following testimony:

- (a) The Queen formation in this area has been totally defined by development. Enhanced recovery by waterflooding has been successful for similar units in this area that have targeted the Penrose sandstone member located in the Queen formation (High Lonesome-Queen Pool; Pool code 30780). The Unit is part of a continuous east-west trend of Penrose sandstone that is at least eight miles long.
- (b) Applicant has described target for enhanced recovery as a sandstone reservoir with a general gross thickness of 30 feet.

Average porosity is 11 percent; however, minimum threshold porosity for production in the reservoir is eight percent (8%).

- (c) The reservoir is confined to the north by loss of permeability due to precipitation of anhydrites and salts in pore space and to the south by change in lithology with an increase in shale content. Permeability along the east and west sides of the reservoir also decreases towards the Unit boundary due to increased precipitation of evaporates in pore spaces during deposition.
- (d) A pilot waterflood project was conducted between 1957 and 1959 that included a portion of the same reservoir located in Section 16. The results of the pilot project increased oil production over 200 percent (200%) for the duration of the injection in the project area.
- (e) The reservoir is confined above and below by thick sequences of low-porosity, anhydritic dolostone that will prevent migration of injected fluids out of the injection interval. There are no faults or other geologic structures that would allow migration of the injected fluids out of the injection interval.
- (f) Each of the new six injection wells will be properly constructed to prevent migration of the injected fluid upward to any underground source of drinking water or other hydrocarbon-producing formation.
- (g) Applicant requests a maximum surface injection pressure of 1100 psi based on similar waterflood operations in the vicinity of the Unit. Applicant submitted Division Order No. R-11674-A which approved a maximum surface injection pressure of 1100 psi for the West High Lonesome (Penrose sand) Unit Waterflood Project located in Sections 17, 18, 19, and 20, Township 16 South, Range 29 East, NMPM. Applicant stated that this adjacent waterflood project had similar reservoir characteristics which necessitated a higher injection pressure to effectively and efficiently waterflood the Unit without fracturing the formation.
- (h) Most of the wells in the one-half mile area of review (AOR) surrounding each of the proposed injection wells are currently plugged and abandoned. Applicant identified a total of 42 wells within the AOR that penetrate the target interval: 26 wells that are plugged and abandoned and 16 wells that are currently producing.
- (i) Applicant was able to compile sufficient completion or plugged and abandoned information for all wells except the Davis Federal Well No. 1 (API No. 30-015-02719). The Sundry Notice for

abandonment was illegible; however, the drilling company, Moab Drilling Company, had abandoned two other wells in this Unit during the same time period (Skelly State Well No. 2; API No. 30-015-02742 and Skelly State Well No. 4; API No. 30-015-02745). Applicant offered that the drilling company had significant historical presence in this area for well completions and abandonments and that the Davis Federal Well No. 1 was abandoned with the same procedures as the two Skelly State wells.

- (j) Based on the available information and the assessment of the Davis Federal Well No. 1 abandonment, Applicant contends that each of the wells in the AOR is properly plugged and abandoned so that it will not become a conduit to allow migration of injected fluids out of the injection zone.
- (k) The water that will be injected is produced water from Yeso wells from a different operator in the vicinity. This water has a general quality of approximately 238,000 parts per million Total Dissolved Solids (ppm TDS) which is lower than the produced water of the Unit. The Applicant intends to blend captured water from production with the Yeso formation water as the project matures. There are no fluid compatibility issues.
- (l) Applicant did not find any water wells within one-mile radius of the proposed injection wells. There is no known hydrologic connection between the injection zone and any underground source of drinking water.
- (m) Applicant provided the required notices to affected persons pursuant to Subsection C of Division Rule 19.15.26.8 NMAC.
- (n) The Unit consists of three State of New Mexico leases of which Applicant has 100 percent ownership. No fee or federal leases are located within this Unit.
- (o) The Commissioner of Public Lands has given preliminary approval of the Unit and waterflood proposal.

(6) No other party appeared at the hearing or otherwise opposed the application.

The Division concludes that:

(7) The proposed 680-acre Unit consists of three (3) state leases which are owned one hundred percent (100%) by Alamo Permian.

(8) The New Mexico State Land Office has given preliminary approval of the High Lonesome Queen Unit and has designated Alamo Permian as the operator.

(9) All of the completed and plugged and abandoned wells in the AOR appear to be adequately plugged so that none of them will become a conduit for the escape of injected fluid from the permitted injection interval.

(10) Applicant's request for a maximum surface injection pressure of 1100 psi is based on a study conducted for the West High Lonesome (Penrose Sand) Unit Waterflood. This study included step-rate tests conducted on five injection wells, frac-height logs, and the results of historical injection in the unit at a gradient of 0.2 psi per foot. The Division finds that the West High Lonesome (Penrose Sand) Unit Waterflood Project has comparable stratigraphy, reservoir conditions and reservoir characteristics as the proposed project.

(11) The proposed project should, in reasonable probability, result in production of substantially more hydrocarbons from the project area than would otherwise be produced therefrom, will prevent waste, and will not impair correlative rights.

(12) This application and proposed project should be approved.

IT IS THEREFORE ORDERED THAT:

(1) The High Lonesome Queen Unit Agreement executed by Alamo Permian Resources, LLC ("Alamo Permian" or "Operator"), is hereby approved and designated the **High Lonesome Queen Unit Waterflood Project** ("Project") for all oil and gas in all formations from the surface to 100 feet below the base of the Penrose sandstone interval of the Queen formation underlying the following described 680 acres, more or less, of State of New Mexico lands ("Project Area") in Eddy County, New Mexico.

Township 16 South, Range 29 East, NMPM

Section 15: NW/4 SW/4

Section 16: All

(2) The application of Alamo Permian for authorization to inject produced water in the High Lonesome Queen Unit is hereby approved. Alamo Permian is authorized to inject produced water into the High Lonesome-Queen Pool (Pool Code 30780) through perforations in the proposed injection wells from 1700 feet to 2000 feet.

(3) The "Unitized Formation" as defined in the Unit Agreement for the High Lonesome Queen Unit Waterflood is the "stratigraphic interval occurring between the surface to 100 feet below the base of the Penrose sandstone interval of the Queen formation, said Penrose sandstone interval base occurring at 1865 feet in the Moab Drilling Company Skelly State Well No. 3 located 1980 feet from the North line and 1980 feet from the West line of Section 16, Township 16 South, Range 29 East, NMPM,

Eddy County, New Mexico as recorded on the radioactive log of said well dated July 1, 1955".

(4) The Unitized Interval for this Order shall comprise the Penrose sandstone member occurring within the Queen formation that underlies the Project Area. The vertical extent of the Unitized Interval is the stratigraphic equivalent of the Penrose sandstone from 1835 feet to 1865 feet below surface as shown on the Gamma Ray and Density Neutron Logs for the Skelly State Well No. 3 (API No. 30-015-02744) located 1980 feet from the North line and 1980 feet from the West line (Unit letter F) of Section 16, Township 16 South, Range 29 East, NMPM, Eddy County, New Mexico.

(5) The following proposed wells are approved for injection under this Order:

- (a) **High Lonesome Queen Unit Well No. 1**
API No. 30-015-Pending
1310 FNL & 10 FWL
Unit letter D, Section 16-16S-29E
- (b) **High Lonesome Queen Unit Well No. 2**
API No. 30-015-Pending
1310 FNL & 1650 FEL
Unit letter B, Section 16-16S-29E
- (c) **High Lonesome Queen Unit Well No. 7**
API No. 30-015-Pending
1980 FNL & 330 FEL
Unit letter H, Section 16-16S-29E
- (d) **High Lonesome Queen Unit Well No. 8**
API No. 30-015-Pending
1980 FSL & 10 FWL
Unit letter L, Section 16-16S-29E
- (e) **High Lonesome Queen Unit Well No. 14**
API No. 30-015-Pending
660 FSL & 1980 FWL
Unit letter N, Section 16-16S-29E
- (f) **High Lonesome Queen Unit Well No. 16**
API No. 30-015-Pending
660 FSL & 660 FEL
Unit letter P, Section 16-16S-29E

(6) Alamo Permian Resources, LLC (OGRID 274841) is hereby designated the Operator of the Unit and the waterflood project.

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

(8) Injection shall be accomplished through plastic-lined tubing installed in a packer set in the casing below the top of the Queen formation and within 100 feet of the uppermost injection perforations. 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 detect leakage in the casing, tubing or packer.

(9) Each injection well shall pass a mechanical integrity test prior to initial commencement of injection and prior to resumption of injection each time the injection packer is unseated. All testing procedures and schedules shall conform to the requirements of Division Rule 19.15.26.11.A NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths.

(10) Prior to commencing injection, the Operator will conduct a step-rate test on one of the six new injection wells to confirm the correlation in reservoir characteristics to the adjacent West High Lonesome (Penrose Sand) Unit Waterflood Project. Selection of the well shall be at the discretion of the Operator. The Operator shall give at least 72 hours advance notice to the supervisor of the Division's Artesia District Office of the date and time the step-rate test will be conducted, so that the test may be witnessed.

(11) Each of the injection wells shall be initially equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure on the well. The maximum surface injection pressure on any injection well within this waterflood project shall be limited to no more than 1100 psi unless the result of the step-rate test conducted in Ordering Paragraph (11) indicates a significant deviation from the test results submitted in evidence for Division Order No. R-11674-A. If there is significant deviation in the test results, the Operator shall be required to submit an application to the Division Director for approval of a new maximum surface pressure based on the result of the step-rate test.

(12) The Division Director may administratively authorize an increase in the maximum injection pressure upon a showing by the Operator that such higher pressure will not result in fracturing of the injection formation or confining strata.

(13) The Division Director may administratively authorize additional injection wells within the Unit as provided in Division Rule 19.15.26.8G.(5) NMAC without the necessity for further hearings.

(14) For each injection well, the Operator shall give at least 72 hours advance notice to the supervisor of the Division's Artesia District Office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure tests will be conducted, so that these operations may be witnessed.

(15) The operator shall provide written notice of the date of commencement of injection operations into each well to the Artesia District Office.

(16) The High Lonesome Queen Unit Waterflood Project is hereby certified to the New Mexico Taxation and Revenue Department as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5).

(17) The area to be affected by the enhanced oil recovery project shall consist of the area within the High Lonesome Queen Unit; however, the area and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted or expanded based upon the evidence presented by the unit operator in its demonstration of a positive production response.

(18) At such time as a positive production response occurs, and within five years from the date the project was certified to the New Mexico Taxation and Revenue Department, the unit Operator must apply to the Division for certification of a "positive production response." This application for "positive production response" shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate.

(19) The Division may review the application administratively or set it for hearing. Based upon the evidence presented, the Division will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

(20) The injection authority granted under this Order is not transferable except upon Division approval. The Division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(21) The operator shall immediately notify the supervisor of the Division's Artesia District Office of the failure of the tubing, casing or packer in any of the injection wells, or the leakage of water, oil, gas or other fluid from or around any producing or abandoned well within one-half mile of the injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(22) The Project shall be governed by applicable provisions of Division Rules 19.15.26.8 through 26.15 NMAC. Operator shall submit monthly reports of the injection operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.28 NMAC.

(23) The injection authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations; provided, however, the Division, upon written request by the Operator filed prior to the expiration of the two-year time period, may grant an extension for good cause.

(24) In accordance with Division Rule 19.15.26.12.C NMAC, the injection

authority granted herein shall terminate, if after injection commences, any continuous period of one year elapses without reported injection into any authorized injection well in the project area occurring; provided, however, the Division, upon written request by Operator filed prior to the expiration of the one-year period of non-injection, may grant an extension for good cause.

(25) Operator shall provide written notice to the Division upon permanent cessation of injection into the Project.

(26) This Order does not relieve Operator of responsibility should its operations cause any actual damage or threat of damage to protectable fresh water, human health or the environment; nor does it relieve the operator of responsibility for complying with applicable Division rules or other state, federal or local laws or regulations.

(27) Upon failure of the operator to conduct operations (1) in such manner as will protect fresh water, or (2) in a manner consistent with the requirements in this order, the Division may, after notice and hearing, (or without notice and hearing in event of an emergency), terminate the injection authority granted herein.

(28) This Order is subject to final approval of the High Lonesome Queen Unit by the New Mexico State Land Office.

(29) 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 cursive script, appearing to read "Jami Bailey".

JAMI BAILEY
Director

JAMES BRUCE
ATTORNEY AT LAW

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(505) 982-2043 (Phone)
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jamesbruc@aol.com

June 15, 2015

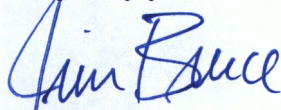
Phillip Goetze
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Dear Mr. Goetz

Enclosed is the application of Rover Operating, LLC to approve the conversion of its High Lonesome Queen Unit Well No. 3 to water injection. Please note the following:

1. Attached is Exhibit A is an extension to commence injection, extending the date to **July 22, 2018**. Thus, time is an issue (as always).
2. The application requests an injection pressure higher than the 0.2 psi per foot of depth to the top perforation. Attached as Exhibit B is Order No. RR-2268-C, granting a higher injection pressure in a nearby waterflood project. However, if that is not acceptable evidence, please grant the 0.2 psi/foot, and Rover will later seek a pressure increase if necessary.
3. The newspaper notice will be provided to you later, together with certified green cards.

Very truly yours,



James Bruce

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



September 18, 2017

Mr. Brady Wilton
Rover Operating LLC
17304 Preston Road, Suite 740
Dallas, TX 75252

EXHIBIT

A

RE: Division Hearing Order No. R-13864; Second Extension of Deadline to Commence Injection

High Lonesome Queen Unit Waterflood Project

Order Date: July 22, 2014

Injection approved High Lonesome; Queen Pool (Pool Code 30780) for the following six wells:

1. **High Lonesome Queen Unit Well No. 1**
API No. 30-015-Pending; 1310' FNL & 10' FWL; Unit letter D, Section 16-16S-29E
2. **High Lonesome Queen Unit Well No. 2**
API No. 30-015-Pending; 1310' FNL & 1650' FEL; Unit letter B, Section 16-16S-29E
3. **High Lonesome Queen Unit Well No. 7**
API No. 30-015-Pending; 1980' FNL & 330' FEL; Unit letter H, Section 16-16S-29E
4. **High Lonesome Queen Unit Well No. 8**
API No. 30-015-Pending; 1980' FSL & 10' FWL; Unit letter L, Section 16-16S-29E
5. **High Lonesome Queen Unit Well No. 14**
API No. 30-015-Pending; 660' FSL & 1980' FWL; Unit letter N, Section 16-16S-29E
6. **High Lonesome Queen Unit Well No. 16**
API No. 30-015-Pending; 660' FSL & 660' FEL; Unit letter P, Section 16-16S-29E

Dear Mr. Wilton:

Reference is made to your request on behalf of Rover Operating LLC (the "operator" or "Rover") to extend the deadline stipulated in Division Order No. R-13864 (Division Case No. 15116) based on the approval date of July 22, 2016, to commence injection for the above referenced wells for an additional one year for reasons outlined in the attached correspondence.

The Division has previously issued a one-year extension of the July 22, 2016 deadline to July 22, 2017 with Alamo Permian Resources, LLC as the designated operator. Division finds that there has been a change of operator following the approval of the first extension and that Rover petitioned in writing for a second extension before the expiration of the first extension.

It is the Division's understanding from your request that there has been one significant change in the information provided in the application submitted for this hearing order. This change included a new operator of wells ("affected person") within the one-half mile radius of one of the proposed injection wells within the waterflood project. Rover has provided evidence of noticed of the approved waterflood project to this new operator. The Division was informed that there were no new wells that penetrate the approved injection interval completed within the Area of Review since the approval of the first extension.

The Division finds that granting this request to extend the division order approving a waterflood project is in the interest of conservation, will prevent waste, and will protect the environment.

The deadline to commence injection for the Division Order No. R-13864 is hereby extended until July 22, 2018. All requirements of the above referenced hearing order remain in full force and effect.

If you have any questions regarding this matter, please contact Phillip Goetze by phone at 505.476.3466 or by e-mail: phillip.goetze@state.nm.us.

Sincerely,



DAVID R. CATANACH
Director

DRC/prg

cc: Oil Conservation Division – Artesia District Office
Case No. 15116
Oil, Gas and Minerals Division – State Land Office

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. 9929
Order No. R-2268-C

APPLICATION OF SOCORRO PETROLEUM
COMPANY FOR WATERFLOOD EXPANSION
AND TO AMEND DIVISION ORDER NO.
R-2268 AND ADMINISTRATIVE ORDERS
WFX-585 AND WFX-587, EDDY COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 2, 1990, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 14th day of June, 1990, 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) The applicant, Socorro Petroleum Company, is the current operator of the Keel-West Waterflood Project which was originally approved by Division Order Nos. R-2268, R-2268-A and R-2268-B, and which encompasses, in part, Sections 3, 4, 9 and 10, Township 17 South, Range 31 East, NMPM, Grayburg-Jackson Pool, Eddy County, New Mexico.

EXHIBIT

B

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Order No. R-2268-C
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(3) The applicant seeks authority to expand said Keel-West Waterflood Project by converting its H. E. West "B" Well No. 24, located 660 feet from the North and East lines (Unit A) of Section 10, Township 17 South, Range 31 East, NMPM, Eddy County, New Mexico, from a producing oil well to a water injection well.

(4) By Order Nos. R-2268 (supplemental), WFX-585 and WFX-587, entered, respectively, October 7, 1989, August 31, 1989, and September 26, 1989, the Division authorized the expansion of said Keel-West Waterflood Project by the conversion of fifteen wells located in said Sections 3, 4, 9 and 10 to water injection wells. These orders further limited the surface injection pressure on said wells to 0.2 psi per foot of depth to the uppermost perforations or approximately 670 psi.

(5) The applicant also seeks authority, in the immediate case, to increase the surface injection pressure on said fifteen injection wells to approximately 450 psi above formation parting pressure as determined from step rate tests conducted on certain injection wells located within the project area. The applicant further seeks to increase the surface injection pressure on its proposed H. E. West "B" Well No. 24, as described above, to 450 psi above formation parting pressure.

(6) At the time of the hearing, the applicant requested that the portion of this case requesting the authority to convert its H. E. West "B" Well No. 24 to an injection well be dismissed inasmuch as a formal application to convert said well has been filed with the Division for administrative approval.

(7) The subject waterflood project was initiated in June, 1962, at which time the Division did not restrict the surface injection pressure on injection wells.

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Order No. R-2268-C
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(8) From inception to August, 1986, the former operator of the Keel-West Waterflood Project utilized some ten injection wells previously approved by said Order Nos. R-2268, R-2268-A, and R-2268-B, and located within said Sections 3, 4, 9 and 10, to inject water into the Grayburg and San Andres formations at surface injection pressures as high as 2500 psi.

(9) Decline curve analysis indicates that if sufficient volumes of water are injected into the Grayburg-Jackson Pool in this area, an estimated additional 1.48 million barrels of oil will be recovered.

(10) The evidence presented by the applicant indicates that sufficient volumes of water cannot be injected into the Grayburg-Jackson Pool by those fifteen subsequently approved injection wells at their currently authorized injection pressures.

(11) The applicant presented test data obtained from step rate injection tests conducted on nine of the fifteen subject injection wells which indicates that the average fracture pressure is approximately 1711 psi.

(12) The evidence presented further indicates that injection volumes limited to the formation fracture pressure as established by said step rate tests are not sufficient to recover the additional 1.48 million barrels of oil.

(13) The applicant, through its engineering evidence and testimony, has satisfactorily demonstrated that injection through the fifteen subject injection wells at a pressure of approximately 450 psi above formation fracture pressure is necessary in order to efficiently and effectively waterflood the area and will enable the applicant to recover the additional oil reserves within the Grayburg-Jackson Pool, thereby preventing waste.

(14) The applicant has further demonstrated that injection into the Grayburg and San Andres formations at said injection pressures should not result in the migration of injected water from the Grayburg-Jackson Pool.

(15) According to the evidence presented, there are no fresh water aquifers located above or below the Grayburg-Jackson Pool in this area.

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(16) Injection into the fifteen subject injection wells at a surface injection pressure of approximately 450 psi above formation fracture pressure will allow the recovery of additional oil reserves within the Grayburg-Jackson Pool, thereby preventing waste, will not endanger any fresh water aquifers, and should therefore be approved.

(17) The Division Director should have the authority to reduce or rescind said injection pressures should it become apparent that the injected fluid is not being adequately confined to the Grayburg-Jackson Pool.

(18) Inasmuch as the injection pressures authorized by this order are based upon the current formation fracture pressure, which, through continued injection, may increase, the Division Director should also have the authority to administratively increase the surface injection pressures on the fifteen subject injection wells, provided, however, that current step rate tests are accompanied by such request.

(19) Prior to authorizing the requested surface injection pressure for the proposed H. E. West "B" Well No. 24, the applicant should be required to demonstrate that said well has been approved for injection, and should further be required to conduct and submit a step rate test on said well.

IT IS THEREFORE ORDERED THAT:

(1) Division Order Nos. R-2268 (supplemental), WFX-585 and WFX-587 are hereby amended authorizing Socorro Petroleum Company to inject water into fifteen previously approved injection wells located within the Keel-West Waterflood Project in Sections 3, 4, 9 and 10, Township 17 South, Range 31 East, NMPM, Grayburg-Jackson Pool, Eddy County, New Mexico, at a surface injection pressure of approximately 450 psi above formation fracture pressure as shown on Exhibit "A" attached hereto.

(2) The Division Director shall have the authority to administratively approve subsequent pressure increases on said wells provided, however, that current step rate tests are accompanied by such requests.

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(3) The Division Director shall also have the authority to reduce or rescind said injection pressures should it become apparent that the injected fluid is not being adequately confined to the Grayburg-Jackson Pool.

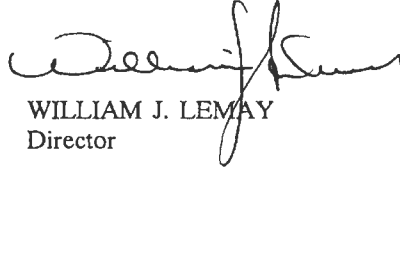
(4) The portion of this case requesting the expansion of the Keel West Waterflood Project by the conversion of the H. E. West "B" Well No. 24 located 660 feet from the North and East lines (Unit A) of Section 10, Township 17 South, Range 31 East, NMPM, Eddy County, New Mexico, to a water injection well is hereby dismissed.

(5) Prior to authorizing the requested surface injection pressure for said H. E. West "B" Well No. 24, the applicant shall be required to demonstrate that said well has been approved for injection, and shall further be required to conduct and submit a step rate injection test on said well.

(6) 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

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EXHIBIT "A"
DIVISION ORDER NO. R-2268-C

<u>WELL & LOCATION</u>	<u>MAXIMUM SURFACE INJECTION PRESSURE</u>
H.E. West "A" No. 8 Unit E, Section 3, T-17S, R-31E	2407 PSIG
H.E. West "A" No. 9 Unit I, Section 4, T-17S, R-31E	2250 PSIG
H.E. West "A" No. 11 Unit G, Section 3, T-17S, R-31E	2160 PSIG
H.E. West "A" No. 14 Unit O, Section 4, T-17S, R-31E	2160 PSIG
H.E. West "A" No. 15 Unit A, Section 3, T-17S, R-31E	2160 PSIG
H.E. West "B" No. 12 Unit G, Section 9, T-17S, R-31E	1872 PSIG
H.E. West "B" No. 13 Unit E, Section 10, T-17S, R-31E	2027 PSIG
H.E. West "B" No. 15 Unit G, Section 10, T-17S, R-31E	2236 PSIG
H.E. West "B" No. 16 Unit M, Section 3, T-17S, R-31E	2160 PSIG
H.E. West "B" No. 18 Unit O, Section 3, T-17S, R-31E	2000 PSIG

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<u>WELL & LOCATION</u>	<u>MAXIMUM SURFACE INJECTION PRESSURE</u>
H.E. West "B" No. 20 Unit O, Section 10, T-17S, R-31E	2160 PSIG
H.E. West "B" No. 21 Unit M, Section 10, T-17S, R-31E	2075 PSIG
H.E. West "B" No. 22Y Unit O, Section 9, T-17S, R-31E	2118 PSIG
H.E. West "B" No. 34 Unit I, Section 10, T-17S, R-31E	2160 PSIG
H.E. West "B" No. 43 Unit M, Section 9, T-17S, R-31E	2470 PSIG