

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

**APPLICATION OF SOUTHWEST ROYALTIES, INC.
FOR APPROVAL OF EXPANSION OF A PRESSURE
MAINTENANCE PROJECT, LEA
COUNTY, NEW MEXICO.**

**CASE NO. 21047
ORDER NO. R-21524**

ORDER OF THE DIVISION

This case came in for hearing before the Oil Conservation Division (“OCD”) at 8:15 a.m. on April 30, 2020 in Santa Fe, New Mexico.

The OCD Director, having considered the testimony, the record, the recommendations of Hearing Examiner Dylan Rose-Coss, these findings of fact, and conclusions of law issues this Order.

FINDINGS OF FACT

- (1) Due notice has been given, and the OCD has jurisdiction of the subject matter of this case.
- (2) By this application, Southwest Royalties Inc. ("Applicant" or "SRI") seeks approval to expand an existing pressure maintenance project in the Flying M San Andres Unit within the San Andres formation (Pool code 24620), with the addition of the following 160 acres, more or less, within Lea County, New Mexico:

Township 09 South, Range 33 East, NMPM
NE/4 of Section 31
(160 Acres)

- (3) The existing project consists of the following 4960 acres:

Section 15: W/2 W/2
Section 16: all
Section 17: all
Section 20 E/2 and E/2 NW/4 Section 21: all
Section 22: W/2 W/2
Section 27: W/2 NW/4
Section 28: N/2, SW/4, and W/2 SE/4 Section 29: all
Section 32: NE/4 and E/2 NW/4 Section 33: W/2 NW/4 and NE/4

The expansion of the project by the addition of the 160 acres will increase the total acres in the project to 5120 acres.

(4) The project was initially approved by order issued on May 3, 1967, Order R-3229 and Case 3555, and the project has subsequently been expanded by orders issued in 1969 (Order PMX-33), 1998 (Order PMX-197) and 2003 (Order -PMX-222). Southwest Royalties has been operating the project since 1997.

(5) The current project consists of 4960 acres with 24 producers, 9 injectors and 1 shut in well. The expanded project will consist of 5120 acres with 23 producers and 12 injectors.

(6) Applicant proposes to convert the following three producing oil wells to injectors through existing perforations:

(a) The Flying 'M' SA Unit# 131 (API No. 30-025-20561) is located 1978' FNL and 1993' FWL in Unit F in Section 21, Township 9 South, Range 33 East. The proposed injection interval is located in the San Andres formation at a depth of 4,456 to 4,518 feet. This well is currently in production and is located in the current project area.

(b) The McGuffin #3 (API No, 30-025-24694) is located 660' FNL and 1980' FWL in Unit C in Section 29, Township 9 South, Range 33 East. The proposed injection interval is located in the San Andres formation at a depth of 4,354 to 4,422 feet. SRI obtained Division approval in 2017 to plug and abandon this well but now wishes to convert it to an injector. The well has not produced since July of 2015 and is located in the current project area.

(c) The Gonsales 31 Federal #2 (API No. 30-025-24004) is located 1980' FNL and 660' FEL in Unit H in Section 31, Township 9 South, Range 33 East. The proposed injection interval is located in the San Andres formation at a depth of 4,261 to 4,294 feet. The well has not produced since July of 2015 and is located in the expanded project area.

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

(8) Applicant appeared through counsel and presented affidavits and exhibits to the effect that:

(a) The San Andres formation in this area has been defined by development by existing and plugged wells within the Unit and it is located entirely in the Flying M; San Andres formation pool (Pool code 24620).

(b) Applicant has described the proposed injection zone in the San Andres formation at a depth of approximately 4260' to 4518' feet. The three proposed wells are currently perforated in these approximate depths.

(c) The Flying M San Andres field is located within the northwest shelf of the Tatum Basin. The field lies along the southern edge of the east-west aligned Levelland-Slaughter trend. Geology consists of porous dolomites to evaporites, dolomites, and limestones.

(d) In this area of Lea County, the San Andres formation is characterized by structural and stratigraphic controls that are typified by porosity and permeability pinchouts from dolomites, limestones and evaporites. A cross section shows good correlation and homogeneity across the project area within the San Andres formation

(e) A type log submitted of the lower San Andres shows it is divided into A, B and C zones. The San Andres A top is confined above by a low porosity/low permeability non-oil bearing Grayburg carbonate layer. The bottom of the porous San Andres is confined below by a low porosity/low permeability non-oil bearing Glorieta carbonate/sand layer.

(f) There are no faults or other geologic impediments that would impede the efficiency of the expanded Project.

(g) Applicant has included proposed wellbore construction schematics for each of the three wells they will convert. The proposed wells will be adequately equipped for injection and the construction of each well will prevent the migration of the injected fluid upward to any underground source of drinking water or other hydrocarbon-producing zones. SRI will run an MIT prior to commencing injection and will monitor pressure during injection.

(h) Applicant requests a maximum surface injection pressure of 800 pounds per square inch (psi) with an average surface injection pressure of 500 psi. The proposed average daily injection rate will be 300 barrels of water per day (BWPD) with a maximum of 600 BWPD.

(i) Applicant testified there are approximately 30 wells within one-half mile of the three proposed wells, and 27 of these do penetrate the proposed injection interval. Of these, 7 wells are plugged and abandoned. All 19 active wells within the two AORs are properly cemented.

(j) Applicant compiled sufficient completion or plugging information for all of the penetrating wells. 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 source of injection fluids will be produced water from the Flying M San Andres Field. Applicant provided analyses of the produced water from the San Andres formation fluid of 228,000 TDS in addition to four wells which possible will contribute injection fluid. TDS ranged from 226,000 to 260,000 TDS based on data from the NM Go-Tech WAIDS database. Applicant expects no compatibility issues.

(l) Applicant located one water well within a one-mile radius of the proposed well and testified there is no known hydrologic connection between the injection zone and any underground source of drinking water. A water analysis was included.

(m) Within the Unit, the reservoir is in an advanced state of depletion. Produced water will be injected into the 'M' San Andres Pool, for the purpose of increasing the ultimate recovery of oil within the project area.

- (n) Applicant provided the required notices to affected persons pursuant to Subsection C of Rule 19.15.26.8 NMAC.
- (o) Applicants stated the project consists of two state leases and one federal lease. 100% of the working interests are committed to the project and proposed expansion. SRI has notified all affected parties including the State Land Office and BLM of its proposed expansion, and no objections were received.
- (p) At this date, SRI (OGRID 21355) is in compliance with Rule 19.15.5.9 NMAC and therefore is eligible for approval of injection permits.

CONCLUSIONS OF LAW

- (9) All of the wells in the one-half mile AOR surrounding the three proposed injection wells appear to be adequately cased and cemented, so that none will become a conduit for the escape of injected fluid from the permitted injection formation. Accordingly, there is no requirement for remedial work on any wells within the AOR for the injection wells.
- (10) Applicant should be authorized to inject fluids at a surface injection pressure not to exceed 800 pounds per square inch (psi) for produced water. Applicant may apply to the OCD for a higher injection pressure upon satisfactorily demonstrating that an increase in injection pressure will not result in fracturing of the injection formation or confining strata.
- (11) The proposed project will, in reasonable probability, result in production of substantially more hydrocarbons from the project area that would otherwise be produced therefrom, will prevent waste, and will not impair correlative rights.
- (12) Accordingly, the application should be approved.

ORDER

- (1) SRI is hereby authorized to expand the existing Flying M San Andres Unit within the San Andres formation (Pool code 24620), with the addition of the 160 acres, at a true vertical depth from approximately of 4,456 to 4,518 feet through the addition of three additional injectors.
- (2) The project expansion consists of the following 160 acres in the following lands in Lea County, New Mexico:
- Township 09 South, Range 33 East, NMPM
NE/4 of Section 31
- (3) Three existing oil wells (the “injection well”) are approved for conversion to injection:
- (a) The Flying 'M' SA Unit# 131 (API No. 30-025-20561) is located 1978' FNL and 1993' FWL in Unit F in Section 21, Township 9 South, Range 33 East. The proposed injection interval is located in the San Andres formation at a depth of 4,456 to 4,518 feet.

- (b) The McGuffin #3 (API No, 30-025-24694) is located 660' FNL and 1980' FWL in Unit C in Section 29, Township 9 South, Range 33 East. The proposed injection interval is located in the San Andres formation at a depth of 4,354 to 4,422 feet.
- (c) The Gonsales 31 Federal #2 (API No. 30-025-24004) is located 1980' FNL and 660' FEL in Unit H in Section 31, Township 9 South, Range 33 East. The proposed injection interval is located in the San Andres formation at a depth of 4,261 to 4,294 feet.
- (4) The 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.
- (5) The injection wells shall be adequately equipped for injection and use the existing perforations currently in place.
- (6) The source of injection fluids will be produced water from the Flying M San Andres Field. There should be no compatibility issues between the formation fluid and the injection fluid.
- (7) Injection shall be accomplished through plastic-lined, 2³/₈-inch tubing installed in a packer set in the casing 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 to detect leakage in the casing, tubing, or packer.
- (8) The injection well shall be initially equipped with a pressure control device or acceptable substitute that will limit the maximum surface injection pressure to no more than 800 pounds per square inch (psi) for produced water.
- (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 packer is unseated. All testing procedures and schedules shall conform to the requirements of 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) Each injection well shall be tied into a SCADA monitoring system which will provide immediate notification of any failure or release.
- (11) The Division Director shall have the authority to administratively authorize an increase in injection pressure upon a showing by the operator that such higher pressure will not result in fracturing of the injection formation or confining strata. The operator shall give at least 72 hours advance notice to the supervisor of the OCD's District office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure test will be conducted, so these operations may be witnessed.

- (12) The operator shall provide written notice of the date of commencement of injection into each of the wells to the OCD's District office.
- (13) The operator shall immediately notify the supervisor of the OCD's District office of the failure of the tubing, casing or packer in the injection well, 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.
- (14) The Project shall be governed by OCD Rules 19.15.26.8 through 19.15.26.15 NMAC. The operator shall submit monthly reports of the injection operations on OCD Form C-115, in accordance with Rules 19.15.26.13 and 19.15.7.28 NMAC.
- (15) 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 OCD, upon written request by the operator filed prior to the expiration of the two-year time period, may grant an extension for good cause.
- (16) The operator shall provide written notice to the OCD upon permanent cessation of injection into the Project.
- (17) This Order does not relieve the 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 OCD rules or other state, federal or local laws or regulations.
- (18) 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 OCD may, after notice and hearing (or without notice and hearing in event of an emergency, subject to the provisions of NMSA 1978 Section 70-2-23), terminate the injection authority granted herein.
- (19) Jurisdiction of this case is retained for the entry of such further orders as the OCD may deem necessary.

DONE at Santa Fe, New Mexico, on this 4th day of January 2021.

**STATE OF NEW MEXICO
OIL CONSERVATION DIVISION**



**ADRIENNE SANDOVAL
DIRECTOR**