

**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:**

**APPLICATION OF RILEY PERMIAN OPERATING COMPANY,
LLC, FOR APPROVAL OF A SALTWATER DISPOSAL WELL,
EDDY COUNTY, NEW MEXICO**

CASE NO. 24279

**APPLICATION OF RILEY PERMIAN OPERATING COMPANY,
LLC, FOR APPROVAL OF A SALTWATER DISPOSAL WELL,
EDDY COUNTY, NEW MEXICO**

**CASE NO. 24280
ORDER NO. R-23683**

ORDER OF THE DIVISION

This case came in for hearing before the Oil Conservation Division (“OCD”) at 8:15 a.m. on July 23, 2024, in Santa Fe, New Mexico.

The OCD Director, having considered the testimony, the record, the recommendations of Hearing Examiners, these findings of fact, and conclusions of law issues this Order.

FINDINGS

1. Due public notice has been given, and the OCD has jurisdiction of this case and the subject matter.
2. At the hearings, Cases No. 24279 and No. 24280 were consolidated for the purpose of testimony and one order should be issued for both cases.
3. In Case No. 24279, Riley Permian Operating Company, LLC (“Applicant” or “Riley”) seeks authority to utilize the proposed Angel Ranch State SWD Well No. 1 (API No. 30-015-pending; “Angel No. 1”), to be located 1320 feet from the North line and 1320 feet from the East line (Unit A) of Section 12, Township 19 South, Range 27 East, NMPM, Eddy County, New Mexico, as an Underground Injection Control (“UIC”) Class II well for disposal of produced water

into the Cisco formation through open-hole completion from approximately 8590 feet to 9190 feet below surface.

4. In Case No. 24280, Riley seeks authority to utilize the proposed Angel Ranch State SWD Well No. 2 (API No. 30-015-pending; “Angel No. 2”), to be located 588 feet from the North line and 2157 feet from the East line (Unit B) of Section 11, Township 19 South, Range 27 East, NMPM, Eddy County, New Mexico, as an UIC Class II well for disposal of produced water into the Cisco formation through open-hole completion from approximately 8450 feet to 8975 feet below surface.

5. The original applicant, Redwood Operating LLC (OGRID No. 330211), submitted a Form C-108 application for Angel No. 1 (Administrative Application No. pAYH2409528216; designated administrative order SWD-2605) on January 3, 2023, for authority to inject through administrative approval.

6. The original applicant, Redwood Operating LLC (OGRID No. 330211), submitted a Form C-108 application for Angel No. 2 (Administrative Application No. pAZS2300437736; designated administrative order SWD-2520) on January 4, 2023, for authority to inject through administrative approval.

7. On January 25, 2023, Permian Resources Corporation protested through counsel the application for Proposed Well No. 2.

8. On February 14, 2024, Riley filed two applications for hearing for approval of the proposed wells for disposal of produced water. The re-filed application for Angel No. 1 was assigned Case No. 24279 while the re-filed application for Angel No. 2 was assigned Case No. 24280.

9. Subsequently on February 28, 2024, MRC Delaware Resources, LLC and MRC Permian Company filed entries of appearance for both cases and included an objection to the cases proceeding by affidavit.

10. On March 21, 2024, Colgate Production, LLC and Permian Resources Operating, LLC filed entries of appearance for both cases and included an objection to the cases proceeding by affidavit.

11. On March 22, 2024, V-F Petroleum, Inc. filed entries of appearance for both cases and included an objection to the cases proceeding by affidavit and a request for a status conference for both cases.

12. Following a status conference on April 4, 2024, the OCD Examiner issued a pre-hearing order for both cases on April 12, 2024, which detailed the evidentiary requirements for the hearing and set the hearing date for July 23, 2024.

13. On July 16, 2024, Riley filed a consolidated pre-hearing statement and entry of appearances for Cases No. 24279 and No. 24280 in support of the approval of the two proposed disposal wells.

14. On July 16, 2024, Permian Resources Operating, LLC and Colgate Production, LLC (collectively “Permian Resources”) filed a consolidated pre-hearing statement and entry of appearances citing the following disputed facts for each of the proposed disposal wells:

a. Whether injected fluids will be contained within the proposed injection interval for each of the wells;

b. Whether there is potential for injected fluids to impact the development and production of hydrocarbon resources in the overlying Third Bone Spring formation;

c. That approval of the injection interval will cause waste and impair correlative rights; and

d. Whether the proposed injection is approvable under OCD’s UIC program requirements.

15. On July 16, 2024, MRC Permian Company (“Matador”) filed a consolidated pre-hearing statement and entry of appearances citing similar disputed facts for each of the proposed disposal wells that was submitted by Permian Resources but contained an additional disputed fact as to the prospect that the proposed injection would result in an unreasonable increase in the risk for induced seismicity.

16. On July 17, 2024, V-F Petroleum, Inc. (“V-F”) filed a consolidated pre-hearing statement and entry of appearances citing similar disputed facts for each of the proposed disposal wells that was submitted by Permian Resources while specifically identifying an existing production well in the Cisco formation that V-F contends would be impacted by approval of the proposed disposal wells.

17. At hearing on July 23, 2024, Riley, through counsel, provided exhibits and testimony at hearing in support of the approval of the injection authority for both proposed disposal wells.

a. Applicant proposed an injection interval within the Cisco formation for both disposal wells. For the Angel No. 1, an interval between 8586 feet and 9190 feet operating at a maximum surface injection pressure of 1718 pounds per square inch (“PSI”) and an estimated daily maximum injection rate of 20,000 barrels of water per day (“BWPD”). For the Angel No. 2, an injection interval between 8450 feet and 8975 feet operating at a maximum surface injection pressure of 1662 PSI and an estimated daily injection rate of 20,000 BWPD.

b. Both proposed wells are to be completed using a three-string casing design: 13³/₈-inch surface casing, 9⁵/₈-inch intermediate casing set at the top of the San Andres formation, and 7-inch production casing to the base of the injection interval with all casings completed with cement circulated to surface. Tubing is to be internally coated and have a diameter of 4¹/₂-inch or less set with a ASI-X mechanical packer within 100 feet of the upper perforation.

c. Applicant states that the proposed injection interval is defined by an upper confining layer composed of low-permeable lithologic barrier in the base of the Wolfcamp formation at the upper contact of the Cisco formation and a lower confining layer composed of low porosity and low permeability carbonates at the base of the Cisco formation. Applicant states that the proposed injection interval is sufficiently isolated as not to impact either deeper producing interval or shallower intervals with development through secondary recovery.

d. Applicant identified two (2) wells that penetrated the proposed injection interval within the one-half mile Area of Review ("AOR") of the surface location of the Angel No. 1 and two (2) wells within the AOR of the surface location of the Angel No. 2. The Applicant stated the completion information indicates the penetrating wells are properly cased and cemented to prevent vertical migration of injection fluids.

e. Applicant identified five (5) water wells listed in the New Mexico Water Rights Reporting System database that are in the within one mile of the surface location of the Angel No. 1, while no water wells were identified within one mile of the surface location of the Angel No. 2. Applicant attempted to sample the wells identified for Angel No. 1

f. The analyses of produced water samples provided by Applicant and included in the Form C-108 applications indicated that injection fluids are compatible with existing formation fluids in the proposed disposal interval.

g. Applicant testified that disposal of fluids into the two proposed wells would be from Applicant's production wells due to limited existing disposal options in the area, but Applicant did not preclude the potential for commercial operation at a future date.

h. Applicant conducted a seismological review for the two proposed disposal wells that was incorporated in the Form C-108 applications. The review was based on publicly available data for seismic events and known fault occurrences, but Applicant did not apply any modeling such as the Fault Slip Potential software tool for either proposed well. Applicant concluded that potential for injection-induced seismicity was minimal.

i. Form C-108 applications for both proposed disposal wells acknowledged that the wells are located within ten miles of the triggering earthquake event used to establish the Atoka Seismic Response Area which is west of the proposed wells.

18. At the same July hearing, Permian Resources appeared through counsel and provided exhibits and testimony regarding the potential impacts of the proposed wells, Angel No. 1 and Angel No. 2.

a. Permian Resources provided a cross section using subsurface information from five wells (including Permian Resources completions) in the vicinity of the proposed disposal wells. This cross section was used to identify two faults in addition to the fault system appearing in the public database. This evidence contradicted the Applicant's assertion that there were no offsetting faults shallower than the Precambrian basement that are critically stressed with indications of

fracturing. Permian Resources contends these features reduces the ability of the Cisco formation to be a confining zone.

b. Permian Resources also testified that the findings of shallow faults identified by the structural mapping were confirmed by propriety 3D seismic data but did not offer any exhibits in support of this statement.

c. Based on their structural assessment, Permian Resources stated the proposed operating injection pressures and injection volumes for Angel No. 1 and Angel No. 2 would result in vertical migration into the shallower Bone Spring formation being developed by Permian Resources.

d. On cross examination, Permian Resources stated that no data had been collected concerning the fracturing operations and the resulting fracture system for the horizontal wells completed in the lower Bone Spring formation.

19. At hearing, Matador appeared through counsel and provided exhibits and testimony regarding the potential impacts of the proposed wells, Angel No. 1 and Angel No. 2.

a. Matador presented an interpretation that a basement-rooted fault which caused fault-propagated folding of the overlying Cisco formation that is the proposed injection interval for both of the proposed disposal wells. Based on 3D seismic data and regional fault characteristics, Matador identified two parallel faults that are present in the vicinity of the two proposed disposal wells.

b. Matador stated that there is approximately 400 feet of separation between the proposed injection interval and the Third Bone Spring reservoir while the identified faults could have placed the interval and reservoir closer at some locations in this area.

c. Fracturing associated with this fault-propagated folding through the Cisco and early Permian strata increases the risk of vertical communication between the proposed injection interval and the Third Bone Spring reservoir which Matador intends to develop through horizontal well completions.

d. Matador further suggested that the Applicant did not identify these features due to scale of the faults and data limitations which did not include the propriety data obtained by Matador.

20. At hearing, V-F appeared through counsel and provided exhibits and testimony regarding the potential impacts of the proposed wells, Angel No. 1 and Angel No. 2.

a. V-F identified a porous dolomite at the top of the Cisco formation using subsurface information from a production well operated by V-F: State 19 Com. No. 1 (API Number: 30-015-22380; "State 19"). This production well is approximately 11,582 feet southeast of the Angel No. 1 location and 15,306 feet southeast of the Angel No. 2.

b. The State 19 is a producing oil and gas well with similar reservoir parameters and structural controls that to the production that occurs in the Cisco Dolomite found in the McMillan upper Pennsylvanian pool.

c. V-F contends that the State 19's location down dip from the proposed disposal wells will impact the productive stratum of the existing well and any future opportunities for development around the State 19.

21. For Case No. 24279, OCD questioned Applicant regarding a penetrating AOR well identified in the Angel No. 1 application. The Eddy GZ State Com No. 1 (API No. 30-015-22562) was abandoned with 5.5-inch production casing that has uncemented annulus between the top of cement at 8580 feet below surface and next cement plug (in the annulus) at 2299 feet below surface. This construction provides only 10 feet of cement above the proposed top of the injection interval to prevent vertical migration of injection fluids through the open annulus or through pathways in the formation near the wellbore.

22. Also at the July hearing, a deficiency in providing proper notice to one affected person, Apache Corporation, was identified for Case No. 24279. While Case No. 24280 was taken under advisement, Case No. 24279 was continued to the Division hearing on August 22, 2024, to resolve the issue of proper notice. At the August hearing, the Applicant provided a revised exhibit that included record of notice to the Apache Corporation and record of readvertisement in a local newspaper of the application to correct the footage for the proposed well in this case. No other party appeared at hearing or otherwise opposed the granting of this application for this case and Case No. 24279 was taken under advisement.

23. On August 21, 2024, closing statements requested by the Division examiner were submitted by Riley and V-F while a consolidated closing statement was submitted by Matador and Permian Resources.

CONCLUSIONS OF LAW

1. Applicant provided the information required by 19.15.26 NMAC including two Form C-108 for application to inject produced water into two separate Class II UIC wells: the Angel No.1 and the Angel No. 2.

2. Applicant complied with the notice requirements of 19.15.4 NMAC.

3. Permian Operating, Matador and V-F (collectively "Protestants") submitted entries of appearance and pre-hearing statements for the cases in a proper and timely manner. These entities qualify as "affected persons" under 19.15.2.7(A)(8) NMAC and have standing for the two cases consolidated at hearing.

4. Applicant presented evidence and testimony in support of the applications demonstrating the protection of Underground Sources of Drinking Water, the protection of correlative rights and the prevention of waste.

5. Permian Operating, Matador and V-F submitted separate entries of appearance and pre-hearing statements for the cases in a proper and timely manner.

6. Having considered the preponderance of the evidence submitted by the Applicant and the Protestants, the findings for the two cases by the OCD are as follows:

a. Even with proximity to designated SRAs, Applicant relied only on the public record for determination of the fault systems and their potential impacts on reservoir, and in turn, on affected persons and their assets;

b. Protestants provided evidence and expert testimony that indicated that faulting and features associated with the faulting that would result in vertical migration of injected fluids outside of the approved injection interval, thus contradicting the conditions of the UIC permit and New Mexico Administrative Code; and

c. Additionally, Protestants' evidence and expert testimony indicated that the proposed injection operations would damage correlative rights and cause "the drowning by water of any stratum or part thereof capable of producing oil and gas in paying quantities."

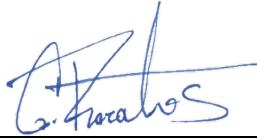
7. Therefore, Protestants' evidence and expert testimonies are more substantial that the approval of the applications for the two disposal wells, as proposed, does not protect correlative rights and does not adequately address the potential of the proposed disposal operations on current induced seismicity activities.

IT IS THEREFORE ORDERED THAT:

1. In Case No. 24279, the application of Riley Permian Operating Company LLC for authority to inject produced water into the Cisco formation using the proposed Angel Ranch SWD Well No. 1 as a UIC Class II disposal well is hereby **denied**.

2. In Case No. 24280, the application of Riley Permian Operating Company LLC for authority to inject produced water into the Cisco formation using the proposed Angel Ranch SWD Well No. 2 as a UIC Class II disposal well is hereby **denied**.

3. Jurisdiction is retained by the OCD for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order; whereupon the OCD may, after notice and hearing or prior to notice and hearing in event of an emergency, terminate the disposal authority granted herein.



GERASIMOS RAZATOS
Division Director (Acting)

Date: 2/19/2025

GR/prg