

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

**APPLICATION OF AMEREDEV
OPERATING, LLC FOR
AUTHORIZATION TO INJECT, LEA
COUNTY, NEW MEXICO.**

**CASE No. 21381
ORDER No. R-21455-A**

ORDER OF THE COMMISSION

THIS MATTER comes before the New Mexico Oil Conservation Commission (“Commission”) on Ameredev Operating, LLC’s (“Ameredev”) *Application for Authorization to Inject, Lea County, New Mexico* (“Application”). The Commission, having conducted a hearing on October 8, 2020, and having considered the testimony and the record in this case, enters the following findings of fact, conclusions of law, and order.

FINDINGS OF FACT

1. On July 10, 2020, Ameredev filed its Application seeking authorization to inject treated acid gas (“TAG”) into the proposed Independence AGI No. 1 well (“Well”).
2. The Well is an Underground Injection Control (“UIC”) Class II well subject to the requirements of 19.15.26 NMAC.
3. The Well is vertical with an approximate surface and bottom hole location approximately 829 feet from the north line and 1,443 feet from the west line (Unit C) of Section 20, Township 25 South, Range 36 East in Lea County.
4. The target injection zone will be from approximately 16,230 to 17,900 feet deep in the Devonian Thirty-One and Upper Silurian Wristen and Fusselman formations.
5. The Well’s maximum daily injection rate is twelve million standard cubic feet per day (“MMSCFD”).
6. The Well’s maximum surface injection pressure is approximately 4,779 pounds per square inch gauge (“psig”).
7. Ameredev gave personal notice of the Application and the Commission’s hearing via certified mail, return receipt requested to the State Land Office and all operators, surface owners, and lessees within a one-mile radius of the location for the Well, but did not give notice to the Oil Conservation Division or the City of Jal, which is located approximately six miles from the Well.

8. The Commission gave public notice of the Application and the Commission's hearing by publication in a newspaper of general circulation in Lea County.

9. Tap Rock Operating, LLC ("Tap Rock") filed an Entry of Appearance on September 10, 2020.

10. The OCD filed an Entry of Appearance and Notice of Intervention on September 22, 2020.

11. The Commissioner of Public Lands of the State of New Mexico, Stephanie Garcia Richard, and the New Mexico State Land Office ("SLO") filed an Entry of Appearance on October 1, 2020.

12. OCD filed a Pre-Hearing Statement on October 1, 2020, stating that OCD's witness would testify that OCD does not oppose Ameredev's Application provided that the Order includes the specific and general conditions stated in OCD Exhibits 2 and 3 (collectively, "Conditions"), and contingent on OCD's review of Ameredev's revised plume dispersion modeling which was not completed at the time of filing the Pre-Hearing Statement.

13. SLO filed a Pre-Hearing Statement on October 1, 2020, stating that SLO's witnesses would testify that SLO concurred with the OCD's Conditions, and also would testify regarding the potential effect of injection into the proposed well on state trust resources.

14. No other person filed an objection to the Application or an entry of appearance.

15. The Commission held a hearing on the Application on October 8, 2020.

16. In support of the Application, Ameredev presented the testimony of three witnesses: Mr. Floyd Hammond, Chief Operating Officer, Ameredev; Mr. Alberto Gutierrez, President, Geolex, Inc.; and Mr. David White, Geologist, Geolex, Inc.

17. Mr. Hammond provided background regarding Ameredev, including its future H₂S treating investment plans and proposal for TAG disposal. Mr. Hammond also testified regarding the benefits of disposing of TAG through an acid gas injection ("AGI") well. Specifically, Mr. Hammond testified that authorization for the Well will allow Ameredev to design and construct a gas treating facility and will provide necessary capacity for needed TAG disposal in the area of the proposed injection. Mr. Hammond testified that the proposed treating facility and Well are needed to resume production in at least nine horizontal wells operated by Ameredev that have been shut-in or curtailed due to a lack of TAG disposal capacity in the area and will allow Ameredev to complete six additional horizontal wells and to drill and develop 89 additional horizontal wells, and to provide services to other operators. Mr. Hammond testified that, in his opinion, Ameredev's proposal to dispose of TAG through the Well will increase reliability of production operations in the area, help prevent shut-ins, and prevent waste and protect correlative rights.

18. Mr. Hammond testified that Ameredev agrees to the Conditions. With respect to the redundant well, Mr. Hammond testified that Ameredev would shut in wells to deal with operational or maintenance issues that might arise after the Well begins to operate and before the redundant well begins to operate; that Ameredev factored the cost of the redundant well into its economic analysis for the Well and the proposed natural gas processing plant; and that if Ameredev does not build the redundant well or tries to back out of the agreement to build the redundant well, it must shut down the Well. Mr. Hammond also testified that Ameredev understands that the Conditions give OCD the discretion to decide whether the final design for the Well is acceptable, and that the redundant well must be built in essentially the same manner as approved for the Well.

19. Mr. Gutierrez testified regarding the information contained in the Application and regarding the site geology and hydrogeology and stated that, in his opinion, the proposed injection zone provides a sufficient capacity and geologic seal to contain the injected TAG and prevent its migration into other zones; the injection zone is sufficiently isolated from any protectable groundwater sources; and there is no evidence that injection will impair existing or potential hydrocarbon production in the area.

20. Mr. Gutierrez testified regarding the design and operation of the Well, and observed that Ameredev had made significant changes to the well design as a result of concerns raised by OCD and SLO after the agencies learned about the Application.

21. Mr. Gutierrez testified that Ameredev will submit its H₂S Contingency Plan for OCD approval prior to commencement of injection, and that Ameredev will certify that it coordinated the plan with the State Emergency Response Commission and the local emergency planning committee, including representatives of the City of Jal, and will provide them with regular updates during operation of the Well.

22. Mr. Gutierrez testified that, in his opinion, the Well will not pose health and safety risks, and the Well will not cause waste or damage correlative rights in any formations in the area.

23. Mr. White testified regarding Geolex's evaluation of the potential for induced seismicity, including seismic review of the area and the preparation of fault-slip modeling. Based on this evaluation, Mr. White testified that the Well can be operated under the proposed operating conditions without contributing significantly to the total risk of injection-induced fault slip.

24. Mr. White further testified the injected TAG is not anticipated to present any risk for vertical migration out of the injection zone based on Geolex's evaluation of local subsurface pressure conditions to assess reservoir containment, including the over-pressure conditions overlying the injection interval, drilling-fluid characteristics, and drilling-fluid programs for the Well. Mr. White confirmed that the injected TAG is not expected to migrate vertically out of the injection zone due to the presence of a dense caprock and because the target injection zone is expected to be under-pressured relative to the overlying strata.

25. Mr. White also testified on plume dispersion modeling over a 30-year period of injection, which included the influence of offsetting injection from saltwater disposal wells. Mr.

White testified that the maximum lateral dispersion of TAG from the Well is predicted to be from approximately 1.6 miles to 1.8 miles, with TAG dispersion at 20% saturation extending to approximately one mile to 1.3 miles from the Well. He testified that, based on the data analyzed, the proposed injection zone is a good candidate for the injection of TAG; the TAG plume and pressure front will not reach producing intervals; the TAG plume will be contained within the injection interval; and TAG can safely be injected into the Well. Mr. White concluded that, in his opinion, the Well will not result in waste, impair correlative rights, or have a negative impact on public health or the environment.

26. OCD presented the testimony of one witness, Baylen Lamkin, along with six exhibits in support of his testimony. Mr. Lamkin testified that OCD worked closely with SLO to develop the Conditions, and that Ameredev had told OCD and SLO that it would accept and comply with the Conditions.

27. Mr. Lamkin testified that the condition requiring a redundant well is important to prevent waste associated with flaring as a result of mechanical issues or maintenance on the Well, and that the condition concerning well construction is important to protect hydrologic flows in the Salado formation and the protectable water source in the Capitan Reef given historic problems with cement returns for long intermediate casing strings. Mr. Lamkin also testified that the remaining conditions were the same conditions adopted in orders granting applications for AGI wells in two prior cases, except for the addition of the certification requirement for the H₂S Contingency Plan.

28. Mr. Lamkin testified that OCD does not oppose the Application, provided that the Commission adopt the Conditions, because they would ensure that the Well prevents waste and does not harm correlative rights, public health, or the environment. Mr. Lamkin testified that OCD has residual concerns about certain assumptions used in Ameredev's fault-slip and plume dispersion modeling, such as porosity, permeability, water saturation, zone definitions, and fault sealing, but that these concerns would be somewhat ameliorated by the condition requiring Ameredev to recalculate its models using observed data five years after commencing injection into the Well.

29. The Commission accepted Ameredev's late-filed Exhibit 3—Updated 2. The Commission also adopted the Conditions with certain modifications reflected below.

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the Parties and the subject matter of this case.
2. Proper public notices of the Application and the Commission's hearing were given, including personal notices to all operators, surface owners, and lessees within a one-mile radius of the Well.
3. The Application is complete.

4. OCD records show that Ameredev Operating, LLC (OGRID No. 372224) is in compliance with Subsection A of 19.15.5.9 NMAC.

5. The Well, if constructed and operated in accordance with the Conditions, as modified by the Commission, will comply with the requirements of 19.15.26 NMAC.

6. Ameredev's injection of TAG, if conducted in accordance with the Conditions, as modified by the Commission, will not cause waste, impair correlative rights, or harm public health or the environment.

ORDER

1. The Application is approved, and Ameredev is authorized to drill and operate the Well with an approximate surface and bottom hole location at approximately 829 feet from the north line and 1,443 feet from the west line (Unit C) of Section 20, Township 25 South, Range 36 East, N.M.P.M., Lea County, New Mexico, to dispose of TAG at a maximum daily injection rate of 12 MMSCFD into the Devonian Thirty-One and Wristen Fusselman formations at depths of approximately 16,230 to 17,900 feet deep and a maximum surface injection pressure not to exceed 4,779 psig, subject to these Conditions.

2. Ameredev shall construct the Independence AGI Well No. 1 in accordance with the design and plan of construction approved by OCD, including the use of corrosion-resistant casing, cement, tubing, and packer, and shall isolate and protect the Salado and Capitan intervals, by (1) installing and cementing an intermediate casing string through the Salado interval before drilling into the Capitan interval; and (2) cementing the subsequent intermediate casing to protect the Capitan interval from the Delaware Mountain Group.

3. Ameredev shall circulate cement for all casing to the surface.

4. Ameredev shall use a corrosion-inhibiting diesel with a biocide component as the annular fluid of the well.

5. Ameredev shall equip the Well with a pressure-limiting device and a one-way safety valve (with the appropriate interior drift diameter) on the tubing approximately 250 feet below the surface.

6. No later than forty-five (45) days after drilling the Well, Ameredev shall submit to OCD's district office the well drilling logs including mudlogs, electric logs, daily reports, static bottom-hole pressure measured at completion of drilling the well, and a written evaluation of the hydrocarbon resource potential for the approved injection interval. If a significant hydrocarbon show occurs during drilling the Well, Ameredev shall submit a Form C-103 and obtain OCD's written approval prior to commencing injection.

7. No later than forty-five (45) days after completing the Well, Ameredev shall submit to OCD the final reservoir evaluation and confirm that the open-hole portion of the Well does not intersect the fault plane of any identified fault that occurs within the approved injection interval.

8. No later than thirty (30) days prior to commencing injection into the Well, Ameredev shall:

a. Obtain OCD's approval of a hydrogen-sulfide contingency plan that complies with Rule 19.15.11.9 NMAC, and that (i) includes a contingency plan for and a GIS mapping layer showing the gathering lines associated with the natural gas processing plant(s) served by the Well; and (ii) certifies that Ameredev has contacted and coordinated with appropriate representatives of the city of Jal, Lea County, the State Emergency Response Commission, and the local emergency preparedness committee and will provide regular updates to the same at least annually;

b. Determine the salinity of the formation fluid from the approved injection interval and submit to OCD either a calculation of the estimated salinity based on open-hole logs or the actual salinity based on a laboratory analysis. If OCD determines that the salinity of the formation fluid from the approved injection interval contains a total dissolved solids (TDS) concentration of 10,000 milligrams or less, the injection authority under this Order shall be suspended and Ameredev shall not commence injection until Ameredev complies with 19.15.26.8(E) NMAC;

c. Conduct step-rate and fall-off tests. Ameredev may adjust the maximum surface injection pressure for the Well after these tests with OCD's written approval; and

d. Obtain OCD's approval of immediate notification parameters for annulus pressure and tubing and casing differential pressure at a set injection temperature.

9. No later than ninety (90) days after commencing injection into the Well, and no less frequently than annually thereafter, Ameredev shall consult with OCD regarding the immediate notification parameters. If OCD determines that the immediate notification parameters should be modified, Ameredev shall provide modified parameters within thirty (30) days of notification for review by OCD.

10. Ameredev shall conduct an annual mechanical integrity test (MIT) on the Well.

11. Ameredev shall conduct continuous monitoring of surface TAG injection pressure, temperature, rate, surface annular pressure, and bottom-hole (or "end of tubing") temperatures and pressures in the tubing and annulus.

12. Ameredev shall maintain a maintenance log, including the volume of annular fluid (diesel) replaced in the annulus of the Well.

13. Ameredev shall establish and submit for OCD approval the temperature parameters for injected fluid, install and maintain temperature-activated controls to govern the temperature of injected fluid, and install and maintain an alarm system for the controls to indicate exceedance of the parameters.

14. Ameredev shall report to OCD on a quarterly basis (unless changed to a biannual basis upon approval of the OCD Director) the summary data for injection parameters monitored pursuant to this Order, and upon request by OCD, shall submit annual reports after each year of operation, which shall include composition and volume of acid gas injected into the Well.

15. No later than thirty (30) days after the fifth (5th) year of injection into the Well, Ameredev shall submit to OCD a report summarizing the Well's performance, including injected volumes by fluid type, change in reservoir pressures, the model originally used in the Application recalibrated using that information, and seismic modeling. Ameredev shall provide an in-person presentation of the report to the Commission at its request.

16. Ameredev shall install, operate, and monitor for the life of this Order a seismic monitoring station or stations. OCD shall be responsible for coordinating with the Manager of the New Mexico Tech Seismological Observatory at the New Mexico Bureau of Geology and Mineral Resources for appropriate specifications for the equipment and the required reporting procedure for the monitoring data.

17. In the event Ameredev transfers ownership of the Well, Ameredev shall seek approval of such change in ownership from OCD pursuant to 19.15.9.9 NMAC.

18. No later than twelve (12) months after issuance of this Order, Ameredev shall file a C-108 with OCD for approval to construct a redundant AGI well ("Redundant Well") in Devonian-Silurian formations that is capable of receiving volumes of TAG that is equal to or greater than the volumes approved for injection into the Independence AGI Well No. 1. No later than twenty (24) months after issuance of this Order, Ameredev will complete the Redundant Well subject to the Conditions this Order. OCD is authorized to review and approve the Redundant Well.

19. If Ameredev fails to timely submit or to diligently prosecute the application for the Redundant Well, fails to construct the Redundant Well by the specified deadline after receiving OCD's approval, or requests an exemption or rescission of the above condition, this Order shall terminate automatically and Ameredev shall plug and abandon the Independence AGI Well No. 1 pursuant to an OCD-approved plan; provided, however, that OCD in its sole discretion may grant an extension of time not to exceed six (6) months to the completion deadline in Paragraph 18 for good cause shown.

20. The injection authority herein granted shall terminate two years after the effective date of this Order if Ameredev has not commenced injection operation. The OCD Director, upon written request of Ameredev submitted prior to the expiration of this Order may extend this time for good cause shown.

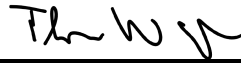
21. After 30 years from the date of the Commission's Order in this case, the authority granted by this Order shall terminate unless Ameredev or its successor-in-interest shall make application before the Commission for an extension to inject.

DONE at Santa Fe, New Mexico on the 4th day of November, 2020.

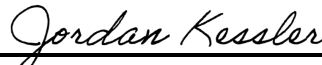
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Jordan Kessler, Esq., Member