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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF FRONTIER FIELD SERVICES, LLC FOR AUTHORIZATION TO INJECT, LEA COUNTY, NEW MEXICO.

CASE NO. 15193
ORDER NO. R-13443-B

ORDER OF THE COMMISSION

THIS MATTER came before the Oil Conservation Commission ("Commission") on the application of Frontier Field Services, LLC ("Frontier" or the "Applicant") for authority to inject treated acid gas. The Commission having conducted a public hearing on September 25, 2014, and having considered the testimony, the record, and the arguments of the parties, and being otherwise fully advised, enters the following findings, conclusions and order.

THE COMMISSION FINDS THAT:

1. Notice has been given of the application and the hearing of this matter, and the Commission has jurisdiction of the parties and the subject matter herein.

2. Frontier seeks authorization to inject treated acid gas ("TAG") from its Maljamar Processing Plant into the proposed Maljamar AGI Well No. 2, to be drilled at a surface location 400 feet from the South line and 2100 feet from the East line of Section 21, Township 17 South, Range 32 East, NMPM, to a bottomhole location 350 feet from the South line and 650 feet from the West line of said Section 21. Applicant proposes to use the Maljamar AGI Well No. 2 to inject acid gas and carbon dioxide into the Wolfcamp formation at depths of approximately 9600-10200 feet subsurface at a maximum injection pressure of 3200 psi and a maximum daily injection rate of 2 MMSCFD.

3. Applicant further requests that the maximum daily injection rate apply to the proposed Maljamar AGI Well No. 2 and to the existing Maljamar AGI Well No. 1 (for either well, or both wells combined). The Maljamar AGI Well No. 1 is located 130 feet from the South line and 1813 feet from the East line of Section 21, Township 17 South, Range 32 East, NMPM. Injection into the Maljamar AGI Well No. 1 was approved by Commission Order No. R-13443-A.

4. The Form C-108 Application was complete and contains all the information

necessary to grant approval.

5. The purpose of the proposed Class II injection well is to dispose of natural gas processing wastes consisting of carbon dioxide ("CO2") and hydrogen sulfide ("H2S") from the Applicant's Maljamar gas processing plant ("Maljamar Processing Plant") by injecting TAG and produced wastewater into the target injection zone. The TAG will consist of approximately 12 percent H2S and 88 percent CO2.

6. The proposed acid gas injection well will be located within the boundary of the Maljamar Processing Plant premises.

7. Frontier provided personal notice, via certified mail, return-receipt requested, of the submission of its application and the Commission hearing to all operators, surface owners, and lessees within a one-half mile radius of the bottomhole location for the proposed well.

8. Pursuant to Rule 19.15.4.9.B(3) NMAC, the Oil Conservation Division ("Division") provided public notice by publishing notice of Frontier's application and the Commission hearing in a newspaper of general circulation in Lea County.

9. In support of the application, Frontier presented direct testimony from two witnesses: one fact witness, Coy Bryant, Frontier's Director of Operations; and a technical witness, Alberto Gutierrez, RG, President of Geolex, Inc.

10. The Oil Conservation Division filed an entry of appearance as an intervener and presented one witness, Phillip Goetze, who testified in support of the Division's recommended conditions of approval outlined in the Division's Pre-hearing Statement.

11. No objections to the application were filed.

12. Mr. Bryant testified that the Maljamar Processing Plant has a capacity to process up to 95 MMSCF of sour gas per day, resulting in approximately 1.4 MMSCFD of treated acid gas at this time. The operation and reliability of the Maljamar Processing Plant will be enhanced by approving the Maljamar AGI Well No.2. It will be operated as a redundant injection well and the existing Maljamar AGI Well No. 1 will be operated as the primary well. The Maljamar AGI Well No. 2 will be capable of operating concurrently with the existing AGI well or each well can operate independently, as appropriate. The Maljamar Processing Plant currently serves approximately 70 producers and 1500 wells, and a second well will allow Frontier to provide more reliable service to producers, to reduce flaring events in the field and at the Maljamar Processing Plant, and to reduce atmospheric emissions.

13. The proposed Maljamar AGI Well No. 2 is necessary to allow Frontier to meet the Maljamar Processing Plant's current operating capacity and to meet growing

production demand for sour gas processing and waste disposal.

14. Frontier technical witness Alberto Gutierrez, RG, testified that injection of TAG through the proposed AGI well will be at a maximum rate of 2.0 MMSCFD, and at a maximum operating surface pressure of 3200 psig.

15. With a safety factor of 100 percent, or the injection of 4.0 MMSCFD of TAG, the radius of influence for each well after injecting for thirty years will be approximately 0.37 miles. The actual projected radius of influence for each well, based on proposed injection volumes, will be approximately 0.26 miles after thirty years of TAG injection.

16. One well penetrates the proposed injection zone within a one-half mile radius of the proposed AGI well. The well has been plugged and abandoned and is isolated from the injection zone.

17. The proposed injection zone is laterally extensive, indicating that it will adequately contain the injected TAG and wastewater within the target injection zone and within the half-mile area of review.

18. The Maljamar AGI Well No. 1 encountered lower than expected permeability in the injection zone, resulting in surface pressures which were higher than originally anticipated. Based on additional well data obtained by Applicant, Frontier anticipates that the proposed well will encounter a higher permeability than the initial well. This will allow both wells to inject at pressure well below the maximum authorized operating pressure.

19. The proposed injection zone provides a sufficient geologic seal to contain the injected TAG and wastewater and prevent its migration into other zones. The injection zone is sufficiently isolated from any protectable groundwater sources and there is no evidence injection will impair existing or potential hydrocarbon production in the area. In addition, there is not any faulting or other geologic or man-made conduits that will allow the treated injected acid gas to migrate out of the injection zone.

20. Fresh water will be protected by surface casing, which will extend to approximately 890 feet below the deepest fresh water. Intermediate casing will extend to approximately 5700 feet below the surface. Production casing will extend to approximately 10220 feet total vertical depth and 10940 feet measured depth and will include approximately 295 feet of corrosion resistant production casing immediately above the injection zone. All casing strings will be cemented to the surface and pressure tested. The casing and cement program will meet all Oil Conservation Division requirements. The entire production tubing will be lined with fiberglass to prevent corrosion. This casing program may be altered with approval of the Division.

21. The annular space will be filled with corrosion-inhibited diesel that also contains a biocide.

22. Annular and injection tubing pressures, temperatures, and flow rates will be continuously monitored and recorded, as will surface annular pressure, and bottomhole temperatures, and pressures, in the tubing and annulus of the well.

23. Injection of the proposed waste stream will protect the environment and human health, and will not cause waste or impair correlative rights.

24. Phillip Goetze, the Division's witness, presented testimony that the Division proposed several conditions of approval in its Prehearing Statement and that the Division and Frontier had reached agreement on the proposed conditions.

25. Frontier and the Division reached agreement on the conditions of approval proposed by the Division, as follows:

(a) Frontier agrees to conduct a mechanical integrity test ("MIT") on the AGI wells every year.

(b) Frontier agrees to conduct a step-rate test on the completed well prior to commencing operation. The maximum surface injection pressure for the proposed well shall be 3028 psig, which may be increased after a step rate test.

(c) Frontier agrees to incorporate a biocide component in the inert annular fluid of the well.

(d) Frontier agrees to conduct continuous monitoring of pressure data, atmospheric H2S, and the safety measures in place for the proposed well.

(e) Frontier agrees to keep a maintenance log of its annular fluid (diesel) replacement activities in the annulus of the proposed well.

(f) Frontier agrees to incorporate temperature controls to govern the temperatures of injected fluid within parameters and provide an alarm system for these controls should parameters be exceeded.

(g) Frontier agrees to equip the well with a pressure-limiting device as well as a one-way safety valve on the tubing approximately 250 feet below the surface.

(h) Frontier agrees to provide summary data on injection parameters monitored in item (d) above, as requested by the Division in quarterly reports submitted on Form C-103. However, after one year Frontier may apply to the Division to submit such data annually.

(i) Frontier agrees to obtain approval of a H_2S Contingency Plan pursuant to Division Rule 11 that incorporates the activities and operations of the proposed AGI well operations, and to conduct and implement all

required air monitoring and safety measures pursuant to that Plan.

(j) Frontier agrees that thirty days prior to commencing injection, the operator shall coordinate with the Division to establish immediate notification parameters for annulus pressure and tubing and casing differential pressure at a set injection temperature.

(k) Frontier agrees that ninety days after commencing injection, the operator shall review the pre-injection immediate notification parameters with the Division. If the Division determines that the parameters require modification, new immediate notification parameters shall be developed and implemented in coordination with the Division.

(l) Frontier agrees that the immediate notification parameters shall be reviewed jointly by the operator and the Division periodically, but not less than once a year.

(m) Frontier agrees to submit all logs and the estimated static bottomhole pressure to the Division's District I Office.

(n) Frontier agrees to provide a report following every tenth year of operation summarizing performance of the well and potential calibration of models due to information collected during the period.

26. The requirements set forth in Paragraph 25 shall also apply to the Maljamar AGI Well No. 1 except for item (b) since this well is already permitted to 3200 psig.

THE COMMISSION CONCLUDES THAT:

1. The Commission has jurisdiction over the parties and the subject matter of this case.

2. Proper public notice has been given.

3. Proper individual notice has been given to all operators, surface owners, and lessees within a one-mile radius of the bottomhole location of the proposed injection well.

4. Under the conditions approved in this Order, Frontier's injection of C02 and H2S can be conducted in a safe manner without causing waste, impairing correlative rights, negatively impacting oil and gas producing zones, or endangering fresh water, public health, or the environment.

IT IS THEREFORE ORDERED THAT:

1. Frontier's application is approved as provided in the Form C-108, and as modified by the conditions described below and in Finding Paragraph 25, above.

Accordingly, Frontier is hereby authorized to drill and operate the proposed Maljamar AGI Well No. 2, to be drilled at a surface location 400 feet from the South line and 2100 feet from the East line of Section 21, Township 17 South, Range 32 East, NMPM, to a bottomhole location 350 feet from the South line and 650 feet from the West line of said Section 21. Applicant proposes to use the Maljamar AGI Well No. 2 to inject acid gas and carbon dioxide into the Wolfcamp formation at depths of approximately 9600-10220 feet subsurface at a maximum injection pressure of 3028 psi and a maximum daily injection rate of 2 MMSCFD.

2. Applicant is further authorized to use the maximum daily injection rate apply to the proposed Maljamar AGI Well No. 2 and to the existing Maljamar AGI Well No. 1 (for either well, or both wells combined). The Maljamar AGI Well No. 1 is located 130 feet from the South line and 1813 feet from the East line of Section 21, Township 17 South, Range 32 East, NMPM. Injection into the Maljamar AGI Well No. 1 was approved by Commission Order No. R-13443-A.

3. The maximum allowable operating pressure for the Maljamar AGI Well No. 2 shall be 3028 psig. Frontier shall conduct a step-rate test on the completed well prior to commencing operation. Based on the step rate test, the Division may allow an increase in the maximum allowable operating pressure up to 3200 psig.

4. The AGI wells shall be constructed substantially in accordance with the description in the Form C- 108 filed by the Applicant in this case, as amended, and as modified at the hearing by the conditions agreed to by Frontier and the Oil Conservation Division.

5. Frontier shall be required to conduct a MIT in accordance with Division rules on the Maljamar AGI Well No. 2 once every year.

6. Prior to commencing injection, the operator shall prepare and secure approval by the Division's Environmental Bureau of a hydrogen sulfide contingency plan that complies with Division Rule 19.15.11.9 NMAC.

7. The casing-tubing annulus of the Maljamar AGI Well No. 2 shall be loaded with diesel treated with corrosion inhibitors and biocides and equipped with a pressure gauge or approved leak-detection device to detect any leakage in the casing, tubing, or packer.

8. Thirty days prior to commencing injection, the operator shall coordinate with the Division to establish immediate notification parameters for annulus pressure and tubing and casing differential pressure at a set injection temperature.

9. Ninety days after commencing injection, the operator must review the pre-injection immediate notification parameters with the Division. If the Division determines that the parameters require modification, new immediate notification

parameters shall be developed and implemented in coordination with the Division.

10. The immediate notification parameters shall be reviewed jointly by the operator and the Division periodically, but not less than once a year.

11. The operator shall record injection rates and pressures on a continuous basis and report these readings in a summary form on a quarterly basis to the Engineering Bureau in the Division's Santa Fe Office and to the Division's District I Office. Each such report shall include the well name, location, API Number and the number of this Order. However, after one year Frontier may apply to the Division to submit such data annually.

12. The operator shall provide the Division a report every ten years, once injection begins, that compares the reservoir pressures, volumes injected and projected TAG plume extent to those provided in the original Order, along with a summary of all the injection results to date. The report shall include an updated model of current and projected plume migration and shall use the modeling technology in standard use at the time of the report and any available information about plume migration.

13. The operating conditions in this Order shall also apply to the Maljamar AGI Well No. 1, including the requirement for an annual MIT, the reporting requirements listed in Finding Paragraph 25, and the installation of monitoring equipment which may be installed during the first workover of the well.

14. Frontier shall notify the Division of any changes or conditions imposed by the U.S. Bureau of Land Management on the wells and the Division shall determine if the changes are significant enough to require a change in this Order by the Commission.

15. The injection authority herein granted shall terminate three years after the effective date of this Order if the operator has not commenced injection operations at the Maljamar AGI Well No. 2. The Division Director may, upon written request of the operator, extend this deadline for good cause shown.

16. Compliance with this Order does not relieve the operator of the obligation to comply with other applicable federal, state, or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

DONE at Santa Fe, New Mexico, on this 19th day of November, 2014.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

ROBERT BALCH, Member

TERRY WARNELL, Member

JAMI BAILEY, Chair

SEAL