

**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 LOGOS OPERATING, LLC FOR AUTHORIZATION TO INJECT,
FOR APPROVAL OF AN ENHANCED RECOVERY PROJECT AND FOR EXCEPTION
TO THE PROJECT AREA FORMATION PROVISIONS OF NMAC 19.15.26.8, SAN
JUAN COUNTY, NEW MEXICO.**

**CASE NO. 22155
ORDER NO. R-22409**

ORDER OF THE DIVISION

This case came in for hearing before the Oil Conservation Division (“OCD”) at 8:15 a.m. on September 9, 2021, in Santa Fe, New Mexico.

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

FINDINGS OF FACT

1. Due public notice has been given, and the OCD has jurisdiction of this case and the subject matter.
2. LOGOS Operating, LLC (“Applicant” or “LOGOS”) seeks authority to utilize its Quinn Well No. 338S (API No. 30-043-32527; “Subject Well”), located 1690 feet from the South line and 1045 feet from the West line (Unit K) of Section 7, Township 31 North, Range 8 West, NMPM, San Juan County, New Mexico, as an Underground Injection Control (“UIC”) Class II well for the purpose to inject carbon dioxide into the Fruitland Coal (Gas) Pool (pool code 71629) to assess the potential for enhanced recovery (“ER”) as provide for in the Statutory Unitization Act.
3. Applicant also seeks an exception for this ER pilot project from 19.15.26.8F(2) NMAC which states:

“The project area of an injection project shall comprise the spacing or proration units a given operator owns or operates upon which injection wells are located plus spacing or proration units the same operator owns or operates that directly or diagonally offset the injection tracts and have producing wells completed on them in the same formation; provided however, that the division

may include in the project area additional spacing or proration units not directly or diagonally offsetting an injection tract if, after notice and hearing, the operator establishes that the additional units have wells completed on the unit that have experienced a substantial response to water injection.”

4. If the exception is granted, Applicant proposes to designate the following lands that are within one-half mile of the Subject Well as the project area:

Township 31 North, Range 8 West, NMPM

Section 7

Section 18

Township 31 North, Range 9 West, NMPM

Section 12

Section 13

5. LOGOS, through counsel, provided exhibits and testimony at hearing geologic and engineering evidence in support of the ER pilot project and approval of the injection authority for the Subject Well.

a. Applicant proposed conversion of the Subject Well for the purpose of injecting carbon dioxide between the depths of 2,675 feet and 3,008 feet using the existing well construction of an uncemented perforated liner set in an open-hole completion.

b. The ER target is a series of multiple coal intervals between depths of 2708 feet and 2990 feet representing approximately 65 feet of net coal section with an average bulk density of 1.63 grams per cubic centimeter.

c. For the ER pilot project, Applicant proposed an injected fluid containing approximately 65 percent carbon dioxide and 35 percent methane recovered by means of a membrane technology utilizing production from wells operated LOGOS. Applicant further states that the proceed gas would be injected below the supercritical state.

d. Applicant will attempt an average daily rate of injection of 250 million cubic feet per day (Mcf/d) and a maximum daily rate of 3500 Mcf/d.

e. Applicant proposes an average surface injection pressure of 200 pounds per square inch (psi) for the initial phase of the pilot project but identified an increase in surface pressure to 800 to 1000 psi in a latter phase with additional equipment installed at the Subject Well.

f. Applicant states that the injected fluid will remain within the one-half mile Area of Review (AOR) used to identify penetrating wells surrounding the Subject Well.

g. The analyses of produced water samples provided by Applicant showed the compatibility of the injected fluids with formation fluids in the proposed disposal interval.

h. Applicant identified two active wells and that penetrated the proposed injection interval within the one-half mile AOR of the surface location of the Subject Well. The completion information indicates the wells are properly cased and cemented to prevent vertical migration of injection fluids.

i. Based on the records of the New Mexico Office of the State Engineer, there are no freshwater wells within one mile of the surface location of the Subject Well. Additionally, Applicant could not identify any drinking water well within a two-mile radius of the Subject Well.

j. Applicant states for the duration of the ER pilot project and for the portion which are in the unitized lease areas that LOGOS bear 100 percent cost of the project and royalty interest would not be affected. If the project is successful, LOGOS would initiate the development of a permanent statutory unit to adjust participation and ownership schedules.

k. Applicant provided confirmation of proper notice to operators for the leases and tracts that are within the proposed project area described in Finding Paragraph (4) and the mineral estate owner, the Bureau of Land Management. Applicant did not identified any allotted lands or tribal mineral interest for the project area.

6. Hilcorp Energy Company filed an entry of appearance but did not oppose the application at hearing. No other party appeared at hearing or otherwise opposed the granting of this application.

The OCD concludes as follows:

7. Applicant provided the information required by 19.15.26 NMAC and the Form C-108 for an application to inject into the Subject Well for a pilot project to promote secondary production from a coalbed interval indicating a steady decline.

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

9. Applicant affirmed in a sworn statement by a qualified person that it examined the available geologic and engineering data and found no evidence of open faults or other hydrologic connections between the approved injection interval and any underground sources of drinking water.

10. Applicant is in compliance with 19.15.5.9 NMAC.

11. Applicant's proposed scale of operation and the restricted source of injected fluid is consistent with the current practices of OCD for conducting pilot projects under the rules contained in the Statutory Unit Act.

12. Having considered the evidence, approval of the ER pilot project with specific conditions and restrictions will enable Applicant to assess the opportunity to expand the ultimate recovery of

the coalbed gas resources in this area, thereby preventing waste while not impairing correlative rights and protecting fresh water or underground sources of drinking water.

ORDER

1. LOGOS Operating, LLC ("LOGOS" or "operator") is hereby authorized to inject processed gas, the injected fluid, into the Fruitland formation [Basin Fruitland Coal (Gas) pool (Pool code: 71629)] for the purpose of conducting a pilot project to assess the potential for enhanced recovery of coalbed gas remaining in place.

2. This pilot project is hereby designated the **Fruitland CBM Enhanced Recovery Pilot Project** ("ER pilot project").

3. LOGOS application for an exception of this ER pilot project from 19.15.26.8F(2) NMAC is hereby granted and is effective for the period of operation approved under this order. The project area shall consist of the Fruitland formation underlying the following lands in San Juan County, New Mexico:

Township 31 North, Range 8 West, NMPM

Section 7: all
Section 18: all

Township 31 North, Range 9 West, NMPM

Section 12: all
Section 13: all

4. LOGOS (OGRID No. 289408) is designated the operator of the project.

5. The injection well approved for injection is Quinn No. 388S (API No. 30-045-32527) with a surface location of 1690 feet from the South line and 1045 feet from the West line (Unit letter K) of Section 7, Township 31 North, Range 8 West, NMPM.

6. The operator shall take all steps necessary to ensure that the injected fluid enters only the injection interval and is not permitted to escape the vertical limits of the Basin Fruitland Coal (Gas) pool (as defined in Order No. R-8768 as amended) or to other formations or onto the surface through injection, production, or plugged and abandoned wells. At a minimum, the injection interval shall be the limits of the open-hole completion below the shoe of the 7-inch production casing at 2661 feet to the plugback depth of the injection well at 3008 feet.

7. The injection well shall use the existing construction with injection occurring through an uncemented liner with perforations from 2675 feet to 2965 feet.

8. The operator shall utilize its own production wells for the source of the processed gas to be used in the injection phases of the ER pilot project.

9. Injection shall be accomplished through 2 $\frac{7}{8}$ -inch, lined tubing installed in a packer set in the production casing so as to provide a proper seal while being as close as practical to the top of liner and being no greater than 100 feet above the top of liner.

10. The injection wells shall be initially equipped with a pressure control device or acceptable substitute that will limit the maximum surface injection pressure (“MSIP”) to no more than 375 pounds per square inch (psi) for processed gas. This MSIP is determined using the administrative gradient of 0.2 psi per foot based on the estimated composition provided by the operator at hearing (65 percent carbon dioxide and 35 percent 35 percent methane) and the processed gas not being injected in a supercritical state.

11. OCD may authorize an increase in the MSIP upon a showing by the operator that such higher pressure will not result in the migration of the injected fluid from the approved injection interval or result in permanent formation damage. Such proper showing shall be demonstrated by sufficient evidence, including an acceptable step-rate test.

12. 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.

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

14. Prior to commencement of injection, the operator shall submit a copy of a cement bond log (“CBL”) for the injection well. If a CBL is not available, then the operator shall run a CBL, at a minimum, for the entire length of 7-inch casing and electronically submit a copy of the CBL prior to commencing injection.

15. Following the completion of the ER pilot project, the operator shall complete a casing integrity log for the injection well and shall electronically submit this log OCD for inclusion in the well file.

16. The injection well shall be monitored with a SCADA system and the operator shall ensure that additional metering systems for the injection well are installed and correctly calibrated.

17. Prior to commencing injection, the operator shall establish and maintain a monitoring program for four wells located in proximity to the edge of the one-half mile radius of the AOR. Each well is operated LOGOS and is completed in the Basin Fruitland Coal (Gas) pool. These include the following:

- a. Jaquez No. 331S (API No. 30-045-32508); 845 feet from the North line and 665 feet from the West line (Unit C) in Section 7, Township 31 North, Range 8 West, NMPM;
- b. Nordhaus No. 714S (API No. 30-045-32591); 985 feet from the South line and 1580 feet from the East line (Lot 15) in Section 12, Township 31 North, Range 9 West, NMPM;
- c. Oxnard No. 332S (API No. 30-045-33511); 1080 feet from the South line and 670 feet from the East line (Unit P) in Section 7, Township 31 North, Range 8 West, NMPM, and
- d. Quinn No. 338T (API No. 30-045-34420); 1711 feet from the North line and 898 feet from the West line (Unit F) in Section 18, Township 31 North, Range 8 West, NMPM.

The operator shall monitor these wells to ensure that the lateral migration of the injected fluids shall not exceed the project area described in Ordering Paragraph (3). Summary of this monitoring shall be included in the report identified in Ordering Paragraph (22) of this order.

18. With commencement of injection operations, the operator shall be required to periodically monitor the bradenhead for pressure of the adjacent AOR production well, the Quinn No, 5B (API No. 30-045-30055) owned and operated by Hilcorp Energy Company. If an automated monitoring system is not available on this well, the operator shall be required to conduct weekly inspections to record the information. If the results of the bradenhead monitoring shows an increase in bradenhead pressures, the operator shall cease injection operations and report these findings along with procedure to identify the source of the pressure increase for eventual use in preparing a remedial action. These findings shall be submitted using the OCD Engineering Bureau e-mail with a copy submitted attached to a Form C-103. Records of this monitoring following completion of the ER pilot project shall be included in the report identified in Ordering Paragraph (22) of this order.

19. The 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 Inspection Supervisor 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.

20. The operator shall provide written notice of the date of commencement of injection into the injection well attached to OCD Form C-103 and submitted electronically to the OCD.

21. The operator shall immediately notify the Inspection Supervisor of the failure of the tubing, casing or packer in either 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 either injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

22. The ER pilot 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.

23. The injection authority granted for the pilot project 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.

24. The operator shall provide written notice to the OCD upon permanent cessation of injection for the ER pilot project using a Form C-103 submitted electronically. Additionally, the operator shall provide the OCD, within one year of the termination date, a report summarizing the operation and the results of the ER pilot project. The report shall include any observations related to the pattern of lateral migration of injected fluids during the operation, changes in permeability as a result of swelling, occurrences of breakthrough injected fluids or issues of mechanical integrity for the injection wells, AOR wells, or wells used for observation of the ER pilot project.

25. 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.

26. 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.

27. Jurisdiction of this case is retained for the entry of such further orders as the OCD may deem necessary



ADRIENNE E. SANDOVAL
DIVISION DIRECTOR

Date: 11/23/22