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 BC OPERATING, INC. FOR AUTHORIZATION TO INJECT, LEA COUNTY, NEW MEXICO.

CASE NO. 15398
ORDER NO. R-14205

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on October 29, 2015, at Santa Fe, New Mexico, before Examiner Phillip R. Goetze, and on November 12, 2015, before Examiners Phillip R. Goetze and William V. Jones.

NOW, on this 29th day of August, 2016, the Division Director, having considered the testimony, the record, and the recommendations of Examiner Goetze,

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and the subject matter.

(2) BC Operating, Inc. ("Applicant" or "BC Operating") seeks authority to utilize its Pearson SWD Well No. 1 (API No. 30-025-24438; the "subject well"), located 1980 feet from the North line and 660 feet from the East line (Unit H) of Section 33, Township 21 South, Range 33 East, NMPM, Lea County, New Mexico, for disposal of produced water into the Cherry Canyon formation through a perforated interval from 5790 feet to 6970 feet below surface.

(3) On August 26, 2015, BC Operating submitted an administrative application (Application No. pMAM1523846715) to the Division for approval of the subject well for disposal of produced water. Prior to the submittal of the application, the Division received notification of protest by Devon Energy Production Company, L. P. ("Devon"), a leasehold operator required to be notified under Division Rule 19.15.26.8(C)(2) NMAC.

(4) On September 8, 2015, Mr. William Savage of Amtex Energy, Inc. ("Amtex") filed a second protest of this application.

(5) On September 29, 2015, the Division received a request from BC Operating to place the application for the subject well on a hearing docket.

(6) Subsequently on October 19, 2015, Devon withdrew its protest and did not appear at hearing in opposition to the application.

(7) At hearing, Amtex appeared *pro se* in opposition as an intervener to the application but did not offer testimony.

Applicant appeared at the hearing through counsel and presented the following testimony.

(8) Applicant seeks to re-enter and utilize the subject well, formerly named the R. F. Leggett Well No. 1, for injection of produced water through perforations from 5790 feet to 6970 feet below surface. The subject well was completed on December 12, 1974, in the Morrow formation and plugged in 1976.

(9) The subject well is constructed with the following five casing strings: a 13⅜-inch surface casing set at 390 feet; a 9⅝-inch intermediate casing string set at 5035 feet with diverter valve (DV) tools at 3406 feet and 3820 feet; a 7⅝-inch intermediate casing/liner set in two sections (casing from surface to 4939 feet and liner from 4945 feet to 11,098 feet with a DV tool at 8820 feet); and a 5-inch production liner set from 9578 feet to 14,983 feet.

(10) The subject well has cement circulated to surface for the surface casing and partial cementing of both the 9⅝-inch and 7⅝-inch intermediate casings strings. The two remaining strings, the lower 7⅝-inch intermediate liner and the 5-inch production liner, were cemented to the top of the liner.

(11) Applicant proposed an average injection rate of 2000 barrels of water per day (BWPD), with a maximum injection rate not expected to exceed 7500 BWPD with the erosional velocity of the tubing being the limiting factor.

(12) The primary source for disposal in the subject well would be produced water from Applicant's production of horizontal wells in the Bone Spring formation.

(13) Applicant requested that the subject well be allowed to operate as a commercial disposal well to include disposal sources not related to Applicant's production. Applicant proposed an average daily injection rate of 4500 barrels of water with a maximum of 7500 barrels of water per day (BWPD).

(14) The depth of the deepest known source of fresh water in the vicinity of the subject well was approximately 1100 feet below surface and was identified as the Santa Rosa sandstone of the lower Dockum group.

(15) Two active fresh-water wells were identified within a one-half mile radius of the subject well. The Applicant provided water quality analyses for each well that showed total dissolved solid (TDS) concentrations less than 1500 milligrams per liter (mg/L).

(16) Applicant's engineering witness testified that he has examined the available geological and engineering data and found no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

(17) The results of the half-mile Area of Review (AOR) around the subject well found one plugged and abandoned well that penetrated the proposed injection interval. The plugged well is properly abandoned to protect underground sources of drinking water and not allow migration of injected fluids from the proposed injection interval.

(18) Applicant identified the Cherry Canyon formation of the Delaware Mountain group for the disposal interval due to the high average porosity of 20 percent and the lack of hydrocarbon production in the formation within a two-mile radius of the subject well.

(19) Applicant provided analysis of formation waters for the Delaware Mountain group in the area of the subject well demonstrating TDS concentrations greater than 243,000 mg/L.

(20) Applicant stated that the economic necessity for disposal in the subject well is to support production.

(21) Applicant provided evidence of proper notification including return receipts and affidavit of publication in a local newspaper of general circulation.

Intervenor presented the following statements at hearing.

(22) The Form C-108 application did not accurately describe the current status of the subject well's construction and the difficulties encountered during the placement of the intermediate casings (the original 9⅝-inch intermediate casing that lost integrity and the later installation of the shallower section of 7⅝-inch casing as a scab liner) at depths where the subject well penetrated both the shallower aquifers within the Dockum group and the deeper Capitan Reef aquifer.

(23) The Form C-108 application provides a remedial cementing program for the intermediate casing suite that has a low potential for success to improve the casing integrity of the intermediate casings of the subject well.

(24) The proposed design of the subject well, as submitted in the Form C-108 application, would not adequately protect the aquifers.

The Division concludes as follows:

(25) Amtex disputed the accuracy of the subject well's construction as originally proposed in the application. Division recognized these same discrepancies during the administrative review of the application and included these concerns at hearing for the Applicant to address.

(26) The Applicant submitted, at a subsequent hearing, a more accurate study of the subject well's completion and an alternative remedial program to resolve the issues concerning the integrity of the intermediate casing and the protection of underground drinking water sources.

(27) The Applicant provided a summary of oil and gas production in the Delaware Mountain group in the vicinity of the subject well that indicated low potential for hydrocarbon potential in the Cherry Canyon formation based on reservoir characteristics such as high water saturations and available formation tests conducted in the area.

(28) Geologic and engineering interpretations submitted by the Applicant identified limestone intervals at the top and at the base of the proposed disposal zone that would prevent the vertical migration of injection fluids into either the Bell Canyon or Brushy Canyon formations.

(29) The disposal fluids are compatible with existing formation fluids based on analytical results provided by Applicant.

(30) The potential impact to the injection interval with the proposed commercial operation of the subject well is not substantiated by the information provided at hearing and requires corroboration to ensure that the formation parting pressure will not be exceeded with additional disposal sources.

(31) The application has been duly filed under the provisions of Division Rule 19.15.26.8 NMAC.

(32) Applicant has presented satisfactory evidence that all requirements prescribed in Division Rule 19.15.26.8 NMAC have been met.

(33) Division records indicate BC Operating (OGRID 160825) as of the date of this order is in compliance with Division Rule 19.15.5.9 NMAC.

(34) Approval of disposal in the subject well will enable Applicant to support existing production and future exploration in this area, thereby preventing waste, and will not impair correlative rights.

(35) The application with the amended remedial program should be approved with conditions.

IT IS THEREFORE ORDERED THAT:

(1) BC Operating, Inc. ("BC Operating" or "operator") is hereby authorized to re-enter and utilize its Pearson SWD Well No. 1 (API No. 30-025-24438; the "subject well"), located 1980 feet from the North line and 660 feet from the East line (Unit H) of Section 33, Township 21 South, Range 33 East, NMPM, Lea County, New Mexico, for disposal of UIC Class II fluids.

(2) Disposal shall be through a perforated interval from 5790 feet to 6970 feet below surface comprising the Cherry Canyon formation only. Injection is to be through plastic-lined tubing and a packer set within 100 feet above the top perforation of the permitted interval.

(3) Sources of the UIC Class II fluids for disposal in the subject well shall be limited to the production from leases operated by BC Operating. The Director of the Division may approve the request for commercial status following completion of a successful Step-Rate Test, as described in Ordering Paragraph (9), and issuance of an injection pressure increase order.

(4) The operator shall take all steps necessary to ensure that the disposed water enters only the permitted disposal interval and is not permitted to escape to other formations or onto the surface.

(5) The operator shall re-enter and conduct the remedial actions as detailed in the proposed workover summary provided in the supplement to Applicant's Form C-108. At a minimum, these activities shall include:

(a) The installation of new 5½-inch casing from surface to 7200 feet below surface.

(b) Cementing of the new 5½-inch casing with cement circulated to surface.

(c) If the cement is not circulated to the surface, the operator shall demonstrate the top of cement (cement bond log, temperature survey log, or equivalent) and shall provide those results to both the District I supervisor and the Engineering Bureau in Santa Fe for review prior to conducting the initial mechanical integrity test. The District supervisor shall have the authority to require additional remedial cement work if the cement work is not deemed adequate.

(d) The remedial actions detailed in this Ordering Paragraph shall be included in the Applicant's Application for Permit to Drill or Reenter (APD) for approval by the Bureau of Land Management and the

Division.

(6) After installation of tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

(7) The well shall pass a mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT procedures and schedules shall follow the requirements in Division Rule 19.15.26.11(A) NMAC.

(8) The wellhead injection pressure on the well shall be limited to **no more than 1158 psi**. The disposal well shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well. The operator shall install and maintain a chart recorder (or equivalent data logging system) showing casing and tubing pressures during disposal operations.

(9) The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the approved injection interval. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate Test.

(10) The operator shall notify the supervisor of the Division's District I office of the date and time of the installation of disposal equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's District I office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 NMAC and 19.15.7.24 NMAC.

(11) Without limitation on the duties of the operator as provided in Rules 19.15.29 NMAC and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's District office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from or around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

(12) The injection authority granted under this order is not transferable except upon Division approval. The Division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(13) The Division may revoke this injection permit after notice and hearing if the operator is in violation of Division Rule 19.15.5.9 NMAC.

(14) The disposal authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request, mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

(15) One year after disposal into the subject well has ceased, the well will be considered abandoned and the authority to dispose will terminate *ipso facto.*

(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.

(17) Jurisdiction is retained by the Division 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 Division may, after notice and hearing or prior to notice and hearing in event of an emergency, terminate the disposal authority granted herein.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

David R. Catanach

DAVID R. CATANACH
Director