



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

July 20, 2020

Peter MacIntyre
Continental Resources, Inc.
PO Box 269000
Oklahoma City, OK 73126

Re: Case No. 1-2020 – Approval of Major Modification, Kirkwood 11-25 Federal WBRRU well,
NW/4 NW/4 Section 25, Township 21N, Range 3 E, Harding County

Dear Mr. MacIntyre:

Thank you for your application filed May 22, 2020, requesting an increase in the maximum injection pressure and volume in the Kirkwood 11-25 Federal WBRRU well, to support the water flood in the "B" zone of the Red River Formation in the West Buffalo Red River Unit for enhanced recovery of oil and gas.

The department published a Notice of Recommendation for Case No. 1-2020 recommending approval of the application. The final date for intervention was July 15, 2020, and no parties petitioned the Board of Minerals and Environment for a hearing on the application by the deadline.

Therefore, in accordance with the Administrative Rules of South Dakota (ARSD) 74:12:07 and 74:12:09, approval of the application is hereby granted. The permit is conditioned on compliance with all applicable requirements of South Dakota Codified Laws 45-9 and ARSD 74:12. Please refer to the enclosed Notice of Recommendation for specific terms and conditions.

Thank you for your interest in protecting the water resources of the state.

Sincerely,

Hunter Roberts
Secretary

Enclosure

STATE OF SOUTH DAKOTA
SECRETARY OF THE
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

<p>IN THE MATTER OF THE APPLICATION OF CONTINENTAL RESOURCES, INC., OKLAHOMA CITY, OKLAHOMA, TO MODIFY ITS PERMIT TO INJECT FOR THE KIRKWOOD 11-25 FEDERAL WBRRU WELL LOCATED IN THE NW¼ NW¼ SECTION 25, TOWNSHIP 21 NORTH, RANGE 3 EAST, IN THE WEST BUFFALO RED RIVER UNIT (WBRRU) OF THE BUFFALO FIELD, HARDING COUNTY, ABOUT FIFTEEN MILES NORTHWEST OF BUFFALO, SOUTH DAKOTA, TO SUPPORT WATER FLOOD IN THE “B” ZONE OF THE RED RIVER FORMATION IN THE WEST BUFFALO RED RIVER UNIT FOR ENHANCED RECOVERY OF OIL AND GAS.</p>	<p>NOTICE OF RECOMMENDATION FOR MAJOR MODIFICATION OF PERMIT TO INJECT</p> <p>OIL AND GAS CASE NO. 1-2020</p>
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Notice is hereby given to the public and to all interested persons that pursuant to South Dakota Codified Laws (SDCL) Chapter 1-26 and Chapter 45-9 and further pursuant to the Administrative Rules of South Dakota (ARSD) 74:12:07 and 74:12:09, the following matter has come to the attention of the Secretary of the Department of Environment and Natural Resources, hereinafter “Secretary.”

Continental Resources, Inc., hereinafter “Continental,” has requested a Major Modification of its permit to inject for the existing Kirkwood 11-25 Federal WBRRU well. The permit to inject for the Kirkwood 11-25 Federal WBRRU well was previously authorized under South Dakota Oil and Gas Order No. 03-1987. The request entails increasing the maximum injection pressure to 1,700 psi and the maximum daily volume to 3,000 bbls.

The Kirkwood 11-25 Federal WBRRU well was completed with 697 feet of 8 5/8-inch steel surface casing, cemented to protect underground sources of drinking water, and 8,575 feet of 5 1/2-inch steel production casing, cemented to protect underground sources of drinking water. The injection zone remains the “B” zone of the Red River Formation. Injection water will be Buffalo Field Red River B produced water and Dakota formation water from a water supply well in the WBRRU. There are no domestic water wells located within the one-half mile area of review. All wells within the one-half mile area of review and maximum calculated radius of influence are constructed such that the injection into the Kirkwood 11-25 Federal WBRRU well will not affect any underground sources of drinking water.

The requested maximum injection pressure for water injection is 1,700 pounds per square inch and the requested maximum daily injection volume is 3,000 barrels of water.

The Secretary recommends approval of the application with the following conditions:

- 1) Injection operations authorized under the permit to inject must be conducted in accordance with SDCL Chapter 45-9, ARSD 74:12, and any applicable orders or rules promulgated by the South Dakota Board of Minerals and Environment;
- 2) The maximum injection rate must not exceed 3,000 barrels of water per day;
- 3) The maximum pressure for water injection must not exceed 1,700 pounds per square inch surface injection pressure during injection operations;

- 4) A mechanical integrity test must be successfully conducted prior to the commencement of water injection activity. The well must pass the mechanical integrity test at 1,000 pounds per square inch surface pressure. The operator is required to notify the Secretary a minimum of 72 hours prior to running a mechanical integrity test;
- 5) Once mechanical integrity is confirmed, the well must be retested at least once every five years to ensure mechanical integrity is maintained;
- 6) If an unsuccessful pressure test occurs, the operator must cease operations immediately if injection threatens any underground source of drinking water. If the failure does not threaten an underground source of drinking water, the operator must cease operations within 48 hours after receipt of the Secretary's notice, and take corrective action on the well as soon as feasible. Corrective action options include repairing the well so that a successful test result can be obtained, plugging and abandoning the well, or any other action approved by the Secretary.

Authority for the Secretary to approve this application is contained in ARSD 74:12:07 and 74:12:09. Unless a person files a petition requesting a hearing on the above application pursuant to the provisions of ARSD 74:09:01 on or before July 15, 2020, the Secretary's recommendation will be considered final and the Secretary will approve the application in accordance with that recommendation.

The application and notice of recommendation are also posted on the Department of Environment and Natural Resources website at: <http://denr.sd.gov/des/og/pubhearing.aspx> and <http://denr.sd.gov/public>. Additional information about this application is available from Mike Lees, Program Administrator, Minerals and Mining Program, Department of Environment and Natural Resources, 523 East Capitol Avenue, Pierre, SD 57501, telephone (605) 773-4201, email michael.lees@state.sd.us.

June 25, 2020

Hunter Roberts
Secretary

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