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DEPT OF AGRICULTURE & NATURAL RESOURCES - RAPID CITY

UIC Class II Permit Application

Continental Resources is requesting to convert the following well to a water injection well to support the secondary oil recovery project within the Buffalo Red River Units.

Well Name: WBRRU 34-36H
Well Location: SWSE Sec 36-T21N-R3E, Harding County, Buffalo, SD.

The application for a permit to inject shall contain the following complete information:

(1) A one-half mile fixed radius area of review plat which shows the location of the injection well or wells, existing or proposed; the location of all oil and gas wells; the location of all water wells active and abandoned; the location of all other wells, including plugged and abandoned wells; abandoned locations; dry holes; current drilling locations; the names of operators; the surface and mineral owners; and each offset operator;

See attached map.

Operator: Continental Resources is the operator of the WBRRU Unit.

Working Owners:

Continental Resources Inc.
Linn Operating INC
Robert G Fowler
Michael Porter

Mineral Owners

See Attached. With the WBRRU being unitized there is a large number of mineral owners.

Surface Owner

Name: Clarkson & Company

Address: 12233 Rasmus Road, Buffalo, SD, 57720

(2) The formation or formations from which oil, gas, and water wells are producing or have produced;

Oil: Red River "B" Formation

Gas: Red River "B" Formation

Water: Red River "B" Formation, Fox Hills, Hell Creek, Inyan Kara, Madison & Minnelusa.

(3) The name, description (stratigraphic and structural), and depth of the receiving formation or formations and the overlying confining zone or formation;

Receiving formation(s): Red River "B" at 8,344'TVD & 8,379 MD.

The Red River "B" zone porosity in the vicinity of the SBRRU #13-32H well is 15-17' thick. It is composed of brown to tan dolomite, often with a chert layer between the upper and lower porosity zones. The upper "B" porosity is about 3' thick in this area and is usually laminated recrystalized algal mat, having better permeability and better oil saturation than the lower "**B"** porosity. The lower "B" porosity is more of a bioturbated mudstone, that is as porous or more porous than the upper "B" but with lower permeability and lower oil saturation.

Confining zone/formation(s):

The SBRRU #34-36 well lateral enters the Red River "B" zone porosity at 8,379' MD & 8,344' MD and the lateral ends at 8,334' TVD & 10,253' MD.

The State #32-16 well in section 16-T21N-R4E shows 73' of shale above the Red River top from 8,435' to 8,508', which contains the water injection from going higher than the Red River formation. It also shows 39' of tight limestone below the base of the Red River "B" porosity from 8,563' to 8,602' which contains the water injection from going lower than the Red River "B" zone porosity zone.
The State #32-16 is the closest well as most Red River "B" wells were intentionally not drilled into the Red River "C" zone due to the high volume of water within the zone.

(4) The well type, construction, spud date, total depth, formation tops, record of completion or recompletion, and plugging for all oil, gas, and injection wells within the area of review, **and any additional pertinent information which the secretary determines is necessary to make an informed judgment on the issuance of a permit,** including drill stem tests and well logs for all oil and gas wells identified in the area of review;

1) **WBRRU 12-36 – TA'd. Permitted to convert to a water injection well**
2) **WBRRU 32-36 –Convert to a Fox Hills water supply well.**
3) **WBRRU 32-36A - Producing**
4) **WBRRU 33-36 SWD – Disposal well in the Dakota**
5) **WBRRU 14-31 - Producing**
6) **WBRRU 12-6 - Producing**
7) **WBRRU 32-1 – Water supply well in Dakota**

See attached documents.

(5) Information on abandoned and active water wells, as follows: None

(a) Abandoned water wells: None

(b) Active water wells: One – See attached document

(6) A description of the injection well's casing and the proposed casing program, and the proposed method for testing the casing for mechanical integrity before use as an injection well.

See attached. The well does have a csg issue at an unknown depth. This will be repair before the well is put on injection.

1) Proposed wellbore diagram

The current production equipment will be removed and a Lok-Set pkr installed with coated tbg. Packer to be set at approx. 8,225 ft. The casing will be MIT tested as required by the State of South Dakota, which is a 15 minute test at 1000 psi with an allowable 10% fall off.

(7) The geologic name and the depth to and interval of all freshwater resources which may be affected by injection;

Name: Fox Hills, Depth: 800'

Name: Dakota Sandstone, Depth: 4,300'

Name: Minnekahta, Depth: 5,875'

(8) The names and addresses of the operators of the project;

Name: Continental Resources
Address: PO Box 268870, Oklahoma City, OK, 73126

(9) Schematic drawings of the surface and subsurface construction details of the well with detailed drawings of the gauge connections;

See Attached

(10) The source and nature of the substance or substances to be injected, its viscosity, its compatibility with the receiving formation, including stability indices, and the estimated average and maximum daily amounts to be injected. If the nature of the injected fluid is produced water, a water quality analysis must be submitted and must include information on total dissolved solids content, chlorides, sodium, sulfates, nitrates, and hydrocarbons;

Max volume: 2000 BWPD
Average volume: 500 BWPD
Injectate water sources – Red River "B" & Inyan Kara
See attach water analysis from Jacam Laboratories.

(11) The average and maximum estimated injection pressure;

Average: 1690 PSI
Maximum: 1700 PSI

(12) A narrative description of any proposed production stimulation program, including a feasibility study, process description, and an explanation of how the data were determined, such as working calculations;
Production stimulation Program

Feasibility Study: The feasibility of oil recovery using water injection has been demonstrated by the increase in oil production from the Central Buffalo Red River Unit.

Process description: Water will be injected into the Red River "B" formation to help mobilize the oil in place by sweeping it towards a producing well.

How data was Determined: Using production data from the Central Buffalo Red River Unit and multiple waterfloods in the US.

(13) An analysis of any corrective action on all wells identified on the plat required by subdivision (1) of this section and the basis for the conclusion;

Corrective Action:

Continental Resources is not aware of any corrective actions needed on any of the wells in the AOR.

Basis for the Conclusion:

All wells within the area of review are properly constructed so no corrective action is need.

(14) The injection zone characteristics, including porosity, compressibility, and intrinsic permeability. This information has been collected over the numerous years of drilling and completion of wells within the unit using well logs.

Porosity: 18%
Compressibility: 0.7 x 10 -6 psi
Intrinsic Permeability: 10 md

(15) The expected project life

Years: 25

(16) The surface owner's name, address, and telephone number.

Name: Clarkson & Company

Address: 12233 Rasmus Road, SD, 57720

Telephone number: (605) 375 - 3261

As indicated in Section 4, the Secretary reserves the right to request additional pertinent information needed to make a recommendation on the approvability of the application. The secretary shall deny any permit application which is incomplete.

In addition, the applicant will need to submit a notorized Certification of Applicant (Form 13), that can be obtained at http://denr.sd.gov/documents/form13.pdf. or by contacting the South Dakota Department of Environment and Natural Resources

All permits to inject are issued pursuant to the provisions of chapter 74:10:11.01.

Name of person legally responsible for Class II operation (owner/operator),

Continental Resources INC

Address: PO Box 268870, Oklahoma City, OK, 73126

Telephone: (405) 234-9000

Local representative or contact person if different from above:

Name: Corey Irons

Address: 11583 S. Cave Hills Road, Buffalo, SD, 57720

Telephone: (605) 375-3731

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment.

Signature _____ Date 4/11/2022

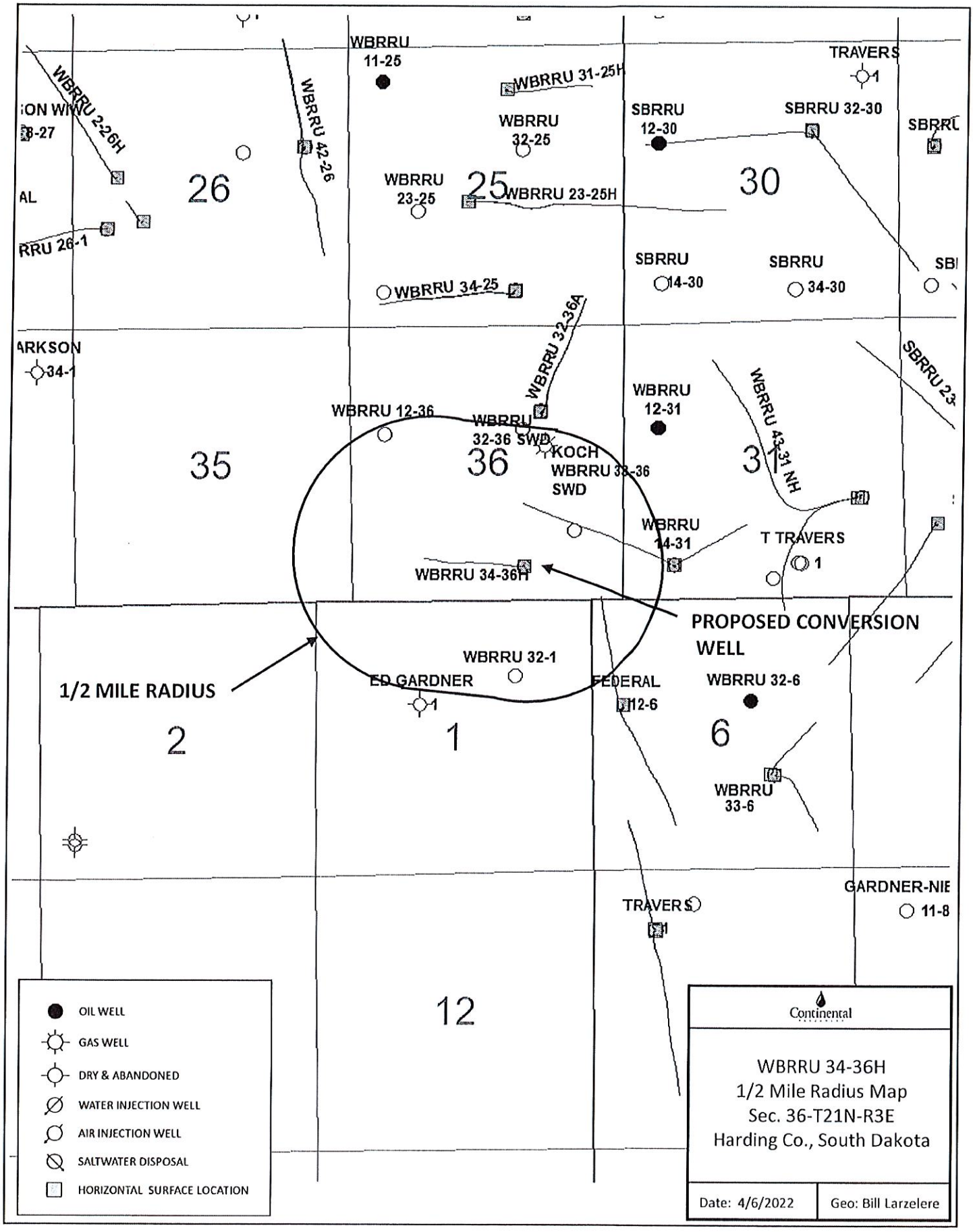
PETER MACINTYRE STAFF ENGINEER.
Printed Name of Person Signing Title

Subscribed and sworn before me this 11 day of April, 2022

Andrea F Riebel
Notary Public

My commission expires: 04/09/2025

(SEAL) ANDREA F. RIEBEL NOTARY # 09003230 EXP. 04/09/25 PUBLIC STATE OF OKLAHOMA


WBRRU 11-25
WBRRU 31-25H
WBRRU 2-26H
WBRRU 42-26
WBRRU 32-25
WBRRU 23-25
WBRRU 23-25H
TRAVERS 1
SBRRU 12-30
SBRRU 32-30
SBRRU 14-30
SBRRU 34-30
WBRRU 34-25
WBRRU 32-36A
WBRRU 12-36
WBRRU 32-36 SWD
KOCH WBRRU 33-36 SWD
WBRRU 12-31
WBRRU 43-31 NH
WBRRU 14-31
T TRAVERS 1
WBRRU 34-36H
PROPOSED CONVERSION WELL
1/2 MILE RADIUS
WBRRU 32-1
ED GARDNER 1
FEDERAL 12-6
WBRRU 32-6
WBRRU 33-6
TRAVERS 1
GARDNER-NIE 11-8
26
25
30
35
36
31
2
1
6
12
OIL WELL
GAS WELL
DRY & ABANDONED
WATER INJECTION WELL
AIR INJECTION WELL
SALTWATER DISPOSAL
HORIZONTAL SURFACE LOCATION
Continental
WBRRU 34-36H
1/2 Mile Radius Map
Sec. 36-T21N-R3E
Harding Co., South Dakota
Date: 4/6/2022
Geo: Bill Larzelere