

**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:**

**CASE NO. 15854
ORDER NO. R-14551**

**APPLICATION OF BLACK RIVER WATER MANAGEMENT COMPANY, LLC
TO AMEND ADMINSTRATIVE ORDER SWD-1682 FOR A SALT WATER
DISPOSAL WELL LOCATED IN EDDY COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on October 12, 2017, at Santa Fe, New Mexico, before Examiner Phillip R. Goetze.

NOW, on this 22nd day of January, 2018, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

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

(2) Black River Water Management Company, LLC (the "Applicant") seeks an order approving the modification of the tubing size for an Underground Injection Control (UIC) Class II well with an approved administrative order granting authority to inject. The UIC Class II well (the "Subject Well") is the Rustler Breaks SWD Well No. 2 (API No. 30-015-44240) authorized to inject under administrative order SWD-1682, issued July 7, 2017, with a surface location 1064 feet from the North line and 230 feet from the West line (Lot 4) in Section 6, Township 24 South, Range 28 East, NMPM, Eddy County, New Mexico.

(3) Applicant seeks a modification of the tubing size for the Subject Well by amending the administrative order to approve the use of 5½-inch tubing in the existing well. The Applicant stated the modification of the tubing size would result in a significant decrease of tubing friction while increasing the disposal capacity of the Subject Well.

(4) On November 3, 2017, the Applicant met with the Division and provided additional geologic and engineering data requested by the Examiner at the October

hearing. This presentation for the Examiner involved interpretations based on proprietary data. The Applicant summarized the presentations without the inclusion of the proprietary data and submitted affidavits of the interpretations for inclusion into the case file.

(5) Applicant appeared at the hearing through counsel and presented engineering evidence to the effect that:

- (a) the Applicant is an operator of multiple disposal wells in New Mexico in support of the oil and gas operations of MRC Energy Company;
- (b) the Subject Well has been completed as proposed in the application for administrative order SWD-1682;
- (c) based on Applicant's Form C-105 for the subject well, the final depths of the permitted open-hole injection interval extends from 13,680 feet to 14,716 feet below surface;
- (d) there is only one disposal well that penetrates the Devonian formation within a one-mile radius of the Subject Well, the Cigarillo SWD No. 1 (API No. 30-015-21643) which is approximately 0.9 mile northwest of the Subject Well;
- (e) the use of a larger 5½-inch tubing with BTC couplings will decrease friction loss by as much as 85 percent and provide for increased capacity for disposal of UIC Class II fluids into the deeper Devonian formation;
- (f) this additional capacity would increase disposal efficiency offsetting the need for new deep disposal wells to be completed in the same Devonian interval;
- (g) the Applicant performed numerous nodal analysis evaluations using a variety of injection rates and multiple tubing configurations which verified the selection of the 5½-inch tubing size;
- (h) the 5½-inch tubing size would allow an injection rate to increase from approximately 21,700 barrels of water per day (BWPD) to 38,000 BWPD with a relatively small increase in the reservoir pressure of less than two percent over the projected lifespan of disposal activity;
- (i) this small increase in the reservoir pressure with the proposed injection rate of 38,000 BWPD should not impact the reservoir pressures for similar disposal operations in the same formation located within two kilometers (1.24 miles) of the Subject Well;
- (j) the installation of 5½-inch, 20 pounds per foot (lb/ft) tubing (with 6.05-inch outside diameter (OD) couplings) inside of 7⅝-inch

(OD), 33.7 lb/ft casing (with an interior diameter of 6.765 inches) provides a difference in diameter of approximately 0.715-inch annular clearance at tubing couples and approximately 1.265 inches between the interior of the 7 $\frac{3}{8}$ -inch (OD) casing wall and the exterior wall of the 5 $\frac{1}{2}$ -inch tubing body;

- (k) the deviation log for the Subject Well showed a vertically straight completion with no abnormal departures (such as "doglegs") in the wellbore;
- (l) the proper well completion and the available annular space of the 5 $\frac{1}{2}$ -inch tubing inside 7 $\frac{3}{8}$ -inch production casing would be sufficient to allow the extraction of any lost tubing with standard fishing tools including overshot tools;
- (m) the Applicant provided additional reduction in the risk associated with unrecoverable tubing by extending the 7 $\frac{3}{8}$ -inch production casing to surface, thereby protecting tubing from external wellbore and formation fluids and eliminating potential interference from liner hangers; and
- (n) the Applicant provided notice of this application to "*affected persons*" by certified mail, return receipt requested and with publication in a newspaper of general circulation in the county. The list of affected persons was compiled from the parties notified in the Form C-108 application for administrative order SWD-1682.

(6) At the meeting on November 3, 2017, the Applicant provided supplemental evidence to the effect:

- (a) that based on the application of an industry-recognized, risk assessment model (the *Fault Slip Potential* software tool; Stanford Center for Induced and Trigger Seismicity; 2017) with Applicant's proprietary 3-D seismic data, there was an extremely low probability of any induced-seismic event occurring during the operational lifespan of injection activity for the Subject Well;
- (b) that the estimated radius of maximum injection fluid migration following 20 years of disposal operation would be greater than 0.5 mile but less than one mile; and
- (c) that as a result of the increased radius of fluid migration, the Applicant provided evidence of notification of this application to all "*affected persons*" within a one-mile radius of the Subject Well.

(7) No other party appeared at the hearing, or otherwise opposed the granting of this application.

The Division concludes as follows:

(8) The Division is responsible for the orderly development and production of hydrocarbon resources including the authority to regulate the disposition of produced water as described in NMSA 1978, Section 70-2-12(B)(15). It is obligated to prevent waste, to protect correlative rights, and to protect human health and the environment.

(9) The Division supports the use of Devonian and Silurian formations as suitable disposal intervals to lessen the potential impact upon production of hydrocarbon resources and associated correlative rights that occur in shallower Permian formations. The Division recognizes the necessity to increase the efficiency of these deeper disposal wells with their increased cost associated with the deeper disposal interval.

(10) Under Division Order No. R-14392 (Case No. 15654), the Division determined that the increase in tubing size and the corresponding increase in injection rates required additional information not previously incorporated into an administrative application for tubing modifications. This included, but was not limited to, the following specific subjects:

- (a) the potential cumulative impacts to a common injection interval utilized by multiple disposal wells in close proximity;
- (b) the consideration that the area of review for penetrating wells based on a one-half mile radius from the disposal well's surface location was adequate;
- (c) the consideration that the notification of affected persons based on a one-half mile radius from the disposal well's surface location was protective of correlative rights;
- (d) addressing the induced-seismicity issue, especially with regards to the potential impacts of increased injection volumes into reservoirs with faulting and the determination of a lower confining layer to ensure injection fluids do not migrate out the permitted interval; and
- (e) the use of the larger diameter tubing in UIC Class II wells and the development of "best management practices" for all future applications with similar requests.

(11) The Applicant offered evidence or testimony to sufficiently respond to the items of concerns brought forth by the Division in its findings in Division Order No. R-14392. This included expanding the area of reviews for penetration wells and notification and conducting a risk assessment for the potential of induced seismicity related to the Subject Well's operation with a larger disposal rate.

(12) The Division noted at hearing that these responses for this application are specific to a unique disposal well and, under current procedures, each similar application would be considered based on its own merits.

(13) To avoid the drilling of additional wells, protect correlative rights, and prevent waste while affording the Applicant the opportunity to fully utilize the disposal potential of the Subject Well in a manner that safeguards the public health and the environment, this application should be approved.

IT IS THEREFORE ORDERED THAT:

(1) The application by Black River Water Management Company, LLC (the "Operator") seeking the use of internally-coated, 5½-inch OD tubing in the Rustler Breaks SWD Well No. 2 (API No. 30-015-44240, the "Subject Well") with a surface location 1064 feet from the North line and 230 feet from the West line (Lot 4) in Section 6, Township 24 South, Range 28 East, NMPM, Eddy County, New Mexico, is hereby approved.

(2) The Division further stipulates the following "best management practices" shall be included as conditions of the approved application:

- (a) The Operator shall complete a step-rate test prior to commencing injection with the new tubing in place and after completing a successful mechanical integrity test.
- (b) The Subject Well shall be included in a Supervisory Control and Data Acquisition (SCADA) system for operation as an injection well.
- (c) The Operator shall first contact the Division's District II supervisor for approval of proposed remedial actions prior to initiating any recovery attempts should a failure of tubing occur with a loss of a tubing section within the Subject Well.
- (d) The Operator shall review the well performance every fifth calendar year (five-year cycle initiated with the commencement of injection with the new tubing size). This evaluation shall consider, at a minimum, any pressure increases in the reservoir, a review of the accuracy of induced-seismicity risk assessment model using data obtained during the operation of the Subject Well, and a brief summary of any issues that required modification of the well's operation.
- (e) The Operator shall submit all well tests and performance reports to Division's District II attached to a Form C-103 and made part of the well file for future availability.

(3) All provisions of this order shall be transferable and shall remain in full force and effect with any assignment of the Subject Well to a new operator.

(4) All other provisions of administrative order SWD-1682 remain in full force and effect.

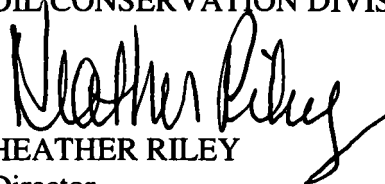
(5) Based on the current casing design, the Division shall not consider any future application for an increase in the tubing size greater than 5½-inch OD for the Rustler Breaks SWD Well No. 2.

(6) Jurisdiction of this case is retained for the entry of such further orders as the Division may deem necessary.

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



STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


HEATHER RILEY
Director