

**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 TO CONSIDER:**

**CASE NO. 22080
ORDER NO. R-21835**

**APPLICATION OF ARMSTRONG ENERGY CORPORATION FOR RE-
INSTATEMENT OF AUTHORIZATION TO INJECT FOR WATERFLOOD
OPERATIONS, LEA COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on August 5, 2021, at Santa Fe, New Mexico, before Examiners Kathleen Murphy and Baylen Lamkin.

NOW, on this 24th day of September 2021, the OCD Director, having considered the testimony, the record and the recommendations of the Examiners,

FINDS THAT:

- (1) Due public notice has been given, and the Division has jurisdiction of this case and of the subject matter.
- (2) On January 24, 2006, the Division issued Order No. R-12496, approving the statutory unitization of the Trinity Burrus Abo Unit ("Unit" or "Project") for secondary recovery. Order R-12496 authorized a previous operator to institute a waterflood project, designated as the Trinity Burrus Abo Unit Waterflood Project, in the Trinity-Wolfcamp Pool.
- (3) Armstrong Energy Corporation (Armstrong or the "Applicant") acquired the Unit in 2017 and had maintained waterflood operations within the Unit.
- (4) The Unit is comprised of the following described 1720 acres (more or less) of federal, state and fee lands located in Lea County, New Mexico:

TOWNSHIP 12 SOUTH, RANGE 38 EAST, NMPM

Section 15: SW/4 SE/4

Section 22: E2, E/2 W/2

Section 23: W/2, W/2 E/2

Section 26: W/2 W/2, NE/4 NW/4, SE/4 SW/4

Section 27: E/2, E/2 W/2

(5) Armstrong's injection authority inadvertently lapsed in May 2020 for the 11 wells listed below:

	Well Name (API: 30-025-XXXXX)	Location within T 12S-R 38E	Injection Interval
1	Trinity Burrus Abo Unit #004 (35817)	2310 FSL & 1210 FEL, UL I, Sec. 22	9050'- 9078'
2	Trinity Burrus Abo Unit #005 (36451)	2310 FNL & 1650 FWL, UL F, Sec 23	9056'- 9091'
3	Trinity Burrus Abo Unit #006 (35937)	330 FSL & 2310 FWL, UL N Sec 22	9035'- 9087'
4	Trinity Burrus Abo Unit #011 (36038)	1650 FSL & 2310 FWL, UL K, Sec 22	9030'- 9080'
5	Trinity Burrus Abo Unit #013 (36018)	2310 FNL & 990 FEL, UL H, Sec 22	9052'-9086'
6	Trinity Burrus Abo Unit #016 (36251)	1980 FSL & 660 FWL, UL L, Sec 23	9014'- 9062'
7	Trinity Burrus Abo Unit #018 (36450)	1650 FSL & 2200 FEL, UL J, Sec 23	9150'-9184'
8	Trinity Burrus Abo Unit #021 (30106)	330 FSL & 1650 FWL, UL N, Sec 23	9110'- 9144'
9	Trinity Burrus Abo Unit #025 (36248)	2310 FSL & 330 FEL UL I, Sec 27	9086'- 9128'
10	Trinity Burrus Abo Unit #026 (35985)	330 FNL & 2000 FEL, UL B, Sec 27	9036'- 9094'
11	Trinity Burrus Abo Unit #028 (37254)	2240 FSL & 2310 FWL. UL K, Sec 27	9078'- 9126'

(6) Production did not lapse in the Unit during this time period.

(7) All of the above wells were initially oil producers in the Trinity:Wolfcamp pool (Pool Code 59890) within the Wolfcamp formation.

(8) In 2006, the Trinity Burrus Abo Unit #005, #011, #013, #018, and #021 wells were converted to injection under the authorization of Order No. R-12496 establishing the Unit waterflood project. In 2007, the Trinity Burrus Abo Unit #004 well was converted to injection and included within the waterflood project under Administrative Order WFX-830. In 2007, the Trinity Burrus Abo Unit #016 and Trinity Burrus Abo Unit #028 wells were also converted to injection and included in the waterflood project under Administrative Order WFX-831. In 2010 the Trinity Burrus Abo Unit #006 and Trinity Burrus Abo Unit #025 wells were converted to injection and

included in the waterflood project under Administrative Order WFX-862. In 2010 the Trinity Burrus Abo Unit #026 well was converted to injection and included in the waterflood project under Administrative Order WFX-878.

(9) In 2011, the Trinity Burrus Abo Unit #005 and Trinity Burrus Abo Unit #011 wells were approved for surface pressure increase under Administrative Order IPI-398.

(10) Armstrong now seeks an order to reactivate the permits allowing injection into the above listed eleven wells, for purposes of waterflooding into the Trinity Burrus Abo Unit Waterflood Project.

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

(a) The Unit is comprised of 30 separate tracts totaling 1720 acres of which 1200 acres are Private (66%), 480 acres are State trust lands (26 %) and 120 acres are federal acres (6 %). At the time of the Unit authorization order (R-12496) in 2006, 94% of working interest owners and 91% of royalty owners were committed to the Unit.

(b) In accordance with R-12496 the unitized interval is 9063 to 9131 measured depth. The perforated injection interval in the 11 wells ranges from 9014 to 9184 feet within the Wolfcamp formation. The wells will inject fluids through a plastic-lined, 2.375-inch tubing set in a packer that is within 100 feet of the top perforation. Water will be injected thru perforations in a closed system. All wells will be acidized with a 15% HCL solution. The wells will be adequately equipped for injection and the construction of the wells will adequately protect fresh water and other hydrocarbon bearing zones.

(c) The source of the water to be injected will be produced water from other Wolfcamp formation wells drilled on the leases within the unit. A produced water analysis was provided in the C-108 application. Applicant does not expect any water compatibility issues.

(d) The Burrus Pay in the Trinity Wolfcamp Pool is the lowermost unit of the dolomitized Abo carbonate shelf that lies immediately above the Wolfcamp limestone. The Burrus Pay is a dolomitized carbonate which is sealed by low porosity and low permeability anhydrite zones both above and below that will prevent migration of fluids out of the injection zone. Productive porosity ranges from 8% to 12%. The injection interval is consistent and continuous across the Unit. There are no open faults of hydrological connection between the proposed Wolfcamp injection interval and underground sources of drinking water.

(e) There are two freshwater wells within 1-mile of the project wells. Applicant provided analyses from these two water wells.

(f) The expected maximum injection pressure will be 1,800 psig.

(g) The maximum daily injection rate will be 1,000 BWPD.

(h) Applicant identified approximately 80 wells within the ½ mile area of review of the 11 wells that penetrate the injection interval and provided detailed wellbore information for the P&A wells. Some of these may be duplicates due to proximity of wells.

(i) The Applicant states that the Burrus Pay is confined by an upper and lower low porosity and permeability anhydrite zone which will keep the injected fluids from migrating out of the formation.

(j) The proposed construction of the subject wells will isolate and protect the underground sources of drinking water (USDWs) identified as the Ogallala Aquifer Area from any disposal activities by the subject wells. The Ogallala Aquifer is located at a depth of approximately 35 to 125 feet depth.

(k) Applicant agreed to provide an annual plan of operation for the Project.

(l) The Applicant provided evidence of notification of this application to all "affected persons" within a one-mile radius of both the surface and bottom-hole locations of the Subject Wells, and also a notice of publication in a newspaper of general circulation in the county.

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

The Division concludes as follows:

(13) The application has been duly filed under the provisions of Division Rule 19.15.26.8 NMAC and Armstrong has presented satisfactory evidence that all requirements prescribed in Division Rule 19.15.26.8 NMAC have been met.

(14) The construction plans for the wells provided in the application are protective of USDWs.

(15) All wells that penetrate the proposed injection interval within a one-half mile AOR are adequately cased and cemented to isolate and confine the injected fluid within the permitted injection interval.

(16) 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.

(17) To prevent waste of oil and gas and protect correlative rights, the re-instatement of the project should be approved.

ORDER

- (1) Armstrong Energy Corporation is hereby authorized to implement enhanced oil recovery operations within an existing project, the Trinity Burrus Abo Unit in the Trinity:Wolfcamp Pool, (Pool Code 59890) at true vertical depths of ranging from 9014 to 9184 feet through 11 of its injection wells.
- (2) The project is comprised of the above described 1720 acres (more or less) of federal state and fee lands located in Lea County, New Mexico.
- (3) Armstrong is further authorized to inject produced water into the Wolfcamp formation, through the eleven wells, as described above.
- (4) Each of the wells is limited to a maximum injection rate of no more than 1,000 barrels of water per day (BWPD).
- (5) The Administrative Order IPI-398 is void due to the loss of injection authority. Applicant may re-submit step rate test results for surface pressure increase for the #005 and #011 wells provided the tubing size, packer setting depths and perforation depths have not changed from the original step rate test date.
- (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 to other formations or onto the surface from injection, production, or plugged and abandoned wells.
- (7) The injection wells shall be equipped with a pressure control device or acceptable substitute that will limit the maximum surface injection pressure to no more than 1,800 pounds per square inch (psi) for produced water.
- (8) The OCD Director shall have the authority to administratively authorize an increase in injection pressure upon a showing supported by an approved Step-Rate Tests (using only water) that such higher pressure will not result in fracturing of the injection formation or confining strata.
- (9) The operator shall provide written notice on Form C-103 to OCD E-Permitting and notify the OCD Engineering Bureau by email of the submittal at least 72 hours in advance 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.
- (10) Injection shall be accomplished through 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 uppermost injection perforations. The limit for the upper placement of the packer in the production casing shall be no greater than 100 feet above the true vertical depth of the uppermost perforation.
- (11) The casing-tubing annulus shall be filled with an inert fluid. Operator shall continuously monitor the annulus including a gauge attached to the annulus in order to detect leakage in the casing, tubing or packer.

(12) The injection wells shall pass a mechanical integrity test prior to recommencement of injection under this Order and prior to resumption of injection each time the packer 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.

(13) The operator shall immediately notify the appropriate OCD Inspections Supervisor and OCD Engineering Bureau by email 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. If the monitoring system indicates communication of the tubing with the annulus due to loss of mechanical integrity, the operator shall immediately proceed to shut-in the injection well and notify the appropriate OCD Inspections Supervisor and OCD Engineering Bureau by email.

(14) The injection wells shall be monitored with a SCADA system and the operator shall ensure that additional sensor systems for each injection well, as proposed in the C-108 application, are installed and monitored.

(15) The operator shall provide written notice using Form C-103 to OCD E-Permitting and notify the OCD Engineering Bureau by email of the submittal no later than two (2) business days following the date on which injection commenced into the Wells.

(16) The 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.

(17) The injection authority granted herein shall terminate one year 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 one-year time period, may grant an extension for good cause.

(18) The injection authority granted herein shall be subject to 19.15.26.12(C)(1) NMAC [Abandonment of injection authority]. If necessary due to operational requirements that all injection wells in the Project are simultaneously not injecting for a continuous one-year period, the operator shall maintain the injection authority of the Order by requesting an extension as provided in 19.15.26.12(C)(2) NMAC.

(19) The OCD Director may administratively authorize alternative or additional injection wells within this lease as provided in 19.15.26.8 NMAC.

(20) 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.

(21) The operator shall provide written notice to the OCD upon permanent cessation of injection into the Project.

(22) 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.

(23) 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.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read 'Adrienne Sandoval', written in a cursive style.

Adrienne Sandoval
OCD Director