

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 OXY USA, INC. FOR AUTHORIZATION TO CONDUCT A
PRESSURE MAINTENANCE PROJECT IN THE OLD MILLMAN RANCH-
BONE SPRING POOL THROUGH ITS GOVERNMENT AB WELL NO. 9, EDDY
COUNTY, NEW MEXICO

CASE NO. 14790
ORDER NO. R-11328-B

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on January 19, 2012, at Santa Fe, New Mexico before Examiner William V. Jones.

NOW, on this 16th day of February, 2012, 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 its subject matter.

(2) OXY USA, Inc. ("Applicant") seeks approval to implement pressure maintenance operations by injection of lease produced water into the Bone Spring formation within the following 160 acres, more or less, within Eddy County, New Mexico:

Township 20 South, Range 28 East, NMPM

Section 3: S/2 SE/4 (Government S Lease, NM 9819)
Section 10: N/2 NE/4 (Government AB Lease, NM 15003)

(3) The project would initially consist of one injection well ("Subject Well") and three producing wells as follows:

30-015-27839	Government S Well No. 3	Producer	Unit letter O, Sec 3
30-015-27964	Government AB Well No. 9	<u>Injection</u>	Unit letter A, Sec 10
30-015-27863	Government AB Well No. 8	Producer	Unit letter B, Sec 10

(4) The vertical extent of the proposed Pressure Maintenance Project underlying the Government AB and Government S Lease Areas is the productive interval within the First Bone Spring Sand formation. The Bone Spring formation top is at approximately 4600 feet and it extends to the Wolfcamp formation at approximately 8500 feet. Injection is proposed into the Government AB Well No. 9 from 6378 to 6619 feet.

(5) OXY presented exhibits and testimony from a landman and engineer indicating the following:

(a) All tracts of lands, at depths of the Bone Spring formation, within one half mile of the Subject Well are controlled by Applicant.

(b) Notice was provided to the Carlsbad Field Office of the U.S. Bureau of Land Management ("BLM") as mineral lessor and as surface owner at the surface location of the Subject Well.

(c) The Project Area is composed of two different federal leases, with OXY or an affiliate owning 100 percent of the working interests.

(d) The Bone Spring formation in this area dips gently to the southeast.

(e) Within one half mile of the Subject Well, the only producing wells within the Bone Spring are located to the north and west.

(f) The Government S Well No. 7 located on a 40-acre oil spacing unit north-northwest of the Subject Well has experienced production response from previous injection into the Subject Well.

(g) This reservoir has yielded a very small percentage of original oil in place from primary recovery. However, the reservoir is expected to respond to water injection and the future secondary oil recovery as a result of injection is estimated by OXY at approximately twice the ultimate primary.

(h) The operator intends to only use the proposed injection well for re-injection of produced water. The source of this produced water is expected to be from the Bone Spring production wells within this project area.

(i) Injection volumes are expected to be approximately 500 barrels of water per day and the well will likely take this water on a vacuum – based on its previous history.

(j) The Subject Well is currently temporarily abandoned with a cast iron bridge plug over the Bone Spring perforations. Applicant intends to drill out the bridge plug, run tubing and packer and commence injection.

(k) The fresh water aquifer in this area is estimated to extend to 60 feet below surface.

(l) All wells within the one half mile area of review are adequately cemented in order to isolate the injection to the intended injection interval. There are no faults or conduits which could transport injected waters out of the injection interval. Any fresh water sands will be protected from this injection operation, and fresh water will not be endangered.

(6) The Government AB Well No. 9 was drilled in 1994 and completed as an oil well in the First Bone Spring Sand formation. On February 16, 2000, this well was approved for Salt Water Disposal purposes by Order No. R-11328 in Case No. 12265. A secondary purpose, stated in the Findings in Order No. R-11328, for converting this well to disposal was to test the oil leg of this reservoir for response to water injection.

(7) That Order as well as subsequent Order No. R-11328-A issued on May 21, 2001, allowed disposal into the Subject Well, but required extensive bradenhead monitoring and reporting due to low cement tops on offsetting wells Government S Well No. 2 located in Unit letter O of Section 3 and Government AB Well No. 2 located in Unit letter I of Section 10.

(8) The Area of Review inspection during this Case No. 14790 presented January 19, 2012, shows both these wells have been repaired by squeeze cementing operations.

(9) The subject well appears to be adequately cased and cemented, in order to confine injection to the proposed interval. Within the Area of Review, all six active wells penetrating the target depth appear to be adequately cased, cemented, or plugged to prevent movement of injection fluids out of zone and to protect any underground sources of drinking water.

(10) The proposed Government AB Lease Pressure Maintenance Project is wholly contained within the Old Millman Ranch-Bone Spring Associated Pool (Pool Code 48035). This pool was first an oil pool then was reclassified to an "associated" pool. Order No. R-5353-M-1 issued in Case No. 10556 (reopened) reviews the history and provides a concise record of the current thinking of reservoir engineers and geologists concerning this reservoir. The limiting Gas Oil Ratio ("GOR") was set at 5,000 cubic feet of gas per barrel of oil, and oil well spacing and proration units were set at 40 acres. Gas wells (defined as wells producing over 30,000 cubic feet of gas per barrel of oil in Associated Pools) exist updip or northwest of the oil wells in this reservoir. The drive mechanism is solution gas drive and the reservoir fluids can be considered as gas-condensate.

(11) OXY USA WTP Limited Partnership (OGRID 192463), ("OXY") is the operator of record of the wells located on this acreage. OXY is in compliance with Division Rule 19.15.5.9 NMAC and therefore eligible for approval of disposal and injection permits.

(12) The BLM as royalty owner has expressed concern about possible movement of minerals off federal lands as a result of this proposed injection. The BLM did not appear at the hearing but submitted a document stating its position to be included in the case file.

(13) Based on the geologic interpretation presented with this case and the fact that the only surrounding production lies to the north and northwest, lands offsetting this proposed injection to the east and southeast are most likely not productive from the targeted Bone Spring sands. Waters injected into the Subject Well will move through the reservoir towards the pressure sink caused by the producing wells and not move east and southeast.

(14) The applicant has notified affected parties of the intent to inject into the proposed injection well. No other parties appeared in this case or otherwise opposed this application.

(15) The proposed Pressure Maintenance Project within this lease is feasible and should result in the recovery of additional oil and gas that would not otherwise be recovered. Additionally, water hauling costs from this lease will be reduced, extending the life of the production wells.

(16) The estimated additional costs of the proposed Pressure Maintenance operations will not exceed the estimated value of the additional oil and gas recovered plus a reasonable profit.

(17) The proposed project will prevent waste, protect correlative rights, and should be approved and called the Old Millman Federal Cooperative Lease Pressure Maintenance Project. The Project Area should include portions of two separate federal leases consisting of 160 acres, more or less, located in the N/2 NE/4 of Section 10 and the S/2 SE/4 of Section 3.

(18) OXY should be approved to inject into the First Bone Spring Sand formation within the Government AB Well No. 9 from depths of 6378 to 6619 feet.

(19) Provisions should be made for the operator of this Project Area to apply administratively for additional or alternative injection wells as needed.

IT IS THEREFORE ORDERED THAT:

(1) OXY USA WTP Limited Partnership ("OXY") is hereby authorized to implement pressure maintenance operations within the Project Area as defined below by

injection of produced water into the productive interval of the 1st Bone Spring Sand formation, Old Millman Ranch-Bone Spring Associated (Oil) Pool (Pool Code 48035).

(2) The acreage approved as the "Project Area" consists of portions of two federal leases totaling 160 acres, more or less, defined as follows:

Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico

Section 3: S/2 SE/4 (Government S Lease, NM 9819)

Section 10: N/2 NE/4 (Government AB Lease, NM 15003)

(3) OXY is approved to utilize the Government AB Well No. 9 (API No. 30-015-27964) located on the surface at 330 feet from the North line and 230 feet from the East line (bottomhole location 772 feet from the North line and 660 feet from the East line, Unit letter A, of Section 10, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico), for injection of produced water (UIC Class II only) into the Bone Spring formation from 6378 feet to 6619 feet for purposes of pressure maintenance.

(4) The Division Director may administratively authorize an alternative injection well or additional injection wells within this Project Area as provided in 19.15.26.8F. NMAC.

(5) The Old Millman Federal Cooperative Lease Pressure Maintenance Project is hereby approved and shall initially consist of one injection well and three producing wells, all contained in the 160-acre Project Area.

(6) The operator of the project shall be OXY USA WTP Limited Partnership (OGRID 192463).

(7) Operator shall take all steps necessary to ensure that the injected fluid enters only the disposal interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(8) Injection into any approved injection well or wells within this project shall be accomplished through plastic-lined tubing installed in a packer located within 100 feet of the uppermost injection perforation. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be attached to the annulus in order to detect any leakage in the casing, tubing, or packer.

(9) The injection well or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the maximum surface injection pressure to 1276 psi. In addition, the injection well or system 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.

(10) 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 target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate-Test.

(11) All approved injection wells shall pass an initial mechanical integrity test ("MIT") prior to initially commencing injection and prior to resuming injection each time the packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC.

(12) The operator shall provide notice, 72 hours in advance, to the supervisor of the Division's Artesia district office of the date and time of the installation of injection equipment and of any mechanical integrity test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of injection to the Division's district 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.

(13) Without limitation on the duties of the operator as provided in Division Rules 19.15.29 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 any injection well, or of any leakage or release of water, oil or gas from 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.

(14) 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.

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

(16) The injection authority granted herein shall terminate:

- a. Two years after the effective date of this order if the operator has not commenced injection operations into the Subject Well; or
- b. One year after the last date of reported injection into any injection well in this Project Area.

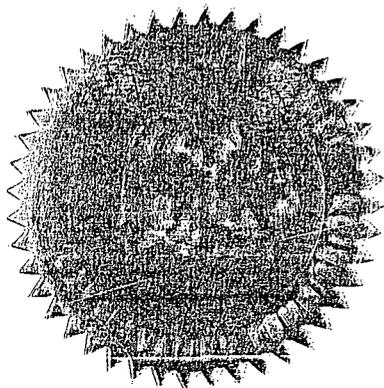
(17) In either such event, the Division shall consider the well or Project Area abandoned, and the authority to inject will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

(18) 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.

(19) 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 without prior notice and hearing in case of emergency), terminate the injection authority granted herein.

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



SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

—JAMI-BAILEY—
Director