

State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Michelle Lujan Grisham**  
Governor

**Sarah Cottrell Propst**  
Cabinet Secretary

**Dylan M. Fuge**  
Deputy Secretary

**Dylan M. Fuge**, Division Director (Acting)  
**Oil Conservation Division**



**BY ELECTRONIC MAIL ONLY**

Alicia Fulton  
Apache Corporation  
E-mail: [alicia.fulton@apachecorp.com](mailto:alicia.fulton@apachecorp.com)

**Re: Injection Pressure Increase: Order IPI-544  
West Blinebry Drinkard Unit (WBDU) Waterflood Project  
Division Order No. R-12981 as Amended  
Lea County, New Mexico**

Greetings Alicia Fulton:

Reference is made to your request on behalf of Apache Corporation (OGRID 873; “operator”) for the application received on August 10, 2023, to increase the maximum allowed surface injection pressure (“MASIP”) based on step-rate test (“SRT”) results which support a MASIP of 1439 pounds per square inch (“psi”) be applied to the 33 injection wells in the designated WBDU North area (Exhibit A) and 20 injection wells in the designated WBDU South area (Exhibit B). The current MASIP is 1120 psi, or a calculated pressure using 0.2 psi per foot of depth to the uppermost perforation, whichever is less, as it is stipulated in Ordering Paragraph (13) of Order No. R-12981.

It is the Oil Conservation Division’s (“OCD”) understanding that the requested pressure increase is needed to increase the rate of injection and this pressure increase will not result in:

1. the fracturing of the permitted disposal interval.
2. the fracturing of either the upper or lower confining strata; or
3. induced-seismic events as a consequence of the higher injection pressure.

Based on the results of the submitted SRTs on 53 wells of the two areas, the wells in the south WBDU area of Drinkard formation are up-dip and have lower parting pressures while the wells in the north WBDU area of Drinkard formation are deeper with higher overburden pressure have higher formation parting pressures (See attached Exhibit 3 depicting SRT fracture pressures mapped along north/south divide line of WBDU unit of Drinkard formation).

Both the north and south areas of the Drinkard formation of WBDU are hydrologically connected. Due to the hydraulic connection of wells between the north and south of WBDU of Drinkard formation, OCD has determined that the well with the lowest parting formation pressure, which is 1439 psi, will dictate the parting-pressure gradient assigned to the entire WBDU waterflood unit wells listed below. Therefore, a MASIP of 1439 psi shall be the new pressure limit for WBDU

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North/South wells listed in the attached Exhibits A and B while equipped with tubing as stipulated in Division Order R-12981 as amended.

This approval is based on the provision that the tubing size, packer setting depth and completion interval for the well does not change and all provisions in IPI-544 are adhered. Any future requested pressure increase will require resubmission of additional data and/or a new SRT. The Director retains the right to require, at any time, wireline verification of completion and packer setting depths in the well. This approval is subject to your being in compliance with all other OCD rules including, but not limited to, Rule 19.15.5.9 NMAC.

The Director may rescind any injection pressure increase permit if it becomes apparent that the injected fluid is not being confined to the permitted disposal interval, impacts correlative rights, is endangering any freshwater aquifer or endangers public health and safety.

Sincerely,

  
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**DYLAN M. FUGE**  
**DIRECTOR (Acting)**  
DMF/ mgm

**Date:** 12/4/23

cc: Well files for wells in Exhibits A and B  
Case file for Case Nos. 14125 and 14126

**Attachments:** Exhibit A: New MASIP for Injection Wells in South WBDU Area  
Exhibit B: New MASIP for Injection Wells in South WBDU Area  
Exhibit C: A Map Depicting Step-Rate Test Fracture Pressures Mapped Along  
North/South Divide Line of WBDU Areas of Drinkard Formation

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| Exhibit "A" WBDU<br>North Approved New<br>IP for 33 Wells |           |                     |                                     |                                 |
|---|-----------|---------------------|-------------------------------------|---------------------------------|
| API   | Well Name | Injection Authority | Current Injection<br>pressure (Psi) | New Injection<br>pressure (Psi) |
| 3002506442  | WBDU #005 | R-12981-A           | 1120                                | 1439                            |
| 3002506443  | WBDU #006 | A-12981-A           | 1120                                | 1439                            |
| 3002506397  | WBDU #008 | A-12981-A           | 1120                                | 1439                            |
| 3002506444  | WBDU #009 | A-12981-A           | 1120                                | 1439                            |
| 3002506445  | WBDU #010 | A-12981-A           | 1120                                | 1439                            |
| 3002506432  | WBDU #020 | A-12981-A           | 1120                                | 1439                            |
| 3002506440  | WBDU #021 | A-12981-A           | 1120                                | 1439                            |
| 3002521225  | WBDU #023 | A-12981-A           | 1120                                | 1439                            |
| 3002526967  | WBDU #026 | A-12981-A           | 1120                                | 1439                            |
| 3002506437  | WBDU #032 | A-12981-A           | 1120                                | 1439                            |
| 3002506438  | WBDU #033 | A-12981-A           | 1120                                | 1439                            |
| 3002509909  | WBDU #034 | A-12981-A           | 1120                                | 1439                            |
| 3002509910  | WBDU #035 | A-12981-A           | 1120                                | 1439                            |
| 3002509908  | WBDU #036 | A-12981-A           | 1120                                | 1439                            |
| 3002506439  | WBDU #077 | WFX-913 (R-12981)   | 1120                                | 1439                            |
| 3002509906  | WBDU #038 | A-12981-A           | 1120                                | 1439                            |
| 3002506441  | WBDU #039 | A-12981-A           | 1120                                | 1439                            |
| 3002506433  | WBDU #075 | WFX-913 (R-12981)   | 1120                                | 1439                            |
| 3002506434  | WBDU #041 | A-12981-A           | 1120                                | 1439                            |
| 3002520178  | WBDU #042 | A-12981-A           | 1120                                | 1439                            |
| 3002506623  | WBDU #057 | A-12981-A           | 1120                                | 1439                            |
| 3002506628  | WBDU #060 | WFX-955 (R-12981)   | 1120                                | 1439                            |
| 3002506629  | WBDU #040 | WFX-913 (R-12981)   | 1120                                | 1439                            |
| 3002506642  | WBDU #065 | WFX-962 (R-12981)   | 1120                                | 1439                            |
| 3002542495  | WBDU #185 | WFX-925(R-12981)    | 1120                                | 1439                            |
| 3002539574  | WBDU #137 | WFX-857 (R-12981)   | 1120                                | 1439                            |
| 3002506396  | WBDU #138 | A-12981-A           | 1120                                | 1439                            |
| 3002541547  | WBDU #178 | WFX-924-0 (R-12981) | 1120                                | 1439                            |
| 3002543780  | WBDU #183 | WFX-970 (R-12981)   | 1120                                | 1439                            |
| 3002543804  | WBDU #184 | WFX-972 (R-12981)   | 1120                                | 1439                            |
| 3002542493  | WBDU#192  | WFX-925(R-12981)    | 1120                                | 1439                            |
| 3002542569  | WBDU#130  | WFX-925(R-12981)    | 1120                                | 1439                            |
| 3002542494  | WBDU #185 | WFX-925(R-12981)    | 1120                                | 1439                            |

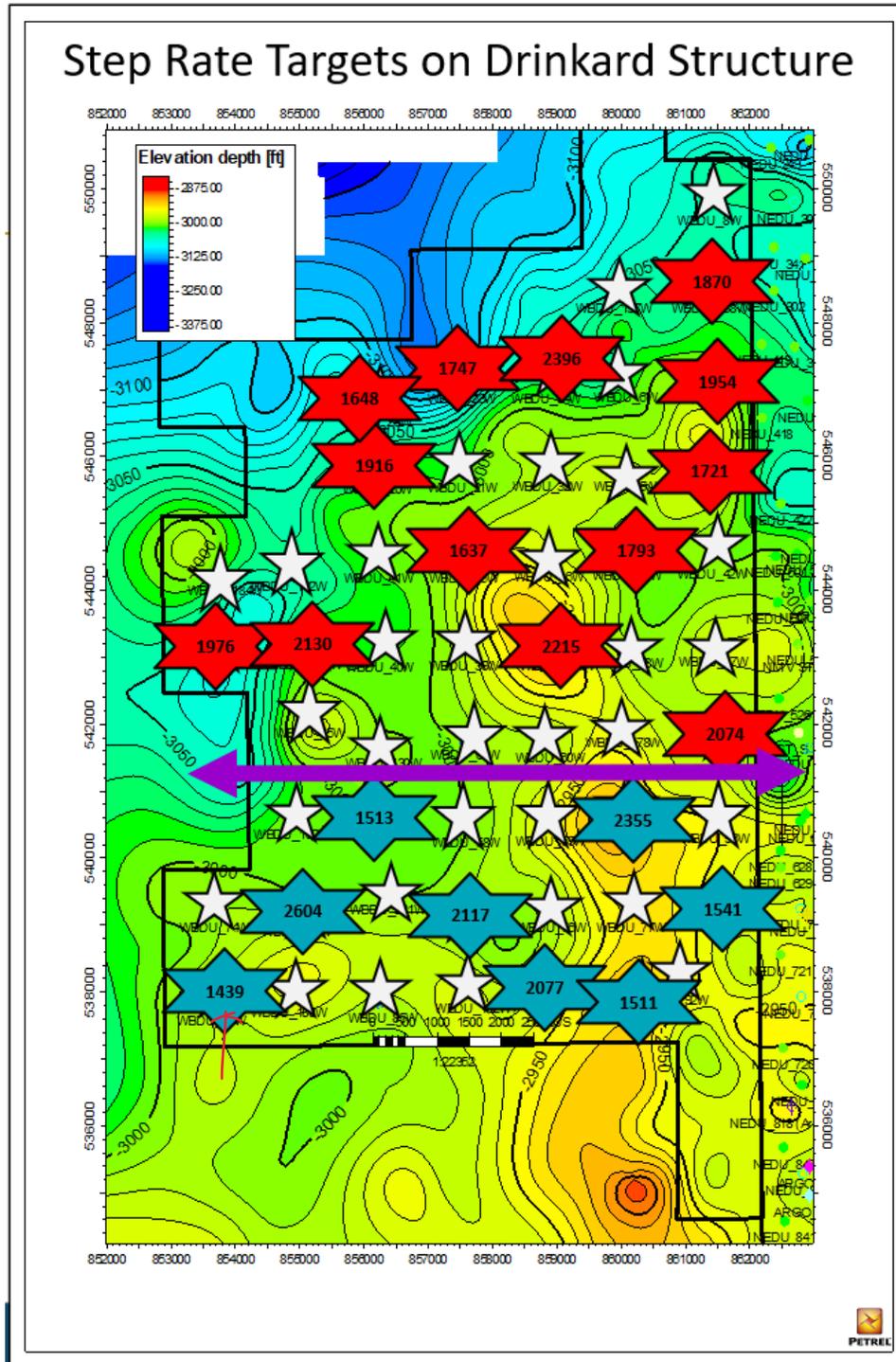
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|            |           |                       | Exhibit "B" WBDU<br>South Approved<br>New IP for 20 Wells |                              |  |
|------------|-----------|-----------------------|---|------------------------------|--|
| API        | Well Name | Injection Authority # | Current<br>Injection<br>pressure                          | New<br>Injection<br>pressure |  |
| 3002506621 | WBDU #59  | WFX-913 (R-12981)     | 1120  | 1439                         |  |
| 3002506625 | WBDU #61  | WFX-913 (R-12981)     | 1120  | 1439                         |  |
| 3002506626 | WBDU #56  | WFX-913 (R-12981)     | 1120  | 1439                         |  |
| 3002506645 | WBDU #72  | WFX-962 (R-12981)     | 1120  | 1439                         |  |
| 3002506647 | WBDU #74  | WFX-962 (R-12981)     | 1120  | 1439                         |  |
| 3002506615 | WBDU #66  | WFX-913 (R-12981)     | 1120  | 1439                         |  |
| 3002506616 | WBDU #76  | WFX-955 (R-12981)     | 1120  | 1439                         |  |
| 3002506618 | WBDU #61  | WFX-913 (R-12981)     | 1120  | 1439                         |  |
| 3002506619 | WBDU #78  | WFX-955 (R-12981)     | 1120  | 1439                         |  |
| 3002506652 | WBDU #85  | WFX-962 (R-12981)     | 1120  | 1439                         |  |
| 3002506643 | WBDU #87  | WFX-964 (R-12981)     | 1120  | 1439                         |  |
| 3002537535 | WBDU #92  | WFX-952 (R-12981)     | 1120  | 1439                         |  |
| 3002543229 | WBDU #145 | WFX-959 (R-12981)     | 1120  | 1439                         |  |
| 3002541543 | WBDU #152 | WFX-922 (R-12981)     | 1120  | 1439                         |  |
| 3002541549 | WBDU #154 | WFX-921 (R-12981)     | 1120  | 1439                         |  |
| 3002541548 | WBDU #168 | WFX-923-B (12981)     | 1120  | 1439                         |  |
| 3002543528 | WBDU #179 | WFX-965 (R-12981)     | 1120  | 1439                         |  |
| 3002543529 | WBDU #180 | WFX-968 (R-12981)     | 1120  | 1439                         |  |
| 3002543530 | WBDU #182 | WFX-968 (R-12981)     | 1120  | 1439                         |  |
| 3002542496 | WBDU #221 | WFX-967 (R-12981)     | 1120  | 1439                         |  |



Exhibit 3



The above map shows the WBDU step rate test fracture injection pressures, plotted on the Drinkard formation map colored by top depth. It is noticeable that multiple SRTs in the south of WBDU, which is up-dip and has a shorter injection history, has multiple lower parting pressures around 1500 PSI—with a minimum of 1439 PSI. In the north, where more tests were taken, the lowest parting pressures are nearer to 1700 PSI—with a minimum of 1648 PSI. As such, it will be safe to inject at higher pressures in the north of the field, and Apache requests two raised limits, divided across the purple line.

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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 396073

**CONDITIONS**

|   |  |
|---|--|
| Operator:<br>APACHE CORPORATION<br>303 Veterans Airpark Ln<br>Midland, TX 79705 | OGRID:<br>873  |
|   | Action Number:<br>396073                                       |
|   | Action Type:<br>[IM-SD] Admin Order Support Doc (ENG) (IM-AAO) |

**CONDITIONS**

| Created By    | Condition | Condition Date |
|---------------|-----------|----------------|
| mgebremichael | None      | 10/26/2024     |