

State of New Mexico
Energy, Minerals and Natural Resources Department

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

**Re: Injection Pressure Increase: Order IPI-544
West Blinbry 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,



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 North Approved New IP for 33 Wells			
API	Well Name	Injection Authority	Current Injection pressure (Psi)	New Injection 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

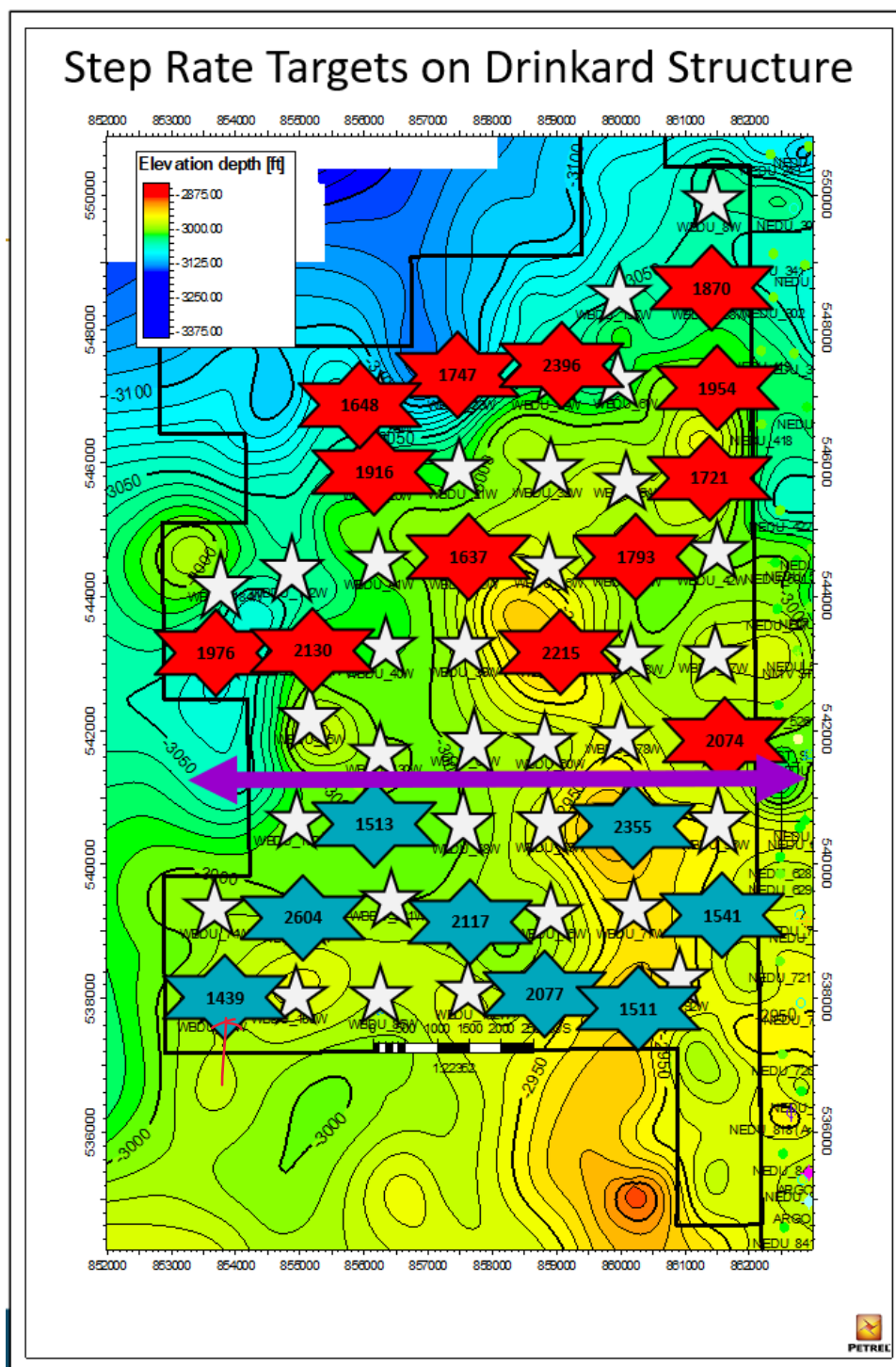
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		Exhibit "B" WBDU South Approved New IP for 20 Wells		
API	Well Name	Injection Authority #	Current Injection pressure	New Injection pressure
3002506621	WBDU #59	WFX-913 (R-12981)	1120	1439
3002506625	WBDU #61	WFX-913 (R-12981)	1120	1439
3002506626	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.
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CONDITIONS

Action 396073

CONDITIONS

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

CONDITIONS

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