

**STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION**

**APPLICATION OF GOODNIGHT
MIDSTREAM PERMIAN LLC FOR APPROVAL
OF A SALTWATER DISPOSAL WELL,
LEA COUNTY, NEW MEXICO.**

COMM. CASE NO. 24123

**APPLICATIONS OF GOODNIGHT
MIDSTREAM PERMIAN LLC FOR APPROVAL
OF SALTWATER DISPOSAL WELLS,
LEA COUNTY, NEW MEXICO.**

DIV. CASE NOS. 23614-23617

**APPLICATION OF GOODNIGHT
MIDSTREAM PERMIAN, LLC TO AMEND
ORDER NO. R-22026/SWD-2403 TO INCREASE
THE APPROVED INJECTION RATE IN ITS
ANDRE DAWSON SWD #1,
LEA COUNTY, NEW MEXICO.**

DIV. CASE NO. 23775

**APPLICATIONS OF EMPIRE NEW MEXICO LLC
TO REVOKE INJECTION AUTHORITY,
LEA COUNTY, NEW MEXICO.**

DIV. CASE NOS. 24018-24020, 24025

**EMPIRE'S RESPONSE TO OCD'S EMERGENCY MOTION TO VACATE AND
CONTINUE THE SEPTEMBER 23-27, 2024 SETTING AND TO VACATE THE
SCHEDULING ORDER IN THE ABOVE-CAPTIONED MATTERS**

Empire New Mexico LLC ("Empire") hereby responds to the Oil Conservation Division's ("Division") Emergency Motion to Vacate and Continue the September 23-27, 2024 Setting and to Vacate the Scheduling Order in the Above-Captioned Matters. The Motion should be denied for at least four reasons. *First*, the Division agreed to this September setting almost four months ago and, at the request of the Division, the Commission narrowed the scope of the hearing to two discrete issues. *Second*, a further delay in resolving the issues to be heard in September will result in substantial adverse impact to all interest owners in the Eunice Monument South Unit ("EMSU"), including the State of New Mexico, the Bureau of Land Management, and other private mineral

interest owners, in addition to Empire. *Third*, the Division's limited role as a non-moving party that has not filed any evidence relevant to the limited issues being decided at the September hearing does not justify the cost, expense, and continuing damage to correlative rights resulting from the requested delay. *Fourth*, the parties, their witnesses, and the Commissioners have planned for four months to attend a hearing in Santa Fe on September 23-27, and should not be required to bear the burden and cost to reschedule and renew their preparations for a delayed hearing in order to accommodate the Division's last-minute request.

For these reasons, Empire requests that the Motion be denied. To the extent that the Commission determines that it will grant the Division more time to prepare, Empire requests that the Commission hear the applicants in these matters at the September hearing and thereafter continue these matters for an additional one-week hearing, if necessary, at the earliest available dates in November or December. In the alternative, Empire requests that the Commission enjoin Goodnight from injection under any permit until the Commission issues a final decision in these matters.

I. The Division agreed to hearing on September 23-27, 2024, almost four months ago and, at the request of the Division, the Commission narrowed the scope of the hearing to two discrete issues.

The Division filed the instant motion one business day prior to the deadline for filing direct testimony and supporting exhibits—a deadline, among many others, that the Division agreed to prior to the Commission hearing on May 9, 2024, and prior to the issuance of the Prehearing Order in this matter on June 3, 2024. *See* Tr. 23:21-24:5 (May 9, 2024), *available at* https://ocdimage.emnrd.nm.gov/Imaging/FileStore/santafe/cf/20240524/23580_05_24_2024_09_10_38.pdf (Division counsel, stating that the proposed prehearing order “was generated at [multiple meetings between counsel]; indicating agreement with the deadlines therein). The

September hearing date was further out than Empire requested but all parties agreed that the September date was sufficient time to prepare for the hearing. This should be especially true since the core issues in dispute have been outstanding for over two years. As discussed below, further delay in resolution of these issues will result in substantial harm to Empire, the other working interest owners, to mineral estate owners, including the State of New Mexico, the United States, and numerous private interest owners.

In addition, at the request of the Division and Goodnight, the Commission carefully narrowed the cases and issues to be heard at the hearing that the Division now seeks to vacate. *See* Joint Order on Goodnight’s Motion to Limit Scope of Hearing on Cases Within the Eunice Monument South Unit and the Oil Conservation Motion Concerning the Scope of the Evidentiary Hearing Set for September 23-27, 2024 (“Scope Order”); *see also* Division’s Motion Concerning the Scope of the Evidentiary Hearing Set for September 23-27, 2024 (May 23, 2024) (“Scope Motion”); Motion to Limit the Scope of the Commission Hearing to Cases Within the Eunice Monument South Unit (May 23, 2024). The Commission limited the matters to be heard to those applications and wells within the EMSU and limited the issues to “the existence, extent of and possible interference with a residual oil zone . . . by produced water injection activities undertaken by Goodnight.” *Id.* ¶¶ 2-3. Thus, the cases and issues are narrowly defined, as the Division requested, and the applicants and the Division timely filed their direct testimony disclosures and exhibits relating to those issues.

II. Additional delay in resolution of these issues will result in substantial harm to Empire, the other working interest owners, and to mineral estate owners, including the State of New Mexico, the United States, and numerous private interest owners.

Substantial harm will occur to numerous interest owners, including the State of New Mexico, the United States, private interest owners, and working interest owners such as Empire, if the hearing on these issues is yet again delayed. Self-Affirmed Statement of William West ¶ 5 (Aug. 27, 2024), attached hereto as Exhibit A. The following illustrates the waste and impairment of correlative rights resulting from additional delay in resolving the pertinent issues.

First, Empire's production of oil is down 112 barrels of oil per day (112 BOPD) from nine months ago. This amount of oil has a value of \$1.3 Million over the period October 2024 to March 2025, which corresponds to the delay requested by the Division. *Id.* ¶ 3. Second, as disposal continues, pressure in the unitized interval is rising. Pressurization of the San Andres increases the amount of CO₂ it will take to perform CO₂-EOR due to the compressibility of the CO₂. By allowing Goodnight to continue to dispose of saltwater until next year, it could cost Empire an additional \$223-\$422 million depending upon the pressure reached in the reservoir. *Id.* ¶ 4. Third, production will be lost even with the increased injection of CO₂ because the chemical composition of the external water will result in "cement (scale) in the porosity and reduce future ROZ productivity potential." Self-Affirmed Statement of Robert F. Lindsay at 3 (discussing his Exhibit B-8); *see id.* at 5; *see also id.* at 9 (discussing Exhibit B-27); *id.* at 11-12. (Aug. 26, 2024), pertinent excerpts attached hereto as Exhibit B. Accordingly, it is critical that this case be heard in September so that saltwater disposal in the San Andres within EMSU can be terminated.

Empire's concern about the issues raised in these matters was first brought to the attention of the Division almost 18 months ago, on March 31, 2022, when Empire entered an appearance in

the Division case regarding Goodnight's proposed Piazza well (Division Case No. 22626).¹ Subsequently, Empire challenged four other additional saltwater disposal wells proposed by Goodnight, in Case Nos. 23614-23617, which were set for hearing on November 2, 2023. Empire and Goodnight filed exhibits in preparation for that hearing on October 26, 2023. The Division has thus had ten months to consider, explore, and research the information provided in the 369 pages of documents filed by Empire for the contested hearing originally set for November 2, 2023. As recently as July, the Division filed a motion to delay the Commission's consideration of the imminent need to prohibit continued injection due to Goodnight's disposal in amounts that exceed their permitted volumes. *See* Division's Motion to Vacate and Reschedule to August 15, 2024 the Oil Conservation Commission Setting for July 18, 2024 (July 8, 2024). The instant Motion is thus the second time in less than two months that the Division has requested postponement of a hearing on this issue scheduled before the Commission. The waste and impairment of correlative rights resulting from further delay warrants denial of the Motion, especially when the Division is not a moving party in the hearing and has had equal time to prepare.

III. The Division is a non-moving party and the new issues raised by the Division's testimony are beyond the limited scope the Division sought and received for the September hearings.

The applications at issue were filed by Empire and Goodnight, each of whom bear the burden of offering evidence in support of their respective positions. The Division is not a moving party and has no obligation to present evidence. Therefore, the Division's role would generally be to listen to the evidence presented, cross-examine any witnesses, if the Division so chooses, and offer their evaluation of the evidence presented to the Commission. Participation in the hearing in

¹ The Division order denying Goodnight's application in Case No. 22626 is before the Commission on de novo review as part of this proceeding in Case No. 24123.

this manner does not require the preparation that the Division contemplates in the Motion. Indeed, the testimony filed by the Division supports this conclusion because it raises water quality issues but does not touch on the limited scope of issues being decided at the September hearing. *See, e.g.,* Division's Exhibit List and Witness Testimony Disclosure at 8, 12-14, 16-17 (Aug. 26, 2024) ("Written Disclosures"). Accordingly, there should not be any need for additional time to expand on or refine the Division's testimony since it does not relate to the limited scope of issues being decided at the September hearing.

The water quality issues raised, at the eleventh hour, by the Division's "Witness Testimony Disclosure," are well outside the limited scope of the September hearing that was narrowed at the Division's request. While it is helpful for the parties to learn that the Division has now focused its attention to concerns about EPA UIC requirements and Capitan Reef groundwater, the simple fact is that water quality issues do not bear on the question of whether there is oil production in the EMSU that is being damaged by Goodnight's salt water disposal. Scope Order ¶¶ 2-3. In fact, the Division's concern that salt water disposal may be damaging the Capitan Reef may be rendered moot (at least as to parties and wells made the subject of the September hearing) if the Commission makes a timely finding that injection should not be allowed within the EMSU. If anything, the Division's newly revealed concern that salt water disposal may be damaging the Capitan Reef should be understood to support Empire's position that the September hearings should move forward. An affirmative finding for Empire would stop Goodnight's salt water disposal within the EMSU, thus avoiding any more potential damage to the Capitan Reef. If no such decision is reached than the Division's water quality issues may be reached at a later hearing, thereby giving the Division the additional time it requests to better understand and prepare for this issue.

In its Written Disclosures, the Division also opines, without citation to authority, that operators and the OCD rely on permits that have been issued “to build and maintain a stable and reliable regulatory structure.” *Id.* at 20. While Empire understands that the Division may have broader considerations for its overall positions within the hearing, it is important to remember that the September hearing is limited only to the parties, wells, and issues identified in the Commission’s order limiting the scope. The September hearing is neither the proper forum nor the proper procedure to seek to establish a broader policy regarding salt water disposal for the entire state of New Mexico. Therefore, a continuance in furtherance of that purpose is improper, especially in light of the ongoing and extensive damage that delay will cost to the correlative rights of the people of New Mexico, the Bureau of Land Management, Empire, and the other working interest owners.

Further, even if freshwater concerns and regulatory reliability were issues pertinent to the September hearing, such concerns warrant immediate action relating to the continued saltwater injection by Goodnight rather than delay. Injection should be enjoined until it has been determined that no freshwater is being contaminated.² The Division’s perspective on regulatory reliability cannot be used to abdicate its paramount obligation to prevent waste and protect correlative rights. NMSA 1978, § 70-2-11. Indeed, the Division expressly retains jurisdiction in the SWD orders to enter “further orders as may be necessary for the prevention of waste and/or protection of correlative rights . . . whereupon the Division may, after notice and hearing, terminate the disposal authority granted” therein. *See, e.g.*, Administrative Order SWD-2075 at 3. Notably, Empire’s rights to produce from the EMSU predate Goodnight’s rights to inject by approximately 35 years.

² If the continuing damage to correlative rights were halted by enjoining Goodnight’s injection pending consideration of broader water rights issues then Empire would be agreeable to the extended delay requested by the Division.

Compare Order No. R-7767 with Order Nos. R-21190, R-22027, R-21190, SWD-2307. Empire's right to rely on its authority to operate the EMSU, granted by Commission orders entered 40 years ago, far outweighs any right that Goodnight may have to inject in the SWD wells at issue in these matters. Thus, the belated issues raised by the Division do not support further delay in hearing evidence from the parties in these matters.

Finally, related litigation pending in the district court has been stayed under the doctrine of primary jurisdiction, pending resolution of two specific factual issues by the Commission. The issues identified by the court are "whether certain formations contain produceable hydrocarbons and whether produced water can migrate from one formation to another." Proposed Order Staying Litigation Pursuant to Primary Jurisdiction Doctrine ¶ 1, attached as Exhibit C; see Email attached thereto, Amy Gross (Holland & Hart) to Judge Kirksey (Aug. 23, 2024) (submitting proposed order). These issues correspond directly to the scope of the hearing identified by the Commission: "the existence, extent of and possible interference with a residual oil zone . . . by produced water injection activities undertaken by Goodnight." Scope Order ¶¶ 2-3. Additional delay in these matters before the Commission will therefore result in additional delay in the district court and, consequently, additional harm to the interest owners in the EMSU.

IV. The applicants, their witnesses, and the Commissioners have planned for four months to attend a hearing in Santa Fe on September 23-27, and should not be required to incur cost and burden associated with rescheduling to accommodate the Division's last minute request for additional delay.

The applicants, their witnesses, and the Commissioners have planned for four months to attend a hearing in Santa Fe on September 23-27. They should not be required to cancel and reschedule their travel plans to accommodate the Division's assertions that the hearing must be delayed to accommodate its belated concerns that do not relate to (1) the scope of the hearing, or (2) the disputes raised by the applicants.

Notably, both Empire and Goodnight filed their written testimony and exhibits on Monday, as agreed to by the applicants and the Division and ordered by the Commission. To the extent that the Division is concerned it may need to rebut any testimony offered by the parties, the deadline for rebuttal testimony is not until September 9. The Division will have the opportunity at that time to offer testimony and exhibits after review of the parties' direct testimony and after any further discovery, such as the depositions that have been contemplated in these matters since the prehearing order was agreed to by the parties last May.

By continuing the hearing in this matter to an even later date, the Division and the Commission would be contributing in large part to the loss of revenues, taxes, and other economic benefits to numerous entities and individuals, including the State of New Mexico and the United States, that could be generated from this field both for oil and gas production and for carbon capture that is projected to result in billions of dollars of revenue.

WHEREFORE, Empire respectfully requests that the Motion be denied and that the hearing take place as scheduled by the Commission and agreed to by the parties, on September 23-27, 2024. To the extent the Division needs additional time to prepare, Empire requests that the applicants be allowed to offer their evidence on September 23-27 and that these matters be continued to an additional one-week of hearing at the earliest available dates in November or December. In the alternative, the Commission should enjoin Goodnight from injection under any permit until the Commission issues a final decision in these matters.

Respectfully submitted,

By: /s/ Sharon T. Shaheen

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served on the following by electronic mail on August 29, 2024.

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DIV. CASE NOS. 24018-24020, 24025

**SELF-AFFIRMED STATEMENT OF WILLIAM WEST IN SUPPORT OF EMPIRE'S
RESPONSE TO THE DIVISION'S EMERGENCY MOTION TO VACATE**

1. I am over the age of 18. I am the Senior Vice President of Operations for Empire Petroleum Corporation and have personal knowledge of the matters stated herein.

2. I make the following statements in support of Empire's Response to the *Oil Conservation Division's Emergency Motion to Vacate and Continue the September 23-27, 2024 Setting and to Vacate the Scheduling in the Above-Captioned Matters* filed in the above-referenced MATTERS on August 23, 2024.

3. Empire's production of oil is down 112 barrels of oil per day (112 BOPD) from nine months ago. This amount of oil has a value of \$1.3 Million over the period October 2024 to March 2025. See Table 1 below.

4. In addition, as disposal continues, pressure in the unitized interval is rising. Pressurization of the San Andres is increasing the amount of CO₂ it will take to perform CO₂-EOR due to the compressibility of the CO₂. As shown in Table 1 below, by allowing Goodnight to continue to dispose of saltwater until next year, it could increase costs of production by an additional \$223 to \$422 million depending upon the pressure reached in the reservoir, which could

EXHIBIT A

decrease overall production obtained from the EMSU. It is critical that this case be heard in September so that saltwater disposal in the San Andres within EMSU can be terminated. See Table 1 below.

5. The approved Unit Area for the Eunice Monument South Unit encompasses 14,189.84 acres with the State Lands comprising 58.32 percent of the land, which is 8,274.8 acres. The fee lands comprise 22.41 percent of the Unit and 3,180.28 acres, while the Federal Lands comprise 19.27 percent of the Unit and 2,734.76 acres. Reduced production from EMSU will mean reduced revenue for the fee owners as well as the working interest owners.

6. Further delay in preventing waste caused by Goodnight’s disposal of wastewater from foreign formations will result in impairment to the correlative rights of the State, the federal government, and numerous private interest owners, in addition to the correlative rights of Empire.

I affirm that my statements above are true and correct to the best of my knowledge as of the date next to my signature shown below and that these statements are made under penalty of perjury under the laws of the state of New Mexico.

/s/ William West
 William West, Sr. VP Operations
 EMPIRE PETROLEUM CORPORATION
 August 27, 2024

Table 1

Oil Price	\$ 75.0			
BOPD	112			
	Month	Reduced Revenue		
	Oct-24	\$ 260,400		
	Nov-24	\$ 252,000		
	Dec-24	\$ 260,400		
	Jan-25	\$ 260,400		
	Feb-25	\$ 235,200		
	Total	\$ 1,268,400		
		CO2 Cost (\$)	Variance (\$)	% Increase
	CO2 Cost @ 1500 psi	\$ 1,703,599,000		
	CO2 Cost @ 2000 psi	\$ 1,926,654,429	\$ 223,055,429	13.1%
	CO2 Cost @ 2500 psi	\$ 2,043,167,181	\$ 339,568,181	19.9%
	CO2 Cost @ 3000 psi	\$ 2,125,371,453	\$ 421,772,453	24.8%

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DIV. CASE NOS. 24018-24020

SELF-AFFIRMED STATEMENT OF ROBERT F. LINDSAY

1. My name is Robert Forrest Lindsay. I am over eighteen years of age and have personal knowledge of the facts herein. I am a geologist with 47 years of experience in the petroleum industry, having worked for Gulf (1976-1985), Chevron (1985-2001), ChevronTexaco (2001-2002), Saudi Aramco (2002-2015), and Lindsay Consulting (2016-Present). My expertise is in reservoir characterization.
2. I hold a Bachelor of Science degree in Geology from Weber State College (June, 1974), a Master of Science degree in Geology from Brigham Young University (December, 1976), and Doctor of Philosophy degree in Geology from the University of Aberdeen, Scotland (July, 2014).
3. I worked on Eunice Monument complex of unitized oil fields for Chevron from 1988 to 2002. I retired from Chevron in 2002. While working for Saudi Aramco (2002-2015), I used the 14-man year data base that I built on Eunice Monument unitized oil fields, other oil fields, and mountain range outcrops to complete a PhD degree (2014) on the Grayburg Formation.
4. I am a member of the following: 1) American Association of Petroleum Geologists (AAPG); 2) Society for Sedimentary Geology (SEPM); 3) Secretary (2023-Present) Midland chapter Society of Independent Professional Earth Scientists (SIPES, #3605); 4) Past-president and honorary life member of the West Texas Geological Society (WTGS); 5) Past-president and honorary life member of the

CBP. Down-dip limits of Goat Seep and Capitan aquifers are shown. Both aquifers are a source of low-salinity (<10,000 ppm) water. Goat Seep Aquifer is 1.5 to 2 miles down-dip of the west unit boundary of EMSU and is the source of edge water entry into the Grayburg reservoir. Capitan aquifer is not in fluid communication with EMSU. Pecos River, far to the west, is not in fluid communication with EMSU.

Exhibit B-4. Left: Index map of EMSUB, EMSU, and AGU unitized oil fields. Right: EMSU-329 to EMSU-458 serve as the principle cross section through the Grayburg reservoir. All cross sections will be along this line, including seismic data. Some cross sections will extend farther up-dip and down-dip.

Exhibit B-5. Reservoir-scale sequence stratigraphic model of Grayburg reservoir architecture, composed of individual cycles of dolostone and interbedded siliciclastic strata. West side of EMSU contains good to excellent reservoir potential. Whereas the east side contains fair to good reservoir potential. Up-dip the stratigraphic trap (right) is non-reservoir. Red = Dolograinstone. Orange = Grain-dominated dolopackstone. Light blue = Mud-dominated dolopackstone. Light gray = Dolowackestone. Green = Fusulinid dolostone. Yellow = Dolomitic sandstone. Up-dip individual cycles act as flow units. Down-dip cycles tend to stack to form thick flow units. Note the presence of a subtle anticline during Grayburg time.

Exhibit B-6. Dip-oriented structural cross section through EMSU. Note double humped shape of the asymmetric anticline. The structure flattens up-dip (right) into the non-porous lateral stratigraphic trap and steepens to 5° down-dip (left) into the Delaware basin. Historically, water-free oil production was from top of Grayburg reservoir unit boundary at -100 ft (subsea) down section to -350 ft (subsea). Farther down section mixed oil and water production were from -350 ft to -540 ft (subsea). Beneath -540 ft (subsea) only water was produced. **San Andres reservoir contains a residual oil zone (ROZ) that extends down section to -719 ft to -750 ft (subsea) and potentially deeper.**

Exhibit B-7. EMSU-679 San Andres core containing good porosity, permeability, and oil saturation from 4239 to 4249 ft (-643 to -653 ft). Foot by foot porosity (Por), permeability (K), oil saturation (So), and water saturation (Sw) data are from core analysis. Core is from 95 ft to 105 ft beneath top of the San Andres. For complete review of EMSU-679 core photographs in plain light and UV light see Plate B-1 pdf.

Exhibit B-8. EMSU-679 San Andres residual oil zone (ROZ) photomicrograph of porous, oil-stained, grain-dominated dolopackstone from 4280.85 ft (-685 ft). Porosity = 14.9%. Permeability = 19 mD. Oil saturation = 38.4%. Water saturation = 28.4%. Blue = porosity. Thin section is from 97 ft beneath top of the San Andres. Injection of high salinity produced water, most likely containing Ca, Na, K, Ba ions, into **San Andres residual oil zone (ROZ) porosity containing sulfate will mix and precipitate cement (scale) in the porosity and reduce future ROZ productivity potential.** Photomicrograph was taken at 40X magnification.

Exhibit B-9. EMSU R.R. Bell #4 San Andres core containing fair to good porosity, low permeability, and fair to good oil saturation. Core photograph is from the base of the cored interval from 3996 to 4002 ft (-445 to -451 ft). Well location was adjacent to the up-dip stratigraphic trap where porosity, permeability,

Mountain Epeirogen west of the Sacramento Mountains by meteoric recharge of fresh water down-dip into the Permian Basin. Recharging meteoric water dissolved San Andres evaporite strata (CaSO₄), which accounts for the source of sulfate (SO₄) in San Andres bottom water at EMSU, EMSUB, and AGU. **If produced water is injected into the San Andres ROZ and that water contains ions such as Ca, Na, K, Ba these ions will mix with SO₄ to precipitate cement (scale) within the ROZ, which will reduce reservoir quality and damage future ROZ productivity.**

It should be noted that water analysis of Goodnight's Wrigley SWD had the following comparison with Empire's produced water samples. The high levels of sodium and calcium cause major concern for scale precipitation in the San Andres ROZ interval.

	Average Chloride (mg/L)	Average Sodium (mg/L)	Average Calcium (mg/L)	Average Potassium (mg/L)
Goodnight	86,147	45,602	4,016	924
Empire	10,542	6,426	652	202

The following figures and previous illustrations confirm the points made above.

Exhibit B-10. Structural cross section of Grayburg reservoir in EMSU. The double humped asymmetric anticline gently dips to the east (right) into the lateral stratigraphic trap and dips 5° to the west (left) into the Delaware basin and is in pressure and fluid communication with the Goat Seep Aquifer. Folding of brittle dolostone reservoir strata created fractures. The Eunice-Monument complex of unitized oil fields is positioned atop the Eunice High structural block. The Eunice High is broken into smaller structural blocks.

Exhibit B-11. The Eunice High is broken into a series of smaller basement-cored structural blocks. This interpretation overlays Exhibit B6 as a comparison. These smaller structural blocks re-adjusted during the Laramide orogeny to uplift and fold Grayburg reservoir strata in EMSU into a double-humped asymmetric anticline and created a series of fractures. Top of San Andres was used as the datum to illustrate vertical offset of individual deep-seated basement structural blocks within the Eunice High.

Exhibit B-12. A Chevron in-house fracture study was performed on EMSU-679 oriented core (120 ft). Fractures were measured in Lower Grayburg reservoir and upper San Andres residual oil zone (ROZ).

Exhibit B-13. EMSU-679 total fractures and their orientation in lower Grayburg reservoir and San Andres residual oil zone (ROZ). Two fracture trends stand out. One is northwest to southeast and another is northeast to southwest. A total of 313 vertical fractures were measured.

Exhibit B-14. EMSU-679 large vertical fractures 1-3 ft in height. A major trend is northwest to southeast, with a minor trend northeast to southwest. A total of 24 fractures measured.

Exhibit B-15. EMSU-679 pyritized vertical fractures. A major trend is northwest to southeast, with minor trends to the northeast to southwest and east to west. 12 pyritized fractures were identified and measured.

- *First, injection of high salinity produced water will communicate up section into the Grayburg reservoir through fractures and impair existing waterflood operations.*
- *Second, being a high salinity heavier fluid, through time injection of produced water will work its way down-dip into the Goat Seep Aquifer and contaminate a source of low salinity water (<10,000 ppm) in the Chihuahuan Desert.*
- *Third, San Andres residual oil zone (ROZ) water is sulfate rich (SO₄). Injection of produced saltwater, most likely containing Ca, Na, K, or Ba ions, will come in contact with SO₄ and precipitate cement (scale) in porous oil saturated San Andres ROZ and reduce reservoir potential.*

The following figure and preceding illustrations confirm the points made above.

Exhibit B-27. Structural cross section through EMSU showing low salinity (<10,000 ppm) edge water entry into west side of EMSU. Source of edge water is Goat Seep Aquifer down-dip 1.5 to 2 miles of the west unit boundary of EMSU. Edge water entry is due to a drop in reservoir pressure from production through time. Injection of produced high salinity saltwater into San Andres strata will be sucked up by the drop in reservoir pressure to form vertically-oriented plumes of water entry into the Grayburg reservoir. **Produced water, being heavier than low salinity (<10,000 ppm) edge water, will eventually through time work its way down-dip to contaminate the Goat Seep Aquifer. Goat Seep Aquifer is one of only two sources of deep subsurface low salinity (<10,000 ppm) water in the Chihuahuan Desert.** The second source of deep subsurface low salinity (<10,000 ppm) water is the Capitan Aquifer farther to the west of EMSU. San Andres residual oil zone (ROZ) will become cemented by the introduction of produced water, most likely containing Ca, Na, K, and Ba, that will precipitate cement (scale) within the ROZ's pore system and reduce reservoir potential.

E. IT IS MORE LIKELY THAN NOT THAT GOODNIGHT'S INJECTION OF HIGH SALINITY WATER INTO THE SAN ANDRES WOULD CONTAMINATE THE GOAT SEEP LOW SALINITY AQUIFER ATTACHED TO THE EUNICE MONUMENT AND ARROWHEAD FIELDS DUE TO ITS GREATER DENSITY AND INCREASED PRESSURE AS MORE WATER IS INJECTED.

11. High resolution 3-D seismic data show that reservoirs along the Eunice Monument trend of unitized oil fields are immediately up-dip approximately 1.5 to 2 miles from the Goat Seep Aquifer a source of low salinity (<10,000 ppm) water:

- Down-dip immediately west of the unitized oil fields the Grayburg underwent erosion at the end of Grayburg deposition, with the down-dip part of the Grayburg eroded.
- The Goat Seep Aquifer is attached to the eroded edge of the Grayburg and is in pressure and fluid communication with Eunice Monument South Unit (EMSU) and Arrowhead Grayburg Unit (AGU).
- Through time as EMSU and AGU produced oil and reservoir pressure decreased, edge water from the Goat Seep Aquifer entered the west side of the two reservoirs.

- Fractures breached non-porous strata associated with the unconformity that separates San Andres reservoir strata from Grayburg reservoir strata.
- Fractures allowed San Andres water to communicate vertically up section to form what is termed a plume of water.
- Plumes of water were easily identified by water chemistry, which identified low salinity water (<10,000 ppm) that contain sulfate.
- San Andres water in the residual oil zone (ROZ) at the Eunice Monument complex of unitized oil fields was sourced from the Southern Rocky Mountain Epeirogen west of the Sacramento Mountains.
- Field work along U.S. Highway 82 west of Artesia, New Mexico and east of the foothills of the Sacramento Mountains identified San Andres collapse breccia horizons where evaporite strata (CaSO₄) were dissolved by recharging meteoric water to form cave horizons that filled with collapse breccia of overlying carbonate strata.
- Dissolution of evaporite strata (CaSO₄) added sulfate (SO₄) to low salinity San Andres water as it recharged into the subsurface.
- Through time recharging meteoric water delivered low salinity water (<10,000 ppm) containing sulfate (SO₄) into the San Andres residual oil zone (ROZ) at EMSUB, EMSU, and AGU.

The following figures and preceding illustrations confirm the points made above.

Exhibit B-31. San Andres collapse breccia along U.S. Highway 82 near the foothills of the Sacramento Mountains, New Mexico. Meteoric recharge of low salinity (<10,000 ppm) water dissolved San Andres evaporite strata (CaSO₄) and formed a cavernous porosity, which caused carbonate strata forming the cave roof to collapse. Dissolved evaporite strata (CaSO₄) added sulfate (SO₄) to low salinity (<10,000 ppm) meteoric water as it recharged farther into the subsurface.

Exhibit B-32. EMSU R.R. Bell #4 3958 ft (-407 ft) nonporous to porous, partially oil-stained strata containing solution-widened fractures. Core is 75 ft beneath top of the San Andres. Porosity = 8.2%. Permeability = 50.4 mD. Oil saturation = 15.4%. Water saturation = 41.0%. Core width is 3 inches (7.62 cm). Left: Core is dry. Right: Core is wet. Well location is near southeast unit boundary of EMSU. Within EMSU near the up-dip pinch out of the reservoir porosity, permeability, and oil saturation decrease and eventually terminate.

Exhibit B-33. EMSU-679 San Andres swarm of vertical fractures. Some fractures are solution-widened and oil-stained, and some are simple hairline fractures. Fractures are in nonporous (tight) to porous strata along the edge of a solution pipe or sink hole. Core is 11 ft beneath top of the San Andres. Porosity = 11.4%. Permeability = 560 mD to 1,044 mD. Oil saturation = 14.5%. Water saturation = 35.4%. Note intense fracturing in less porous strata adjacent to porous, oil-stained, grain-rich strata that filled the solution pipe or sink hole. Left: core is dry. Right: core is wet. Laramide (Late Cretaceous-Early Cenozoic) reactivation of basement-cored fault blocks folded Permian strata and preferentially fractured less porous San Andres dolostone strata. Core width is 3 inches (7.62 cm).

Exhibit B-34. EMSU-679 San Andres 4335 ft (-739 ft) with less porous (gray) to more porous (beige) strata, adjacent to solution-widened fractures that are partially calcite cemented. Core is 191 ft beneath

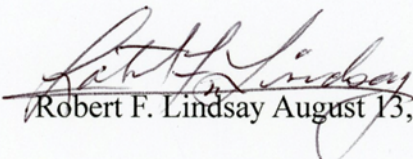
top of San Andres. Left: Core is dry. Right: Core is wet. Core width is 3 inches (7.62 cm). Porosity = 3.7%. Permeability = 11 mD to 46 mD. Oil saturation (So) = 0.0%. Water saturation (Sw) = 88.3%. Note porosity zonation adjacent to fractures (beige color), while strata farther away from the fracture is less porous (gray). Initial solution-widening of fractures was via undersaturated fluid that extended away from fractures into surrounding matrix and was followed later by a calcite cementation event as fluid reached saturation.

G. PROOF OF CHANNELING AND CROSSFLOW BETWEEN ZONES THROUGHOUT THE FIELD THEREFORE HAS BEEN DOCUMENTED BY PRODUCTION DATA AND INCREASE IN SULPHUR CONTENT. IT IS MORE LIKELY THAN NOT THAT THIS WILL OCCUR AS A RESULT OF GOODNIGHT'S SALTWATER DISPOSAL.

13. The above testimony confirms the following:

- **First, injection of high salinity produced water into the San Andres reservoir residual oil zone (ROZ) in EMSU will communicate up section through fractures into the Grayburg reservoir and will thereby result in the waste of hydrocarbons.**
- Additional water entry into the Grayburg reservoir at EMSU will more likely than not have negative effects on production within the reservoir.
- Injection of high salinity produced water will through time communicate down section to contaminate the low salinity (<10,000 ppm) Goat Seep Aquifer.
- Goat Seep aquifer is a source of low salinity (<10,000 ppm) water in the subsurface in this part of New Mexico where sources of fresh water are rare and should not be contaminated and will therefore harm public health and the environment.
- **Injection of high salinity produced water into EMSU, EMSUB, and AGU will impact the San Andres reservoir residual oil zone (ROZ) by the precipitation of cement (scale) in reservoir porosity, which will reduce porosity-permeability and future productivity. Goodnight's disposal water contains high levels of sodium (39,580-51,322 mg/L) and calcium (2206-5988 mg/L) when compared to Empire's produced waters which has an average of 6426 mg/L sodium and 652 mg/L calcium from 32 samples.**

I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my electronic signature below.


Robert F. Lindsay August 13, 2024

STATE OF NEW MEXICO
COUNTY OF LEA
FIFTH JUDICIAL DISTRICT COURT

FILED
5th JUDICIAL DISTRICT COURT
Lea County
8/29/2024 11:00 AM
NELDA CUELLAR
CLERK OF THE COURT
Cory Hagedoorn

EMPIRE NEW MEXICO, LLC,

Plaintiff,

No. D-506-CV-2023-01180

v.

GOODNIGHT MIDSTREAM PERMIAN, LLC,

Defendant.

**ORDER STAYING LITIGATION PURSUANT TO PRIMARY JURISDICTION
DOCTRINE**

THIS MATTER comes before the Court on Defendant Goodnight Midstream Permian, LLC (“Goodnight”)’s *Motion to Stay Litigation Under the Primary Jurisdiction Doctrine or to Dismiss For Failure to State a Claim* (the “Motion”), filed March 4, 2024. The Court has reviewed the Motion, the response in opposition filed by Empire New Mexico, LLC (“Empire”), and Goodnight’s reply, along with the authorities cited in each of the foregoing. The Court also heard arguments of counsel on May 29, 2024. The Court, being otherwise fully advised in the premises, finds that the Motion is well taken and should be **GRANTED IN PART**. For the reasons described below, the Court will not dismiss this action, but pursuant to the doctrine of primary jurisdiction this action will be stayed pending a resolution of proceedings before the New Mexico Oil Conservation Commission (“OCC”).

1. The claims presented by Plaintiff Empire New Mexico call for application of the unique expertise of the New Mexico Oil Conservation Division (“OCD”) and/or OCC. The Court finds that the agency has unique expertise regarding the issues presented in this case, including whether certain formations contain produceable hydrocarbons and whether produced water can

EXHIBIT C

migrate from one formation to another. There is a need for the expertise of the OCD and/or OCC on these questions, and these issues fall within the special competence of these agencies.

2. The Court has also considered the fact that there are already cases pending before the administrative agency. This is one of the strongest factors in the Court's mind. Many of the cases cited by the parties involve situations in which a matter would need to be referred to agency. Here, cases are already pending before the agency and action is already going forward on those.

3. Given that matters are pending before the OCD and have been moved up to the OCC, a stay of these matters will not cause undue delay.

4. Both parties will have a full and fair opportunity to litigate before the administrative agency. OCD and/or OCC may be able to give some resolution on the issue of permits granted to Goodnight that Empire seeks to revoke, and how the denial of Piazza #1 well permit that was not granted may have an impact in this matter. These questions go to the issue of res judicata as raised by Goodnight.

5. The Court finds that the Legislature intended for the OCD to have the primary jurisdiction over these kinds of issues.

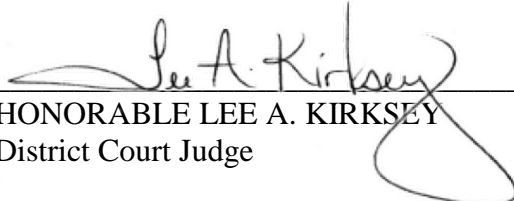
6. The Court also has concern that proceeding here may yield an inconsistent decision that may have an impact on other saltwater disposal wells.

7. After resolution of critical factual issues presented by Empire's claims by the administrative agency, both parties may return to this Court for resolution of the common law claims, including for damages and for injunctive relief if appropriate. This Order is not a dismissal of the action, but only a stay. The OCD and/or OCC do not have authority to make a final determination on the common law claims, but their determinations on the factual issues over which they have jurisdiction are more appropriately made by the OCD and/or OCC.

8. The Court has set a status conference in this matter for September 24, 2024.

9. Pursuant to NMSA 1978, § 39-3-4, the Court further finds that the matters decided herein involve a controlling question of law as to which there is substantial ground for difference of opinion and that an immediate appeal from the order or decision may materially advance the ultimate termination of the litigation.

IT IS SO ORDERED.


HONORABLE LEE A. KIRKSEY
District Court Judge

SUBMITTED BY:

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