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

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

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.

CASE NO. 23775

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

CASE NOS. 24018-24020, 24025

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

CASE NO. 24123
ORDER NO. R-22869-A
DIVISION CASE NO. 22626

GOODNIGHT MIDSTREAM'S CONSOLIDATED PRE-HEARING STATEMENT

Goodnight Midstream Permian, LLC ("Goodnight Midstream"), the applicant in Case Nos. 23516-23617, 23775, and de novo Case No. 24123, submits this Consolidated Pre-Hearing Statement pursuant to the rules of the Oil Conservation Commission and the Third Prehearing Order, dated January 31, 2025, that governs these consolidated cases. For the reasons outlined in this Prehearing Statement and detailed in its pre-filed written testimony and exhibits, Goodnight's applications should be granted.

Goodnight also is a party to Case Nos. 24018-24020, and 24025 in which Empire New Mexico LLC is the applicant. Goodnight opposes Empire's applications and, for the reasons outlined in this Prehearing Statement and detailed in its pre-filed written direct and rebuttal testimony and exhibits, Empire's applications should be denied.

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GOODNIGHT'S STATEMENT OF THE CASES

I. Introduction

Goodnight Midstream Permian, LLC ("Goodnight") and Empire New Mexico, LLC ("Empire") are engaged in a dispute over Goodnight's existing and proposed injection of produced water for disposal into the San Andres formation in the Eunice Monument South Unit ("EMSU" or the "Unit"), which is a statutory waterflood unit operated by Empire in southeast New Mexico near Hobbs. At issue is whether this injection is causing waste or impairing correlative rights in the Unit.

The San Andres is an aquifer, not a hydrocarbon reservoir. It was erroneously included in the EMSU unitized interval and its special oil pool when the EMSU was created in 1984 because it was the only source of water available sufficient to conduct the waterflood and had historically been included as part of the Grayburg oil pool in the area. However, the San Andres has never

produced hydrocarbons in or around the EMSU. It has instead been used for decades as a water management zone—a formation for produced water disposal and a prodigious source of water supply. In fact, it has supplied more than 380 million barrels for waterflood operations in the EMSU from six water supply wells permitted by the State Engineer. And for more than 60 years the San Andres in and around the EMSU has been designated for produced water disposal by the Division long before the EMSU was ever created. Attached as **Exhibit A** is a map showing all active SWDs within two miles of the EMSU and Empire's two other operated units, the EMSU-B and the Arrowhead Grayburg Unit ("AGU"). It depicts the location of each SWD, its API number, operator, date of first injection, and cumulative volumes injected as of approximately January 12, 2025.

Through its history as a water management zone, the San Andres has proven to be a massive and prolific aquifer, capable of receiving and producing huge volumes of water at exceedingly high rates. After obtaining 12 SWD approvals for disposal into the San Andres starting in 2018, Goodnight seeks approvals for five additional San Andres SWDs within the boundaries of the EMSU in Case Nos. 23614-23617 and de novo Case No. 24123. In addition, it is seeking authorization to increase its approved injection rate from 25,000 barrels of water per day ("bpd") to 40,000 bpd in one existing well under Case No. 23775, also within the EMSU.

In these cases, and for the first time since Goodnight obtained its prior SWD approvals, the Division raises substantive concerns about Class II UIC San Andres injection, including disposal and enhanced oil recovery injection, potentially reaching the Capitan Reef aquifer several miles to the west. Setting aside the long history of Division approval of injection into the San Andres, Goodnight was previously required to demonstrate through each of its existing Division-approved applications that (1) the San Andres is not prospective for hydrocarbon production and will not

cause waste or impair correlative rights; and (2) its disposal will remain within the injection interval and will not impact freshwater or underground sources of drinking water ("USDWs"). On several occasions the Division asked in hearings, and in follow-up requests, for Goodnight to confirm the distance of its injection from the Capitan Reef and the relationship of the San Andres to the Capitan Reef. In every instance Goodnight and its expert witnesses supplied the requested information, confirmed the Capitan Reef is stratigraphically separate from the San Andres, and received unconditional approvals from the Division for its disposal—as recently as March 2, 2023, under Order No. R-22506. In addition, the Division has separately concluded geologic seals separate the San Andres disposal zone from the overlying producing Grayburg formation within the EMSU that prevents the vertical migration of fluids. *See, e.g.*, Order No. R-21190, ¶ 10. While the Division previously raised generalized concerns about potential future impacts to the Capitan Reef, there was never any indication the information Goodnight supplied was not sufficient to resolve those concerns because the Division never asked for additional information and always approved Goodnight's applications—until the Division filed its testimony in these cases on August 26, 2024. Nevertheless, Goodnight takes the Division's concerns seriously. In its rebuttal, Goodnight responds to the Division's concerns, addresses the basis for them, and provides additional information and data confirming stratigraphic separation between the San Andres and Capitan Reef and lack of communication through updated geochemical analyses and an independent review. Empire's experts have also separately determined that the San Andres is stratigraphically separate from and not in hydraulic communication with the Capitan Reef.

However, alignment over potential impacts to the Capitan Reef is the extent of agreement between Goodnight and Empire. After acquiring the EMSU from XTO in March 2021, Empire apparently discovered for the first time that there is existing and proposed San Andres disposal in

and around the Unit and moved to oppose new injection and revoke approvals for existing SWDs. Empire has primarily focused its attacks on Goodnight, although it has taken the position that no SWDs should be allowed within two miles of its units and possibly not within five miles. *See* Empire West Exhibit I-6; Buchwalter Exhibit E, p. 4.

In its applications to revoke Goodnight's injection authority for the SWDs within the EMSU under Case Nos. 24018-24020, and 24025, Empire makes two claims. First, it claims Goodnight's disposal into the San Andres aquifer harms Empire's ability to produce oil and gas from the overlying Grayburg formation and, therefore, causes waste and impairs correlative rights. It contends Goodnight's injection is migrating into the Grayburg and watering out and/or encroaching on Empire's ongoing secondary waterflood operations. Second, Empire claims that the San Andres aquifer is actually a residual oil zone ("ROZ") that contains commercially recoverable volumes of oil that can be mobilized and produced only through a costly continuous carbon dioxide ("CO2") flood. Empire claims Goodnight's disposal injection is watering out this purported ROZ, causing waste and impairing correlative rights.

Neither of Empire's broad claims withstand scrutiny nor do the disparate and unconnected bits of evidence Empire proffers in support. Because Empire has raised so many various and contrasting factual assertions—and because it is seeking to effectively terminate Goodnight's New Mexico operations—Goodnight has been forced to expend substantial effort to investigate, evaluate, and refute each and every claim. While the subject matter and evidence at the core of the dispute is highly technical—with a heavy focus on petrophysics, petroleum geology, geochemistry, and geology—fundamental tenets of logic and reason are still very much applicable. Even without an advanced degree in petroleum geology, geochemistry, or petrophysics, the weight

and force of the evidence is clear and supports granting Goodnight's applications and denying Empire's applications.

II. Overview of Arguments

The EMSU is a statutory waterflood unit approved by the New Mexico Oil Conservation Commission ("OCC" or the "Commission") in 1984 under Order No. R-7765, as amended, pursuant to the New Mexico Statutory Unitization Act, NMSA 1978, § 70-7-1, *et seq.*, creating a unitized interval from the base of the San Andres formation through the overlying Grayburg and up into the Lower Penrose.[1] The Commission authorized the EMSU for secondary recovery through waterflood operations under Order No. R-7766.[2] The Commission also created a special pool for the EMSU that matches the unitized interval under Order No. R-7767.

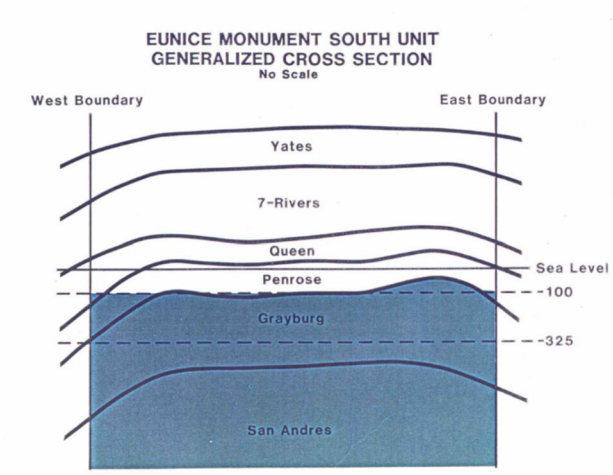

Figure 1 is a generalized cross-section excerpted from Gulf's EMSU hearing Ex. No. 24 in Case No. 8397. It shows the stratigraphic relationship of the San Andres aquifer within the EMSU unitized interval in relation to sea level, the gas-oil-contact at -100 feet subsea, and the oil-water-contact at -325 feet subsea.

[1] The top of the unitized interval is defined as being from 100 feet below mean sea level or at the top of the Grayburg formation, whichever is higher, to a lower limit at the base of the San Andres formation. *See* Order No. R-7767, decretal ¶ 3.

[2] On January 23, 2025, Goodnight filed a motion for partial summary judgment on Empire's claims that Goodnight's injection is impairing the unitized interval of the EMU on the grounds that the San Andres formation was improperly included in the definition of the unitized interval within the EMSU under Order No. R-7765, as amended, and should be excluded. The San Andres was not shown to be an oil-bearing formation at the time it was included in the EMSU and the Eunice Monument Grayburg-San Andres special pool. Nor was the San Andres shown to be reasonably defined by development, as required under the New Mexico Statutory Unitization Act.

Gulf Oil Corporation, the original EMSU operator, identified the San Andres as the source of water supply for initial fill-up and makeup water during waterflood operations and confirmed at the hearing that the oil column targeted for waterflood operations is limited to the Grayburg and Lower Penrose, where the oil column is located. At the unit hearing, it was established that within the EMSU the gas-oil-contact is at approximately -100 feet subsea and the oil-water-contact, or lower limit of oil production, is at -325 feet subsea, which is well above the top of the San Andres aquifer. *See, supra*, Fig. 1. Gulf's expert testified that the oil-water contact "determines the lower limit of oil production in the area." *See* Case No. 8399, Hrg. Tr. 46:24-47:3, 11/7/1984. That means the San Andres had not been "reasonably defined by production" at the time of the EMSU hearing and that it does not meet the statutory definition of a pool or a portion of a pool. Accordingly, and for the additional reasons outlined in Goodnight's Motion for Partial Summary Judgment, the San Andres aquifer was improperly included within the EMSU's unitized interval. It does not contain a common accumulation of oil or gas. And it does not meet the statutory definition of a pool or portion of a pool subject to statutory unitization orders.

At the time the EMSU was formed, no hydrocarbons were reported to have been produced from the San Andres in or around the EMSU for several miles. No hydrocarbon production has been reported in the San Andres since the Unit's creation. According to the testimony at the EMSU hearing, the San Andres was included in the unitized interval as a water supply source for the planned waterflood and because it was historically included with the Grayburg oil pool.

Since the 1950s, long before the EMSU was formed, the San Andres formation in this area has been an authorized zone for produced water disposal. Around the late 1980s or early 1990s, the Division designated the San Andres in and around the EMSU as a produced water disposal pool and assigned it a pool code: SWD; San Andres 96121. The Division has approved more than

90 saltwater disposal wells ("SWDs") to inject within this disposal pool with many more pending approval. Goodnight and numerous other operators have deployed hundreds of millions of dollars to construct produced water transportation and disposal infrastructure in the State of New Mexico in reliance upon these validly issued permits. Within and immediately adjacent to what would become the EMSU, the Division authorized two SWDs in the 1960s that continue commercial disposal operations into the San Andres today. *See* **Exhibit A**. Since creation of the EMSU in 1984, the Division authorized three additional San Andres SWDs in the EMSU between 1987 and 2020—one operated by Empire for EMSU operations and two operated by third parties (now OWL/Pilot and Rice Operating/Permian Line Service) for non-EMSU, commercial disposal. Following those approvals, Goodnight Midstream submitted, and the Division approved, four SWD applications for disposal into the San Andres within the EMSU (Andre Dawson SWD, Ernie Banks, SWD, Sosa SA SWD #2, Ryno SWD). A total of eight SWDs operated by four different operators have been approved for disposal within the EMSU and remain active. *See* Exhibit A.

In addition to being an approved produced water disposal zone, the San Andres is also a recognized water supply source. In 1965, the New Mexico State Engineer ("NMOSE") declared it to be within the Capitan Underground Water Basin, making it subject to permitting requirements for beneficial use. *See* 19.27.26.8 NMAC. EMSU's original operator (Gulf Oil/Chevron) permitted six water supply wells[3] in the San Andres through the NMOSE in the 1980s as a water source for waterflood operations. These six water supply wells have withdrawn more than 380 million barrels of water from the San Andres within the EMSU with no recorded hydrocarbon production. An additional 18 San Andres water supply wells are located within one Township of the EMSU. Based

[3] EMSU-457 (NMOSE Permit CP-00670); EMSU-458 (NMOSE Permit CP-00694); EMSU-459 (NMOSE Permit CP-00697); EMSU-460 (NMOSE Permit CP-00693); EMSU-461 (NMOSE Permit CP-00695); and EMSU-462 (NMOSE Permit CP-00696).

on available records, Goodnight estimates these wells have produced between 850 million and 1 billion barrels of water, contributing to the formation's depletion.

These substantial water withdrawals, and re-injection into the overlying Grayburg in the EMSU and nearby waterflood units, have contributed to a sustained, geographically expansive pressure differential between the Grayburg and the San Andres formations that has been maintained by a competent and effective geologic seal. This substantial pressure differential has been corroborated and confirmed through multiple lines of evidence—including a vertically extensive loss-circulation zone immediately below the permeability barrier isolating Goodnight's San Andres disposal interval encountered while drilling Goodnight's wells inside and outside the EMSU. Other evidence includes the ability of Goodnight's disposal wells to (1) operate on low injection pressures (several hundred psi below the maximum operating surface injection pressure) even at high injection rates (~40,000 bbls/day); (2) return to negative pressures within seconds after shutting in immediately following high rates of injection (~40,000 bbls/day); (3) record several-hundred-foot fluid level drops after periods of non-injection; and (4) record substantial shut-in pressure differentials compared to offsetting EMSU Grayburg waterflood injectors. This evidence—among multiple other lines of evidence—confirms the existence of an effective geologic barrier to fluid migration between the San Andres and the Grayburg across the EMSU. Due to substantial depletion, it can receive large volumes of injection that remain contained within the disposal zone. These facts make the San Andres formation an ideal candidate for disposal and a critical resource for the state, despite Empire's claims to the contrary.

Empire's first claim is that Goodnight's injection is migrating into the Grayburg, watering out its remaining oil production and encroaching on its Grayburg waterflood operations in the EMSU. In fact, Empire's expert asserts that approximately 24,000 bpd of San Andres water is

migrating up into the Grayburg within the EMSU due to Goodnight's ongoing injection. *See* Empire Exhibit E, p. 6, ¶ 2. Goodnight's current average injection rate across its four EMSU disposal wells is about 14,000 bpd per SWD. *See* Goodnight Exhibit B-13. According to Empire, that means a volume equivalent to about 170% of the average daily injection in one of Goodnight's SWDs is migrating into the Grayburg every day. If that were truly the case, Empire should have been able to show in its direct testimony abnormal water production in its wells somewhere in the EMSU. It did not because the data does not support the claim. There is no showing of unaccounted for water in the EMSU.

Empire instead has been forced to rely on three sub-par arguments that are easily refuted or are unsupported and not diagnostic. First, Empire relies on an oriented core fracture study that was prepared in 1991 in a single well in the EMSU. But that fracture study, presented in Empire's direct testimony, was limited to the Grayburg formation and did not identify any vertical fractures longer than three feet and none that extended through Goodnight's permeability barrier into the San Andres disposal zone. Second, Empire relies on historic data from high-water-cut wells that are explained through well-documented field-wide edge water encroachment and/or by analyzing the well completion histories. In place of actual production data, Empire instead engaged a reservoir modeler to generate a simulation of the EMSU showing large volumes of water must be migrating up from the San Andres to account for historic water production, according to his calculations. Empire, however, provided the modeler only certain limited information resulting in an unreliable simulation. Most remarkably, Empire failed to inform him that the Grayburg is known to be hydraulically connected to the Goat Seep, an expansive aquifer to the west. It has been documented since the 1930s to supply water, up-dip along the base of the Grayburg, with

sufficient hydraulic head to climb approximately 300 vertical feet up structure across the top of the double-humped anticline into the eastern third of the EMSU. *See, infra*, Fig. 2.

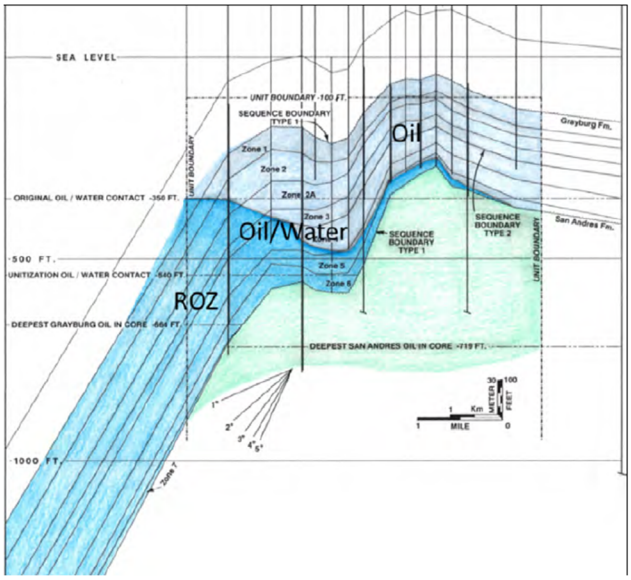

Figure 2 is an image from Empire Exhibit B-27 depicting a structural cross section through the EMSU showing low salinity edge water in dark blue entering the Grayburg from the Goat Seep aquifer down-dip 1.5-2 miles to the west, climbing the top of the double-humped anticline about 300 feet up-structure in the eastern third of the EMSU. This critical hydrological feature was excluded from Empire's model simulation.

Third, Empire contends that because the San Andres is sulfate rich and the Grayburg is sulfate poor, higher concentrations of sulfate in the Grayburg confirm migration of San Andres water. But Empire's assertion is not diagnostic. The EMSU has been under waterflood with sulfate-enriched San Andres water since about 1986. In fact, approximately 380 million barrels of sulfate-enriched San Andres water has been injected into the EMSU for waterflood purposes in various Grayburg intervals over more than 20 years. To prove migration of San Andres water into the Grayburg through fractures, Empire would need to affirmatively rule out the substantial influence of waterflood injection in any given water chemistry analysis. Empire has not done that. The water chemistries Empire has produced show constituent concentrations well within the historic variability documented throughout the waterflood prior to Goodnight's disposal activities. Water chemistry is simply not diagnostic here.

Empire's second claim is that the San Andres aquifer is actually a residual oil zone, or ROZ, containing commercially recoverable volumes of oil that can be mobilized and produced

only through a costly continuous CO2 flood. Under this theory, Empire apparently contends Goodnight's injection is over-pressuring the San Andres above what is required to achieve miscible CO2—a key condition for an effective CO2 flood. As a result, Empire argues that as the pressure in the San Andres increases with additional disposal volumes it will be forced to spend more money to buy larger volumes of CO2 to conduct its planned flood because the increased formation pressure will compress the CO2 thereby requiring more CO2 to sweep the formation than would otherwise be required. Empire also apparently contends it will have to spend more money moving additional volumes of water around and out of the San Andres during its proposed CO2 flood due to Goodnight's injection.

But these arguments are premised on the notion that Goodnight's San Andres disposal zone contains economic accumulations of ROZ. It does not; far from it. The only core in the EMSU that is deep enough to penetrate the top of Goodnight's San Andres disposal zone is the EMSU-679. It reflects the tell-tale drop off in oil saturation to below 20 percent that represents the base of a potential ROZ at approximately -652 feet subsea, which is above the permeability barrier isolating Goodnight's San Andres disposal zone at -672 feet subsea.

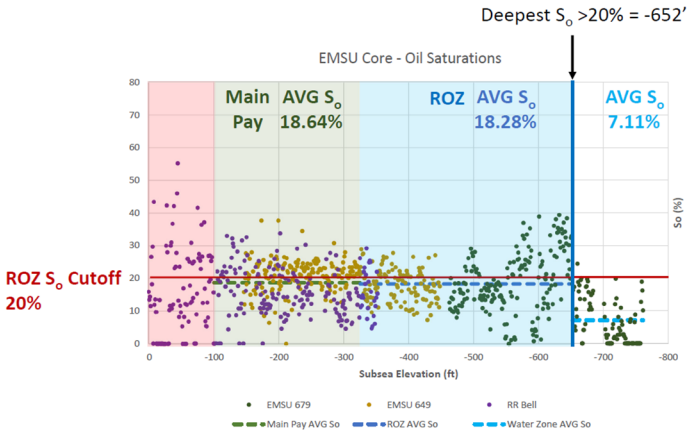

Figure 3 is an excerpt from page 3 of Goodnight Exhibit B-32. It shows a plot of the deepest core oil saturations (So) on the Y-axis by subsea depth on the X-axis. The deepest consecutive So values above 20 percent is at -652 feet subsea. The top of the permeability barrier isolating the San Andres disposal zone is at -672 feet subsea.

Empire's experts agree that an ROZ is defined as an interval with an average oil saturation of at least 20 percent and up to about 40 percent, or whenever oil becomes mobile. Empire's

experts are not aware of any pilot or commercial ROZ project that has targeted intervals with average oil saturations below 20 percent. Empire's expert, Dr. Lindsay, also testified the ROZ he identifies in the EMSU is limited to the Grayburg and follows the structure of the composite sequence boundary along the base of the Grayburg that serves as a barrier to fluid flow. *See, supra*, Fig. 2. He testified that there is another potential ROZ in the Upper San Andres, but that it is "speculation" there is a ROZ in the Lower San Andres. He also testified that it would be "unique" to have a ROZ on both sides of a composite sequence permeability barrier, such as the one separating the Grayburg from the San Andres.

Despite core saturations that average below 8 percent in Goodnight's San Andres disposal zone, Empire's petrophysics expert, Galen Dillewyn with NuTech Energy Alliance, provided in his original direct testimony log interpretations on available logs showing significant oil saturations for the San Andres in the EMSU—some of the logs had previously been interpreted by NuTech for XTO. The initial analysis NuTech prepared for Empire submitted in August 2024 shows significantly higher oil saturations than in NuTech's earlier interpretations for XTO and far above what would be necessary for oil to be mobile—in some cases surpassing 60 percent to 70 percent. Despite having a logged core available for the EMSU-679, NuTech did not initially attempt to calibrate its original log interpretations to the core. It also did not attempt to validate its initial interpretations against publicly available well test data or production data, which showed many of the intervals interpreted as having mobile oil testing 100 percent water. Recognizing that problem after reviewing Goodnight's petrophysical analysis—a true logical impasse for advancing its argument—Empire directed NuTech to revise its interpretations to match the EMSU-679 core water saturations using variable inputs for two key parameters (cementation exponent, M, and saturation exponent, N) based on a published study. Mr. Dillewyn submitted his revised

petrophysical analysis and direct testimony in December 2024, substantially reducing his oil saturations. His updated analysis caused Empire's petroleum geologist, Joseph McShane, to revise his direct testimony in December 2024, as well. Mr. McShane updated his oil-in-place calculations based on the revised petrophysics, reducing his oil-in-place estimate by an average of nearly 60 percent.

But now Empire has a new problem—actually, it has at least two new problems. First, it substantially revised its petrophysical interpretation and, as a result, also revised its oil-in-place analysis to make its oil saturations and oil-in-place estimates more reasonable; however, it did so without correcting for water loss that occurred due to de-pressurization when the core was retrieved from the well. Even though NuTech substantially reduced its oil saturations in its revised analysis, the reduction was not enough because, by matching its log interpretations to uncorrected core water saturations, NuTech still substantially overestimates its oil saturations. In petrophysics, it is assumed that oil saturation (So) is the inverse of water saturation (Sw); so, if the water saturation is known, oil saturation is just 1-Sw. Empire's assumption was that by matching its revised log interpretation to the water saturation in the core, they would have a log interpretation that more accurately reflects the true oil saturation. As explained in Dr. Davidson's rebuttal statement, that assumption is incorrect. NuTech did not correct for water loss in the core, resulting in an overestimation of oil saturations. In contrast, Dr. Davidson calibrated his log analyses to corrected core oil saturations and, in his rebuttal statement, demonstrates that his core corrections are reasonable and valid and provides separate lines of validation for his log interpretations. Having failed to validate its log interpretations against well test data and matched its interpretations to uncorrected core water saturations, Empire's petrophysical analysis and resulting oil-in-place estimates are unreliable.

Empire's second problem is that its petrophysics expert, Mr. Dillewyn, does not stand by his revised analysis that resulted in substantially reduced oil saturations and is necessary to support Empire's revised oil-in-place estimates. When asked which of his two analyses "is more likely the correct answer," he stated that "we stand by our initial interpretation." *See* G. Dillewyn, Depo. Tr. 222:20-223:9, attached as **Exhibit B**. That means Empire's revised petrophysics analysis and updated oil-in-place calculations are also unreliable because the expert who sponsored the work does not stand behind it.

Without core data showing that there are oil accumulations in the San Andres disposal zone or an expert to endorse Empire's revised petrophysics analysis, Empire has no evidentiary basis to contend Goodnight's disposal is causing waste or impairing correlative rights in the San Andres. This proof is Empire's burden to establish by a preponderance of the evidence as applicant to revoke Goodnight's authority to dispose into the San Andres and to foreclose future disposal in the San Andres within the EMSU. Accordingly, Empire is seeking now to introduce a new petrophysical analysis and a new oil-in-place calculation on rebuttal, notwithstanding the fact that these are necessary elements of its case in chief and do not constitute rebuttal.

Putting aside this evidentiary dispute, the ultimate test of the purported San Andres ROZ has already been conducted and the results are a resounding negative. The San Andres disposal zone is the same interval that has produced more than 380 million barrels of water over more than 20 years. If there were residual oil saturations in recoverable quantities—let alone at the saturations calculated by NuTech—some of that oil would have been mobilized by the depressurization resulting from the massive withdrawal of water from the six water supply wells over the course of the EMSU's waterflood operation. But no oil production or skim oil was ever documented or recorded from the San Andres water supply zone. The San Andres water production was a multi-

decade, large-scale, de-pressurization ROZ test that has definitively proven the negative—there is no ROZ in the San Andres disposal zone. As Goodnight's expert petroleum geologist efficiently summed it up: "We have found no data to support that the current disposal intervals in the EMSU, or any interval below the highest water only test at -500 ft TVDSS, as being a reasonable target for economic oil recovery." *See* Revised Expert Statement of William J. Knights, P.G., at 5, filed January 21, 2025.

Because the San Andres does not "warrant economic evaluation,"[4] Goodnight's existing and proposed disposal will not cause waste and will not impair correlative rights. Because its injection stays within the San Andres disposal zone—it does not migrate into the Grayburg and is not in communication with USDWs, including the Capitan Reef—it also will not water out or reduce the total ultimate recovery from the Grayburg or impair freshwater sources. Goodnight's disposal injection does not interfere with EMSU operations, and it otherwise complies with the Oil and Gas Act. In short, no evidentiary basis exists to deny Goodnight's pending applications or to revoke its current injection authority within the EMSU, upending decades of reliance on the Division's regulatory scheme and long-standing orders. Goodnight's applications should be granted and Empire's applications denied.

III. Summary of Goodnight Case Nos. 23614-23617, 23775 and 24123

In **Case No. 23614**, Goodnight seeks authorization for a new commercial saltwater disposal well to be named the Doc Gooden SWD #1 Well (API No. pending), which will be located 1,596 feet from the south line and 1,334 feet from the east line (Unit J) in Section 3, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. The proposed injection disposal interval will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between

[4] See id. at 1.

approximately 4,200 feet and 4,900 feet below the ground through a perforated completion. Disposal fluid will be produced saltwater from oil and gas wells in the area producing from the Delaware Mountain Group, Wolfcamp, and Bone Spring formations. The maximum surface injection pressure will be 840 psi.

In **Case No. 23615**, Goodnight seeks authorization for a new commercial saltwater disposal well to be named the **Hernandez SWD #1 Well** (API No. pending), which will be located 326 feet from the south line and 793 feet from the east line (Unit P) in Section 10, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. The proposed injection disposal interval will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between approximately 4,200 feet and 5,300 feet below the ground through a perforated completion. Disposal fluid will be produced saltwater from oil and gas wells in the area producing from the Delaware Mountain Group, Wolfcamp, and Bone Spring formations. The maximum surface injection pressure will be 840 psi.

In **Case No. 23616**, Goodnight seeks authorization for a new commercial saltwater disposal well to be named the **Hodges SWD #1 Well** (API No. pending), which will be located 2,833 feet from the north line and 1,620 feet from the west line (Lot 11) in Section 4, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. The proposed injection disposal interval will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between approximately 4,100 feet and 5,200 feet below the ground through a perforated completion. Disposal fluid will be produced saltwater from oil and gas wells in the area producing from the Delaware Mountain Group, Wolfcamp, and Bone Spring formations. The maximum surface injection pressure will be 820 psi.

In **Case No. 23617**, Goodnight seeks authorization for a new commercial saltwater disposal well to be named the **Seaver SWD #1 Well** (API No. pending), which will be located 1,809 feet from the south line and 1,428 feet from the west line (Unit K) in Section 10, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. The proposed injection disposal interval will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between approximately 4,200 feet and 5,300 feet below the ground through a perforated completion. Disposal fluid will be produced saltwater from oil and gas wells in the area producing from the Delaware Mountain Group, Wolfcamp, and Bone Spring formations. The maximum surface injection pressure will be 840 psi.

In **Case No. 23775**, Goodnight seeks to amend Order No. R-22026/SWD-2403 to increase the approved maximum rate of injection in its Andre Dawson SWD #1 (API 30-025-50634) from 25,000 barrels per day (bpd) to 40,000 bpd. All other conditions of the approved permit under Order No. R-22026/SWD-2403 would remain unchanged. The well is located 1,105 feet from the South line and 244 feet from the East line (Unit P) of Section 17, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. The well is approved as a produced water disposal well under Order No. R-2206/SWD-2403 to inject into the San Andres formation through a perforated interval from approximately 4,287 feet to 5,590 feet below the surface at maximum surface injection pressure of 857 psi. The maximum surface injection pressure will remain unchanged. As demonstrated through Goodnight's exhibits, the San Andres formation has more than sufficient capacity to accept the requested rate increase. *See, e.g.*, Goodnight Exhibits B, ¶¶ 75-81, B-11 & B-12.

In **Case No. 24123**, Goodnight Midstream seeks authorization for a new commercial saltwater disposal well to be named the **Piazza SWD #1 Well** (API No. pending), which will be

located 1,847 feet from the south line and 2,537 feet from the west line (Unit K), Section 9, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. The proposed injection disposal interval will be within the San Andres formation [SWD; San Andres (Pool Code 96121)] between approximately 4,125 feet and 5,400 feet below the ground through a perforated completion. The estimated average surface injection pressure is expected to be approximately 495 psi. The maximum surface injection pressure will be 825 psi.

The evidence, testimony, and decades of historically-supported commonplace wisdom demonstrates that the San Andres disposal has not produced hydrocarbons and is not prospective for hydrocarbons; that the proposed injection will remain contained within the San Andres disposal zone and will not migrate out of the injection interval and will not communicate with the Capitan Reef or any other Underground Source of Drinking Water; and that the injection will not cause waste or impair correlative rights in the EMSU. The evidence and testimony presented also shows that the proposed injection otherwise complies with the New Mexico Oil and Gas Act. Approving these applications will (1) avoid the drilling of unnecessary wells; (2) prevent waste; (3) protect correlative rights; and (4) is protective of underground sources of drinking water.

IV. Summary of Empire's Applications to Revoke Injection in Case Nos. 24018-24020, 24025

In **Case No. 24018**, Empire seeks to revoke the injection authority granted under Order No. R-22026/SWD-2403 to operate and dispose of produced water through Goodnight's Andre Dawson SWD #1 (API No. 30-025-50634).

In **Case No. 24019**, Empire seeks to revoke the injection authority granted under Order No. R-22027 to operate and dispose of produced water through Goodnight's Ernie Banks SWD No. 1 well, API# 30-025-50633 ("Well").

In **Case No. 24020**, Empire seeks to revoke the injection authority granted under Administrative Order No. SWD-2307 to operate and dispose of produced water through Goodnight's Ryno SWD #001 f/k/a Snyder SWD Well No. 1, API# 30-025-43901 ("Well").

In **Case No. 24025**, Empire seeks to revoke the injection authority granted under Order No. R-21190 to operate and dispose of produced water through Goodnight's Sosa SA 17 SWD Well No. 2 well, API# 30-025-47947 ("Well").

Under each of the foregoing applications, Empire alleges:

- Goodnight's SWDs dispose of water within the unitized interval of the EMSU;
- Goodnight "misrepresented that the San Andres is a non-productive zone";
- that "residual oil zones ("ROZ") are found within the San Andres, and Empire has the right to recover hydrocarbons therein";
- Goodnight's injection "impairs" Empire's ability "to within the Unitized Interval and thereby adversely affects the correlative rights of Empire and other interest owners in the Unit and results in waste"; and
- Revocation of the injection authority "will prevent waste of recoverable hydrocarbons and will protect correlative rights."

Goodnight denies each of the allegations in Empire's applications and, through its direct and rebuttal testimony and exhibits, refutes each allegation, as outlined above. Empire's applications should be denied.

V. Issues Common to All Applications

- Whether there is a competent geologic barrier that effectively isolates the Goodnights San Andres disposal zone from EMSU waterflood operations above?

- Whether Goodnight's San Andres disposal zone in the EMSU contains economic accumulations of residual oil that are commercially recoverable through a CO2 flood?
- Whether Goodnight's disposal of produced water into the San Andres disposal zone causes waste in the EMSU?
- Whether Goodnight's disposal of produced water into the San Andres disposal zone impairs correlative rights in the EMSU?
- Whether any stratum within the EMSU that is capable of producing oil or gas or both in paying quantities is being drowned out by water from Goodnight's injection?
- Whether any pool within the EMSU that is capable of producing oil or gas or both in paying quantities has premature and irregular encroachment of water or any other kind of water encroachment from Goodnight's injection that reduces or tends to reduce the total ultimate recovery of crude petroleum oil or gas or both in the EMSU?
- Whether the San Andres is geologically or hydraulically connected to the Capitan Reef aquifer or any other Underground Source of Drinking Water (USDW)?

VI. Issues Unique to Any Specific Application

- In Case No. 23775, whether Order No. R-22026/SWD-2403 should be amended to authorize Goodnight to increase the maximum rate of injection in its Andre Dawson SWD #1 (API 30-025-50634) from 25,000 barrels per day (bpd) to 40,000 bpd, where all other conditions of the approved permit would remain unchanged.

APPLICANT'S PROPOSED EVIDENCE

WITNESS Name and Expertise	ESTIMATED TIME	EXHIBITS
Nate Alleman, Ace Energy Advisors, Regulatory Matters & SWD Permitting	Self-Affirmed Statement	Ex. A, A-1 through A-9
Preston McGuire, Goodnight Midstream, Petroleum Geologist and Reservoir Engineer	Self-Affirmed Statement	Ex. B, B-1 through B-37
	Self-Affirmed Rebuttal	Ex. B-38 through B-60
Thomas E. Tomastik	Self-Affirmed Statement	Ex. C, C-1 through C-11
	Self-Affirmed Rebuttal	Ex. C-12 through C-27
Dr. James A. Davidson, Petrophysics	Self-Affirmed Statement	Ex. D, D-1, Figures 1-10, and Appx. A, B, & C
	Self-Affirmed Rebuttal	Figures 1-17
William J. Knights, Petroleum Geology	Self-Affirmed Statement	Ex. E, E-1, Figures 1-14
	Self-Affirmed Rebuttal	Figures 1-11
John McBeath, Reservoir Engineering, P.E.	Self-Affirmed Statement	Ex. F, F-1 through F-20
	Self-Affirmed Rebuttal	Ex. F-21 through F-27
Dr. Larry Lake, Reservoir Engineering and Enhanced Oil Recovery	Self-Affirmed Statement	Ex. G, G-1 through G-10
	Self-Affirmed Rebuttal	Ex. G-6 through G-12
David White, PG, Geolex Inc.	Self-Affirmed Rebuttal	Exhibit H,

Goodnight reserves the right to use any document produced in discovery in these cases or any document filed and submitted by a party to a government agency under its regulatory requirement as an exhibit for cross examination. Goodnight also reserves the right to request

leave to submit sur-rebuttal testimony and exhibits, subject to leave to do so, and the right to call and/or rely upon expert testimony by any expert identified by any other party.

PROCEDURAL MATTERS

Goodnight has a motion for partial summary judgment pending. Rice, Permian Line Service, and OWL/Pilot joined in the motion. Empire and the Division oppose the motion.

Goodnight anticipates it may request the Commission to issue a subpoena or subpoenas for witness attendance at the hearing in these matters pursuant to 19.15.4.16.A NMAC with respect to one or more of the following:

- Pilot Water Solutions SWD, LLC
- Permian Line Service, LLC
- Rice Operating Company
- Empire New Mexico LLC

Goodnight is continuing to evaluate the Division's proposed monitoring plan presented in OCD Exhibit 14. Goodnight anticipates it will submit an alternative monitoring plan at or before the hearing in these matters.

One of Goodnight's expert witnesses, Dr. Larry Lake, will be available for in-person examination on February 27 and 28. If he is not called as a witness on those days other arrangements will have to be made for him to appear in person or he can appear remotely through the Teams platform.

DATED: February 10, 2025

Respectfully submitted,

HOLLAND & HART LLP

By: _____

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CERTIFICATE OF SERVICE

I hereby certify that on February 10, 2025, I served a copy of the foregoing document, along with Goodnight's rebuttal testimony and exhibits summarized herein, to the following counsel of record via Electronic Mail to:

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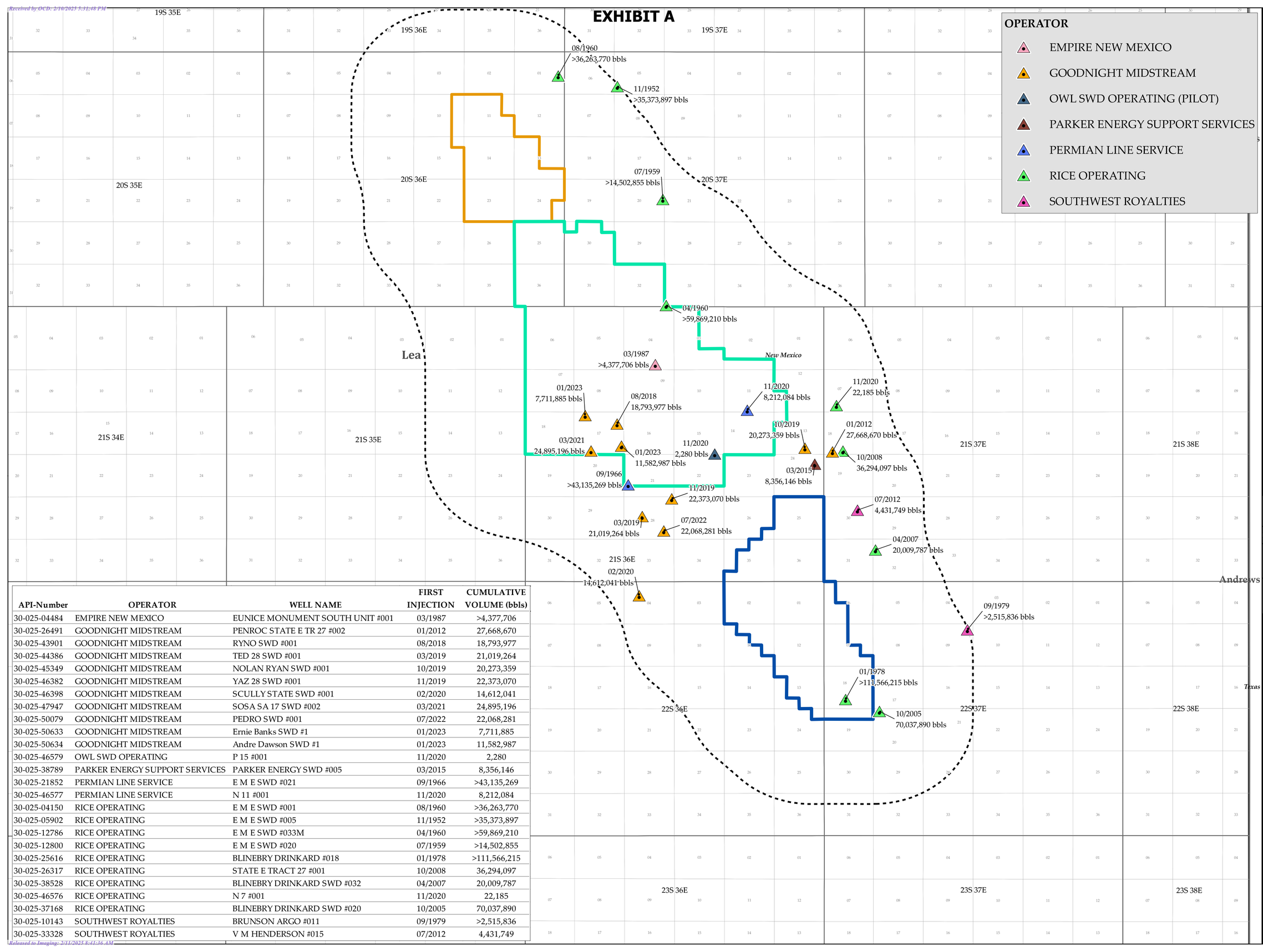
EXHIBIT A



API-Number	OPERATOR	WELL NAME	FIRST INJECTION	CUMULATIVE VOLUME (bbls)
30-025-04484	EMPIRE NEW MEXICO	EUNICE MONUMENT SOUTH UNIT #001	03/1987	>4,377,706
30-025-26491	GOODNIGHT MIDSTREAM	PENROC STATE E TR 27 #002	01/2012	27,668,670
30-025-43901	GOODNIGHT MIDSTREAM	RYNO SWD #001	08/2018	18,793,977
30-025-44386	GOODNIGHT MIDSTREAM	TED 28 SWD #001	03/2019	21,019,264
30-025-45349	GOODNIGHT MIDSTREAM	NOLAN RYAN SWD #001	10/2019	20,273,359
30-025-46382	GOODNIGHT MIDSTREAM	YAZ 28 SWD #001	11/2019	22,373,070
30-025-46398	GOODNIGHT MIDSTREAM	SCULLY STATE SWD #001	02/2020	14,612,041
30-025-47947	GOODNIGHT MIDSTREAM	SOSA SA 17 SWD #002	03/2021	24,895,196
30-025-50079	GOODNIGHT MIDSTREAM	PEDRO SWD #001	07/2022	22,068,281
30-025-50633	GOODNIGHT MIDSTREAM	Ernie Banks SWD #1	01/2023	7,711,885
30-025-50634	GOODNIGHT MIDSTREAM	Andre Dawson SWD #1	01/2023	11,582,987
30-025-46579	OWL SWD OPERATING	P 15 #001	11/2020	2,280
30-025-38789	PARKER ENERGY SUPPORT SERVICES	PARKER ENERGY SWD #005	03/2015	8,356,146
30-025-21852	PERMIAN LINE SERVICE	E M E SWD #021	09/1966	>43,135,269
30-025-46577	PERMIAN LINE SERVICE	N 11 #001	11/2020	8,212,084
30-025-04150	RICE OPERATING	E M E SWD #001	08/1960	>36,263,770
30-025-05902	RICE OPERATING	E M E SWD #005	11/1952	>35,373,897
30-025-12786	RICE OPERATING	E M E SWD #033M	04/1960	>59,869,210
30-025-12800	RICE OPERATING	E M E SWD #020	07/1959	>14,502,855
30-025-25616	RICE OPERATING	BLINEBRY DRINKARD #018	01/1978	>111,566,215
30-025-26317	RICE OPERATING	STATE E TRACT 27 #001	10/2008	36,294,097
30-025-38528	RICE OPERATING	BLINEBRY DRINKARD SWD #032	04/2007	20,009,787
30-025-46576	RICE OPERATING	N 7 #001	11/2020	22,185
30-025-37168	RICE OPERATING	BLINEBRY DRINKARD SWD #020	10/2005	70,037,890
30-025-10143	SOUTHWEST ROYALTIES	BRUNSON ARGO #011	09/1979	>2,515,836
30-025-33328	SOUTHWEST ROYALTIES	V M HENDERSON #015	07/2012	4,431,749

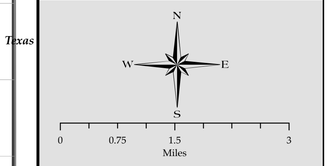
OPERATOR

- EMPIRE NEW MEXICO
- GOODNIGHT MIDSTREAM
- OWL SWD OPERATING (PILOT)
- PARKER ENERGY SUPPORT SERVICES
- PERMIAN LINE SERVICE
- RICE OPERATING
- SOUTHWEST ROYALTIES

San Andres SWDs

- AGU Outline
- EMSU Outline
- EMSU -B
- 2 mile buffer

Printed Date: January 13, 2025



1 in = 1 miles

1 inch = 4,956 feet

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

GOODNIGHT MIDSTREAM
5910 N. CENTRAL EXPWY SUITE 800 | DALLAS, TX 75206

EXHIBIT B

asking my confidence in the initial August interpretation of the data?

Q. I think you already gave me that, right? You told me that you stand by it. You're confident in it, right?

A. Yes.

Q. Okay. And I'm not hearing great confidence in this revised analysis.

MS. SHAHEEN: Objection. Form.

Q. BY MR. RANKIN: Are you confident in the revised analysis?

A. If the inputs used in that calculation are accurate, then the revised interpretation is correct.

Q. Okay. Relative to the analysis you did back in August, which is the more correct analysis?

MS. SHAHEEN: Objection. Form.

THE WITNESS: They are both correct with the inputs supplied. Other inputs could also change saturation values.

Q. BY MR. RANKIN: Mr. Dillewyn, you're being qualified -- you're seeking to be qualified as an expert in petrophysics.

A. Yes.

Q. And your job I think before the Commission is to advise them on what your opinion is in terms of what is

the reality, what is the most likely.

So as you -- as you prepare to appear in front of the Commission in February, what are you going to tell the Commission? Which of these potential analyses is the most likely in terms of oil in place or oil saturation? You can't tell them they're both right. Which one is it? Which is more likely the correct answer?

A. Given the values we have, we stand by our initial interpretation.

Q. Okay. Did NuTech conduct an uncertainty analysis of its petrophysical modeling results in its original -- of its original analysis associated with the August 2024 petrophysical logs?

A. No.

Q. How would you -- does NuTech ever do an uncertainty analysis of any kind of its petrophysical analyses?

A. In regards of looking at the analysis and the variance due to different parameters to then tie to production and actual other measured data, yes.

Q. How do you do that?

A. One example is to -- if we want to validate the type of formation water being produced, we will get a water sample from either client or an offset client to validate that value as RW has an immediate impact on water

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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

QUESTIONS

Action 430337

QUESTIONS

Operator: GOODNIGHT MIDSTREAM PERMIAN, LLC 5910 North Central Expressway Dallas, TX 75206	OGRID: 372311
	Action Number: 430337
	Action Type: [HEAR] Prehearing Statement (PREHEARING)

QUESTIONS

Testimony

Please assist us by provide the following information about your testimony.

Number of witnesses	*Not answered.*
Testimony time (in minutes)	*Not answered.*