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

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN, LLC FOR APPROVAL OF A SALTWATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO **CASE NO. 24123**

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**

EMPIRE NEW MEXICO LLC'S CLOSING BRIEF

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I. INTRODUCTION

The Commission issued an order approving the Eunice Monument South Unit ("EMSU" or "Unit") on December 27, 1984 and defined the unitized interval as "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-7765. The Commission also extended the vertical limits of the Eunice Monument Oil Pool within the EMSU. *See* Order No. R-7767. Empire New Mexico LLC ("Empire") acquired the Unit from Exxon Mobil/XTO ("XTO") in March of 2021. As a result, the EMSU Unit Agreement, which was approved by the Commission, New Mexico State Land Office and Bureau of Land Management in 1984, vests Empires with the "exclusive right, privilege and duty of exercising any and all rights of the parties hereto including surface rights which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances." *See* Empire Ex. A-4 (Unit Agreement) at Section 10. Thus, Empire alone is lawfully authorized to operate wells within the EMSU's unitized interval.

Goodnight Midstream Permian LLC ("Goodnight") must be prohibited from continuing its unlawful commercial disposal operations within the EMSU. Goodnight obtained its existing permits by failing to disclose critical information to the Oil Conservation Division ("Division" or "OCD"), and Goodnight's daily injection of tens-of-thousands of barrels of wastewater into the EMSU is causing waste and impairing correlative rights by reducing or tending to reduce the hydrocarbons that may be recovered from the unitized interval. Empire, as the designated operator of the EMSU, should be allowed to continue to produce the Grayburg formation and afforded the opportunity to produce the residual oil zone ("ROZ") within the San Andres formation without the waste caused by Goodnight. This production benefits not only Empire, but the State of New Mexico and the United States, which own 58% and 20% of the minerals, respectively.

Empire purchased the exclusive privilege to conduct oil and gas operations within the EMSU as its designated operator, whereas Goodnight has never been the designated operator of the EMSU and has no lawful right to inject into the unitized interval. Even Goodnight's witnesses are not aware of another non-designated operator obtaining injection authority for commercial disposal within a statutory unit. Goodnight is an outlier that improperly obtained its authority through misleading applications that were adjudicated without affording due process to XTO, the designated operator of the EMSU at that time.

In the present case, Empire has presented overwhelming geological and engineering evidence that demonstrates the existence of a ROZ within the unitized formation that is being wasted by Goodnight's injection operations. Goodnight's experts did no reservoir modeling and based their opinions on nonstandard, result-driven assessments that disregard scientific and industry standards. Goodnight's petrophysical analysis, for example, uses a non-geologist's rock facies selections that are inconsistent with the reservoir environment and invariably result in the exclusion of certain oil saturations that qualify as a ROZ.

Goodnight's experts also ignored fundamental geology and core data that should be used to select formation tops in accordance with well-established industry standards. Goodnight instead relied on engineering data and mud losses to rationalize an allegedly impermeable barrier, when that approach is not supported by any studies or literature. Goodnight's reservoir engineer and tertiary recovery expert, Dr. Larry Lake, admitted that he had never seen mud losses used to predict formation tops—but testified "[t]hat's what made it interesting."[1] Goodnight's use of experimental and result-oriented assessments that interested its experts rather than scientifically reliable methodologies is not credible evidence.

[1] 04/24 Tr. 208:25-209:5.

Finally, the Commission is not required to consider the economic viability of a tertiary recovery project to determine that Goodnight is causing waste. The watering out of hydrocarbons in paying quantities within the ROZ is merely one type of waste that must be prevented under the Oil and Gas Act. Goodnight is causing waste far beyond that, as its injected wastewater is impairing production in the Grayburg, resulting in scale and corrosion that reduces the efficacy of secondary and tertiary recovery, and adding economic barriers that impair Empire's opportunity to develop the ROZ. Contrary to Goodnight's arguments throughout this proceeding, Goodnight's only economic witness, John McBeath, conceded that a production in paying quantities ("PPQ") analysis does not apply to Empire's ROZ project. But even if it did, Empire has shown that tertiary recovery of the ROZ would be economic under New Mexico's PPQ standard. Mr. McBeath provided inconsistent testimony on this subject and conceded that he did not apply New Mexico's PPQ standard when he evaluated the economics of Empire's future CO_2 project.

The Commission should administer its paramount duty to prevent waste and protect correlative rights by disallowing Goodnight's disposal operations within the EMSU that are destroying New Mexico's irreplaceable natural resources. No recourse should be given to Goodnight in consideration of its lost investment, which is a consequence of Goodnight relying on injection permits that were issued based on its own misrepresentations and its decision to proceed to drill and operate wells after it was aware of Empire's objections. Empire's applications should be granted, and Goodnight's applications should be denied.

II. SCOPE OF THE HEARING

On March 4, 2025, the Commission entered its *Order Partially Amending the Commission's July 2, 2024 Order with Respect to the Scope of the Hearing*. The Commission determined that the issues to be decided in this case are: (1) whether granting Goodnight's applications would impair correlative rights or cause waste in the EMSU pursuant to Section 70-

2-11, or (2) whether granting Empire's applications would prevent the impairment of correlative rights or waste in the EMSU pursuant to Section 70-2-11.[2] The evidence presented at hearing conclusively demonstrates that the answer to both of these questions is a resounding "Yes."[3]

III. BURDEN OF PROOF

As the permit applicant, Goodnight must prove by a preponderance of the evidence that its proposed injection will not cause waste or impair Empire's correlative rights, and Empire bears the burden of proving, by a preponderance of the evidence, that Goodnight's existing injection is causing waste and violating correlative rights. *See* NMSA 1978, § 70-2-11(A). New Mexico follows the common-law rule that in an administrative proceeding, the party seeking affirmative relief bears the burden of proof. *See Int'l Minerals & Chem. Corp. v. N.M. Pub. Serv. Comm'n*, 1970-NMSC-032, ¶ 10, 81 N.M. 280 (placing the burden on the moving party). The Commission has said the same. *See* Order No. R-21420-A at 6.

New Mexico courts have clarified that "burden of proof" encompasses two distinct concepts: (1) the burden of persuasion, or the ultimate obligation to convince the factfinder, and (2) the burden of production, meaning the duty to present sufficient evidence to create a question of fact. *See Strausberg v. Laurel Healthcare Providers, LLC*, 2013-NMSC-032, ¶ 24, 304 P.3d 409. In plain terms, the burden of persuasion requires the applicant to convince the Commission that it

[2] The Order also included within the scope of the hearing the issue of whether granting or denying any of the applications would "cause the disposition of produced water in violation of the federal Safe Drinking Water Act or contrary to public health, the environment and fresh water resources pursuant to Section 70-2-12(B)(15)." However, that issue had been raised by the Oil Conservation Division ("OCD"), and OCD reached an agreement with Goodnight on the eve of presenting its case and withdrew its appearance. As a result, it is Empire's understanding that this question is no longer presented for the Commission's review.

[3] At hearing, Goodnight attempted to argue the EMSU's unitized interval should be revised to exclude the San Andres formation, but that issue is the subject of separate hearing applications that have been stayed. *See* March 9, 2024 Order Denying Empire New Mexico LLC's Motion to Dismiss Applications to Amend Orders R-7765 and R-7767. Goodnight filed a motion for partial summary judgment on that issue in this proceeding, but the motion was denied. *See* Order Denying Goodnight's Motion for Partial Summary Judgment (Feb. 14, 2025).

deserves the relief it seeks. The burden of production, by contrast, requires enough evidence to keep the application alive. In this instance, the party seeking affirmative relief from the Commission bears the burden of persuading the Commission that it is entitled to the relief requested in its applications.

During this proceeding, Goodnight has argued that if it makes a *prima facie* case, Empire must then "rebut" it. This is incorrect as a matter of law. The Court of Appeals has repeatedly confirmed that in administrative proceedings, only the burden of *production* may shift. The burden of *persuasion* does not. *See, e.g.*, *Gemini Las Colinas, LLC v. New Mexico Taxation & Revenue Dep't*, 2023-NMCA-039, ¶ 27, 531 P.3d 622 ("[W]hile the burden of production often shifts (or even disappears) during civil litigation, the burden of persuasion generally remains on the party who bears it initially.").

Just last month, the Court of Appeals again reaffirmed this principle in *Alto Coalition for Env't Preservation v. Roper Construction Inc.*, No. A-1-CA-41197 (N.M. Ct. App. May 14, 2025). There, the court reversed a permitting decision by the Environmental Improvement Board, holding that once a permit applicant makes a *prima facie case*, "the person opposed to the relief sought must go forward with adverse evidence showing why the relief should not be granted." *Id.* at *6, ¶ 24. But, echoing *Gemini*, the court made clear that "going forward" means offering evidence sufficient to raise a question of fact as to the relief requested. *Id.* at *5-7, ¶¶ 19-26. It does not turn the entire proceeding on its head and force the responding party to carry the burden of proof.

Goodnight has also claimed that Empire must provide "overwhelming" evidence to revoke Goodnight's existing permits. *See* 05/20 Tr. 153:3-8. However, no such standard exists under New Mexico law.

Accordingly, each party bears the burden of persuasion, by a preponderance of the evidence, on their respective applications. For the reasons that follow, Goodnight has failed to establish even a *prima facie* case. Empire, by contrast, has more than met its burden of production and persuasion. The Commission should deny Goodnight's applications and grant Empire's applications.

IV. ARGUMENT

A. New Mexico law requires the Commission to prevent waste of hydrocarbons and protect correlative rights for the benefit of the state and its citizens.

Empire has presented overwhelming evidence that Goodnight's current and proposed injection of wastewater into the EMSU unitized interval is causing waste and impairing Empire's correlative rights within the Grayburg and the San Andres ROZ. If Goodnight's injection is allowed to continue, it will forever condemn the natural resources owned by the State of New Mexico, the United States, and Empire, among others.

The Constitution of the State of New Mexico requires the Legislature to protect the state's natural resources, "consistent with the use and development of these resources for the maximum benefit of the people." N.M. Const. Art. XX, § 21. To that end, the Legislature created the Oil Conservation Commission and Division to prevent the waste of hydrocarbons and protect correlative rights. *See* § 70-2-11.

As the New Mexico Supreme Court has recognized, "the basis of [the Commission's] powers is founded on the duty to prevent waste and protect correlative rights. . . . *[T]he prevention of waste is the paramount power*, inasmuch as this term is an integral part of the definition of correlative rights." *Continental Oil Co. v. Oil Conservation Comm'n*, 1962-NMSC-062, ¶ 11, 146 N.M. 24 (emphasis added); *see also El Paso Natural Gas Co. v. Oil Conservation Comm'n*, 1966-NMSC-092, ¶ 4, 76 N.M. 268 ("[T]he primary concern of [the Oil and Gas Act is] eliminating and

preventing waste in the pool so far as it can practicably be done, and next the protection of the correlative rights of producers from the pool."). The term "waste" includes "underground waste," which is defined as the "inefficient, excessive or improper, use or dissipation of the reservoir energy, including gas energy and water drive, of any pool, and the locating, spacing, drilling, equipping, operating or producing, of any well or wells in a manner to reduce or tend to reduce the total quantity of crude petroleum oil or natural gas *ultimately recovered from any pool*." Section 70-2-3(A) (emphasis added). As part of its obligation to prevent waste, the Commission has authority "to prevent the drowning by water of any stratum or part thereof capable of producing oil or gas or both oil and gas in paying quantities *and to prevent the premature and irregular encroachment of water or any other kind of water encroachment that reduces or tends to reduce the total ultimate recovery of crude petroleum oil or gas or both oil and gas from any pool*." Section 70-2-12(B)(4) (emphasis added).

New Mexico Courts have also recognized that the Oil and Gas Act includes a "practicable" standard. *See, e.g., Grace v. Oil Conservation Comm'n*, 1975-NMSC-001, ¶ 27, 87 N.M. 205. Section 70-2-17(A) of the Oil and Gas Act states:

> The rules, regulations or order of the division shall, *so far as it is practicable to do so*, afford to the owner of each property in a pool *the opportunity* to produce his just and equitable share of the oil or gas, or both, in the pool, being an amount, *so far as can be practically determined*, and *so far as can be practicably obtained* without waste, *substantially in the proportion* that the quantity of the recoverable oil or gas, or both, under such property bears to the total recoverable oil or gas, or both, in the pool, and for this purpose to use his just and equitable share of the reservoir energy.

(emphasis added). Thus, precise proof of the loss of a specific volume of hydrocarbons is not required to establish waste.

The Oil and Gas Act's definition of "correlative rights" mirrors the language in Section 70-2-17(A) and defines "correlative rights" as:

> [T]he opportunity afforded, so far as it is practicable to do so, to the owner of each property in a pool to produce *without waste the* owner's just and equitable share of the oil or gas or both in the pool, being an amount, so far as can be practicably determined and so far as can be practicably obtained without waste, substantially in the proportion that the quantity of recoverable oil or gas or both under the property bears to the total recoverable oil or gas or both in the pool and, for such purpose, to use the owner's just and equitable share of the reservoir energy.

Section 70-2-33(H) (emphasis added). Accordingly, the concepts of waste and correlative rights are intertwined, and the Commission must consider both in evaluating this matter.

In addition to the Commission's obligations to prevent waste and protect correlative rights, it must also administer the Statutory Unitization Act, which applies to the EMSU. Under the Act, NMSA 1978, §§ 70-7-1 to -21 (1975, as amended through 2024), the Commission has a duty "to make and enforce such orders and do such things as may be necessary or proper to carry out and effectuate the purposes of the Statutory Unitization Act." Section 70-7-3. The purpose of the Statutory Unitization Act is to "provide for the unitized management, operation and further development of . . . oil and gas properties . . . to the end that greater ultimate recovery may be had therefrom, waste prevented, and correlative rights protected of all owners and mineral interests in each unitized area." Section 70-7-1. Because the Commission approved the EMSU under the Statutory Unitization Act, it must protect the reserves underlying the Unit.

Viewed against this legal backdrop, the evidence presented at hearing demonstrates that to prevent waste and protect correlative rights, Goodnight's injection of millions of barrels of produced water into the EMSU unitized interval must cease. The Commission must enforce Empire's exclusive right to operate and manage the EMSU, which has been in existence for over 40 years, and to produce oil from the Grayburg and San Andres intervals within the Unit.

B. As the designated operator of the EMSU, only Empire may lawfully operate wells within the Unitized Formation.

The EMSU Unit Agreement was approved on December 27, 1984, and has existed, undisturbed, since that date. *See* Empire Ex. A-4. Section (h) of the Agreement defines the "Unitized Formation" as "the interval underlying the Unit Area, the vertical limits of which extend from an upper limit described as 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." *Id.* Simply stated, the Unitized Formation consists of the Grayburg and the San Andres. Section (i) of the Unit Agreement defines "Unitized Substances" to include all "oil, gas, gaseous substances . . . within and produced from the Unitized Formation." *Id.* Thus, Unitized Substances include the oil and gas within the Grayburg and the San Andres in the EMSU.

Section 10 of the Agreement states that the "exclusive right, privilege and duty of exercising any and all rights of the parties hereto including surface rights which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances *are hereby delegated to and shall be exercised by the Unit Operator*." *Id.* (emphasis added). Under the Agreement, which was approved by the Commission, New Mexico State Land Office, and Bureau of Land Management, Empire has the exclusive right, without interference, to produce oil from the Grayburg and San Andres in the EMSU. No Goodnight or Empire witness has been able to identify any other oil unit, in the history of New Mexico, where commercial saltwater disposal wells have been authorized by the Division. *See, e.g.*, 02/24 Tr. 166:16-25; 04/09 Tr. 38:21-39:18; 04/11 Tr. 182:3-183:11; 04/22 Tr. 117:10-16; 04/24 Tr. 57:14-23, 88:12-21; 05/20 Tr. 138:9-24. Even outside New Mexico, no Goodnight or Empire witness has been able to identify any oil unit in which commercial SWDs were authorized by any regulatory body.

With no evidentiary basis, Goodnight proposes that the Commission set a precedent that will endanger the oil units of operators across the State of New Mexico and result in waste of the State's precious natural resources. Goodnight invites the Commission to allow commercial SWD operators to enter existing oil units and establish "water management zones"—a creature of no rule, regulatory or legislative existence. The Commission should decline Goodnight's request that it authorize this unprecedented and wasteful practice.

C. Goodnight's existing SWD permits within the EMSU must be revoked because Goodnight failed to disclose that it was injecting into the EMSU unitized interval and failed to notify XTO of its hearing applications.

Goodnight's injection permits must be revoked if: (1) Goodnight's permit applications contained a material mistake; (2) Goodnight's permit applications include an incorrect statement on which the Division relied; (3) injected fluid is escaping from the approved injection interval; or (4) the injection could lead to waste. *See* Order No. R-22027 (Ernie Banks SWD); Order No. R-22026 (Andre Dawson SWD); Order No. R-21190 (Sosa SWD); Admin. Order SWD-2307 (Ryno SWD). Under the Division's regulations, the failure to provide sufficient notice is also a basis for revocation. Based on these factors, Goodnight's existing permits should be revoked.

1. <u>Goodnight's existing permits should be revoked because it deliberately failed to disclose that it proposed to inject into the EMSU unitized interval and into the EMSU oil pool.</u>

Goodnight made incorrect and misleading statements in its Applications for Authorization to Inject, and OCD relied on those statements in granting the permits. First, Goodnight was aware it was injecting into the EMSU unitized interval but chose not to disclose that information anywhere in its applications. 04/24 Tr. 54:11-58:14; 72:9-73:5; 81:9-82:13. Goodnight's applications also stated that Goodnight would inject into the San Andres SWD Pool and omitted the Eunice Monument Oil Pool, leading the Division to believe the injection would not impact hydrocarbon-bearing zones. *See id.*

Second, Goodnight stated that the proposed SWDs would "be injecting water into the San Andres Formation which is a non-productive zone known to be compatible with formation water from the Wolfcamp and Bone Springs." GN Exs. A-4, A-5, A-6, A-7. In reality, the unitized interval is hydrocarbon bearing and includes the San Andres, which Goodnight's experts have conceded includes a ROZ. 04/24 Tr. 102:23-106:20; 04/25 Tr. 104:22-25; 05/20 Tr. 146:2-11. Goodnight interpreted this section of the C-108 as only applying to existing production, which is nonsensical and would not prevent waste, and also ignores that the San Andres is productive in the vicinity of the EMSU. 04/24 Tr. 102:23-106:20; *see* Empire Ex. N-15.

Third, Goodnight stated the injected water would be compatible with the San Andres water when that is not the case. As Empire demonstrated at hearing, there are significant water chemistry differences between the Delaware Basin water that Goodnight is injecting and the San Andres and Grayburg water. 04/09 Tr. 160:7-17, 180:20-188:18. As a result, the injection is causing scale and damaging the formation. *See id.; see also* 02/24 Tr. 38:13-39:15.

Goodnight's permits should also be revoked because injection fluid is escaping the approved injection interval in the San Andres. It was established at hearing that no impermeable barrier exists between the Grayburg and the underlying San Andres, and Goodnight's wastewater is communicating out of the permitted formation and into the Grayburg through fractures. *See, e.g.*, Empire Exs. N-23; N-24; *see* 02/24 Tr. 29:22-30:3, 34:18-21, 154:11-13; 04/09 Tr. 163:5-167:4; 04/11 Tr. 79:2-82:25. As discussed below, Goodnight's wastewater injection in the EMSU is causing waste because it is reducing recovery of the existing secondary recovery oil zone in the Grayburg Formation. Goodnight has made no effort whatsoever to identify where radially its wastewater is presently going, or will go. 04/21 Tr. 143:4-13; 262:21-24.

The evidence shows that Goodnight omitted material information from its applications and made inaccurate statements, on which the Division relied. 04/24 Tr. 59:14-64:6. Goodnight knowingly failed to disclose in its applications the hydrocarbon bearing zones and that it was injecting into the EMSU. *Id.* Because Goodnight intentionally failed to disclose material information in its applications, provided inaccurate information on which the Division relied, and injection fluid is escaping from the San Andres into the Grayburg, Goodnight's existing permits must be revoked.

2. Goodnight's existing permits for the Andre Dawson, Ernie Banks, Sosa, and Ryno wells should be revoked because Goodnight's notice was defective.

When applying administratively for a permit to inject, the applicant must send a copy of the application "to each owner of the land surface on which each injection or disposal well is to be located and to each leasehold operator and other affected persons, as defined in Subsection A of 19.15.2.7 NMAC, within any tract wholly or partially contained within one-half mile of the well." 19.15.26.8(B)(2) NMAC. If an objection is made to the administrative application, then the applicant must file an application for hearing with the Division. *See* 19.15.26.8(D) NMAC. Applicants to an adjudicatory proceeding before the division are required to provide notices as set out in 19.15.4.12 NMAC. Among other requirements for notice, an applicant must provide the same notice to "affected persons" as required by 19.15.26.8(B)(2) NMAC. In accordance with Rule 19.15.2.7, "affected persons" include "the designated unit operator" of a division-approved or federal unit.

In the context of Commission proceedings, the New Mexico Supreme Court has held that due process requires that "if a party's identity and whereabouts are known or could be ascertained through due diligence, the due process clause of the New Mexico and United States Constitutions requires the party who filed a[n] . . . application to provide notice of the pending proceeding by

personal service to such parties whose property rights may be affected as a result." *Uhden v. N.M. Oil Cons. Comm'n*, 1991-NMSC-089, ¶ 13, 112 N.M. 528. In this instance, Goodnight was fully aware that XTO was an affected party but failed to notify XTO of its hearing applications. *See, e.g.*, 04/24 Tr. 65:22-66:20, 70:21-71:2. And although Goodnight's witnesses repeatedly testified that XTO received notice of its SWD applications, Goodnight failed to provide return receipts or any evidence whatsoever that XTO received actual notice of the applications. *See, e.g., id.* 65:7-21.

In addition, regarding the Ryno well, Goodnight's application identified the Projected Injection Interval as 4,320' to 5,625', but the Legal Notice published on June 12, 2019, in the Hobbs News-Sun identified the injection interval as 4,500' to 5,350'. 05/20 Tr. 99:15-102:2. The top of the interval differs by 180', which is material and does not comply with the Division's notice requirements for SWDs. *See id.* The Ryno application was approved administratively based on the fact that there were no objections, but the published notice was incorrect.

Because Goodnight obtained approval of its applications based on defective notice, its permits must be revoked.

D. Goodnight's existing and proposed injection reduces or tends to reduce the recovery of hydrocarbons within the EMSU and impairs correlative rights by watering out the Grayburg and interfering with Empire's tertiary recovery project to produce the San Andres ROZ.

New Mexico's oil and gas policies concern "the need and right of the state, in the interest of the public welfare, to prevent waste of an *irreplaceable* natural resource." *El Paso Natural Gas Co.*, 1966-NMSC-092, ¶ 4. Additionally, the Commission has "recognized that the protection of the correlative rights . . . weighs equally with the obligation to prevent waste." *Jalapeno Corp. v. New Mexico Oil Conservation Comm'n*, No. A-1-CA-37449, 2020 WL 5743659, *6, ¶ 6, (N.M. Ct. App. Sept. 23, 2020). In furtherance of these state policies and statutory duties, the Commission

should prevent Goodnight's injection operations from continuing to cause waste within the EMSU and impair Empire's correlative rights.

Goodnight has argued that its disposal of wastewater into Lower San Andres is not causing waste, claiming that (1) the ROZ is limited to the Upper San Andres, and (2) an impermeable barrier prevents vertical migration of the wastewater in Lower San Andres. These claims are not supported by any credible evidence. Goodnight's experts rely on unreasonable and unscientific assessments that deviate from industry standards, ignore fundamental geology and core data, and utilize irrational and result-driven assumptions. In contrast, Empire's empirical evidence demonstrates to a reasonable degree of scientific certainty that a ROZ exists throughout San Andres, and no laterally continuous barrier underlies the EMSU that could prevent fluid communication between San Andres and Grayburg.

1. Empire has demonstrated that a recoverable ROZ exists within the San Andres in the EMSU.

It is undisputed that a ROZ exists within the San Andres. All experts agree—Empire's and Goodnight's. *See, e.g.*, 04/25 Tr. 104:22-25 (Commissioner Ampomah recognizing that "Empire's experts and also even Goodnight's experts, they've all – they've all presented to the Commission, at least based on the evidence, there is an ROZ."). Empire's expert geologists, Dr. Robert Lindsay and Dr. Robert Trentham, and engineer Steve Melzer, demonstrated through core analysis and log data that the EMSU has oil saturations between 20-40% (i.e., ROZ) throughout the San Andres. *See generally* 02/24 Tr. 22:25-24; 02/27 Tr. 786-831, 822:12-25. Likewise, Stanley Birkhead's petrophysical analysis of unmodified and corrected data ranges confirm a "very continuous level of ROZ throughout the entire San Andres," including the depths designated by Goodnight as Lower San Andres." 02/25 Tr. 458:23-459:3; *see also* 02/26 Tr. 647:5-13 ("[T]here are definite indications [of a ROZ] going through Lower San Andres."). A ROZ is detectable all the way down "to the

base of the cores, so we know it has to go deeper." 02/24 Tr. 38:1-11. Even Goodnight's petrophysicist Dr. Davidson confirms that oil saturation exists throughout the San Andres by stating "there's some up to 30 to 40 percent in there. They show up periodically up and down the system." 04/21 Tr. 242:17-243:14.

Goodnight's contention that the ROZ is only in the Upper San Andres is not supported by the evidence. Its petrophysical assessment and corresponding expert evaluation of the data lacked sound scientific methods. Goodnight did not have a geologist pick the rock types for its facie model. Its geologist, William Knights, was unaware of the methodology used to select the rock types. 04/22 Tr. 175:19-24, 176:13-19, 178:1-6. Dr. James Davidson, a non-geologist, selected rock types of mud-dominated packstone and limestone (i.e., non-reservoir) based on his incorrect belief that the EMSU was a deep-water, low-energy environment. Contrary to Dr. Davidson's non-geologist opinion, Goodnight geologist William Knights agreed that the EMSU is predominately a shallow water environment. 04/22 Tr. 163:14-16. The erroneous rock type selections of an engineer (Dr. Davidson) formed a base assumption of Goodnight's assessment that the San Andres is eighty percent (80%) or more water saturated, and no credit is given to crude volumes of rocks that have less than twenty percent (20%) oil saturation.

Goodnight's result-driven assessment inevitably reached the conclusion Goodnight wants – that no ROZ exists within the lower San Andres. This conclusion, however, is the biased byproduct of an unscientific and unreliable assessment. Goodnight offers no credible evidence to support its position on the ROZ within the unitized formations.

2. Goodnight's current and proposed injection is resulting in waste and impairing Empire's correlative rights by interfering with Empire's ability to implement a tertiary recovery project to produce the San Andres ROZ.

Waste—including underground waste—occurs where the "operating or producing, of any well or wells . . . reduce[s] or tend[s] to reduce the total quantity of crude petroleum oil or natural

gas ultimately recovered." Section 70-2-3(A). The Commission may also find waste based on "its ordinary meaning" and as the words "underground waste . . . are generally understood in the oil and gas business." *Id.; Richard v. Marathon Petroleum Corp.,* No. A-1-CA-40747, at *10, ¶ 44 (N.M. Ct. App. May 14, 2025) ("[C]ommon dictionary definitions" can be consulted "to identify the word's ordinary meaning."). Empire's expert witnesses Steve Melzer and Frank Marek have referred to waste as impeding the recovery of hydrocarbons.

Waste is integral to correlative rights, which afford the "opportunity . . . to produce *without waste* the owner's just and equitable share of the oil or gas or both." Section 70-2-17(A) (emphasis added). Deprivation of an owner's opportunity to recover its equitable share of oil and/or gas causes waste if it reduces or tends to reduce the total hydrocarbons ultimately recovered. *See* § 70-2-3(A). Goodnight's commercial disposal operations within the EMSU have various consequences that are individually and collectively causing waste and impairing correlative rights.

Goodnight argues that its injection is not causing waste because there is an impermeable barrier between the lower San Andres – which it calls a "water management zone" – and the upper San Andres, where it agrees a ROZ exists. Goodnight's claim is based on flawed and result-driven analysis that is not supported by any scientific literature or industry practice.

First, Goodnight failed to geologically characterize the San Andres. All of Goodnight's witnesses testified that they relied on Preston McGuire's picks for the top of the San Andres formation, but Goodnight conceded that it did not focus on characterizing the San Andres. *See* 05/20 Tr. 131:13-17. The Lovington sand is a critical geological feature within the San Andres based on established literature. *See* 02/25 Tr. 263:6-17. Goodnight's witnesses testified they did not know what or where it was and placed the top of the San Andres above and below the Lovington Sand. *See id.* 265:20-266:4; *see, e.g.*, 04/21 Tr. 144:18-25; 04/22 Tr. 103:16-18. All of

Goodnight's experts relied on the San Andres tops provided by Mr. McGuire, and he testified to relying upon tops picked by a prior geologist. *See* 05/19 Tr. 185:13-18; 05/20 Tr. 130:6-12, 133:1-10. Therefore, unlike Empire, Goodnight did not present a single witness at hearing who picked the top of the San Andres.

Second, Goodnight's claimed impermeable barrier does not exist. None of Goodnight's witnesses could point to any literature that identifies an impermeable barrier between the upper and lower San Andres within the EMSU. *See* 05/20 Tr. 125:14-19. Rather than relying on geological studies, analysis, or literature, Goodnight relied on: (1) mud losses that occurred while drilling its SWDs; and (2) Mr. McGuire's Exhibit B-9, which included well logs on which he drew a purported barrier based on a 7% porosity cutoff. Neither method is valid.

Goodnight's witnesses were unable to cite a single study to support their claim that mud losses that occur while drilling are sufficient to show an impermeable barrier between geological zones. *See id.* 39:1-18; 04/24 Tr. 209:14-17. Goodnight's expert in petroleum geology, William Knight, testified that he was not sure how mud losses could show an impermeable barrier across the EMSU. *See* 04/22 Tr. 127:19-128:16. And even Dr. Lake recognized the novel nature of Goodnight's theory. 04/24 Tr. 208:25-209:5. Drilling mud losses cannot be used to establish an impermeable barrier between zones, particularly in the absence of any correlating geological evidence. Goodnight's argument on this issue must be rejected.

Goodnight's claim that an impermeable barrier exists based on a 7% porosity cutoff shown in Mr. McGuire's Exhibit B-9 is not supported by any literature. 05/20 Tr. 121:25-126:7. All of Goodnight's witnesses relied on Mr. McGuire's Exhibit B-9, but the exhibit does not show an impermeable barrier across the San Andres. For example, in the Ryno well, the exhibit shows no barrier between Goodnight's injection zone and Empire's producing Grayburg zone. *See* 05/19 Tr.

266:6-14. Mr. McGuire's cartoon also ignores core data within the EMSU. 05/19 Tr. 257:20-258:3. And even where Goodnight attempted to draw "barriers," the barriers could not be correlated from well to well. For example, the "barriers" shown in the EMSU 462 do not correlate to the "barriers" shown in the EMSU 460, which is approximately 4,052' away; the "barriers" shown in the Banks 17-1 do not correlate to the "barriers" shown in the EMSU 462, which is approximately 5,173' away; the "barriers" shown in the Banks 17-1 do not correlate to the "barriers" in the Ryno 17-1, which is approximately 3,333' away; and the "barriers" shown in the Sosa 17 2 do not correlate to the "barriers" shown in the Ryno 17-1, which is approximately 4,278' away. GN Exs. B-8; B-9; 05/19 Tr. 263:7-24, 266:6-14. No "barriers" are radially/laterally mappable across these relatively short distances, let alone across the 14,189.94-acre EMSU.

In contrast, Empire presented multiple geology experts, including Dr. Lindsay, who testified regarding the depths of the San Andres within the EMSU based on published studies and scientific analyses. No study identifies an impermeable barrier between the upper and lower San Andres as Goodnight claims, and mud losses can occur for any number of reasons and do not demonstrate a barrier.

Third, Goodnight is injecting off-lease produced water with high saline content that creates scale when it reacts with the sulfates in the unitized formations. *See* 02/24 Tr. 38:13-39:15; 04/09 Tr. 160:7-17, 180:20-188:18. Goodnight's wastewater introduces barium and strontium which result in "very nasty scale" that irreparably "block[s] off the ROZ" because it cannot be removed through nonmechanical means. 04/9 Tr. 184:8-185:12. Scale "is basically going to cement up the ROZ" and thereby reduce the reservoir potential. 02/24 Tr. 39:5-15. The injected wastewater is also introducing iron, which causes corrosion of the formation. 04/09 Tr. 186:17-23. This scale and

corrosion also damages Empire's well equipment. *Cf. id.* 190:15-191:17 (discussing comparable damage to Goodnight's own wells).

Finally, Empire will be forced to incur additional expenses to implement its CO_2 recovery project due to Goodnight injecting commercial volumes into the EMSU. The resulting increase in fluid and formation pressure will require more CO_2 to recover hydrocarbons from the ROZ. To achieve the same recovery potential, Empire will need to expense (1) the purchase of additional CO_2, (2) removal of excess water, and (3) the purchase of "heavier duty equipment to handle the higher pressures." 04/09 Tr. 158:2-5, 177:20-179:22. These additional expenses may be substantial. According to Goodnight's witness Mr. McBeath, CO_2 will be the most expensive part of the tertiary recovery project. *See* 04/11 Tr. 125:12-14. Empire will also incur the costs of removing radioactive NORM that is forming from the lithium and other heavy metals in the injected wastewater. *See* 04/09 Tr. 185:23-186:15.

The above impacts of Goodnight's injection operations are causing waste within the EMSU. Less oil will be available for recovery because the injected wastewater is causing (1) hydraulic fracturing that results in recoverable ROZ being bypassed, and (2) scale and corrosion that destroys the unitized formation by cementing up the pore space. *See supra* at Page 18; 04/07 Tr. 129:4-7; *see also* 04/08 Tr. 98:15-23 (Goodnight's injection operations are "damaging the hydrocarbon reserves present at the EMSU."). Empire's well equipment is also being damaged. Such damages, along with the additional costs of a future CO2 recovery project, are obstructing Empire's opportunity to produce its fair share of the oil from the ROZ. Mr. West testified that the additional expenses may "kill[] the project" which "is why it's crucial that [Goodnight's] wastewater can't [be] allowed . . . into the San Andres." 04/09 Tr. 179:15-22.

3. Goodnight's current and proposed injection is resulting in waste and impairing Empire's correlative rights by watering out the Grayburg.

Empire has demonstrated that the wastewater Goodnight is injecting into Lower San Andres is migrating into Upper San Andres and Grayburg. The migrating wastewater is causing the waste and infringement of correlative rights throughout the San Andres and the Grayburg formations underlying the EMSU. In fact, Goodnight's commercial disposal has already increased the expense of, and lowered production from, Empire's Grayburg producers—"[t]he damage has already been done." 04/11 Tr. 43:7-25.

Goodnight's injection of commercial volumes pressurizes the San Andres and forces wastewater to migrate upwards through vertical plumes. Grayburg producers have extracted more water than expected, and the additional unanticipated volumes are coming from the San Andres. Empire Ex. N-23; 04/10 Tr. 156:21-158:5; 04/11 Tr. 62:25-64:25. Dr. Lindsay's fracture studies and permeability analysis demonstrates that communication between San Andres and Grayburg occurs through fractures and vertical plumes within the EMSU. *See* 02/24 Tr. 28:16-30:13; *accord* 04/09 Tr. 163:14-16 (Mr. West testifying that "there is no other explainable way that water is getting into the Grayburg than through these plumes or fractures in the San Andres.") Water can even move through the low porosity rocks that have achieved high permeability. *See* 02/24 Tr. 29:22-30:3 (Fractures as thin as paper have "infinite permeability"). Additionally, Dr. James Buchwalter's model shows to a reasonable degree of scientific probability that water is moving from San Andres into Grayburg. *See* 02/27 Tr. 766:6-11. Because there is no continuous seal, the injected wastewater is migrating into the Upper San Andres and the Grayburg formations and further causing waste and impairing correlative rights.

Empire also presented Chevron's 1996 water chemistry work that indirectly shows communication between San Andres to Grayburg. The injected wastewater has more chloride,

calcium, magnesium, and other ions as compared with the concentrations typically found in the unitized formations. Grayburg water samples containing higher concentrations of such ions show that the wastewater injected into the Lower San Andres is moving into the Grayburg. *See* 04/24 Tr. 160:7-23; *see also* 02/24 Tr. 34:12-21 (Dr. Lindsay, testifying that water chemistry shows that injected wastewater is moving from San Andres into Grayburg).

Because there is no continuous water seal, Goodnight's injected wastewater is migrating and causing waste throughout the unitized formations by reducing or tending to reduce recoverable hydrocarbons. The commercial volumes of injected wastewater are resulting in scale, corrosion, and pressure increases that impede Empire's planned tertiary recovery project within the San Andres ROZ and are watering out the producing Grayburg reservoir, and adding economic barriers that may be prohibitive to a tertiary recovery project As the designated operator of the EMSU, Empire should be afforded the opportunity to recover hydrocarbons—from which the state and its citizens will benefit—without the waste and additional expenses that are being caused by Goodnight's unlawful injection operations.

E. Empire is not required to establish its future San Andres ROZ tertiary recovery project is economic to prevail but has done so regardless.

As discussed above, the Statutory Unitization Act was created by the legislature to provide for "greater ultimate recovery" from the "unitized management, operation and further development" of oil and gas properties to which the statute is applicable. Section 70-7-1. Further, the statute was enacted with the goal of "substantially increas[ing] the recovery of oil above the amount that would be recovered by primary recovery alone." *Id*. Empire's ability to recover hydrocarbons from the ROZ within the EMSU is precisely the type of "greater ultimate recovery" contemplated by the statute.

Unitization of the EMSU was approved in 1984 through Order No. R-7765. The concurrently issued Order No. R-7767 approved expanding the vertical limits of the preexisting Eunice Monument Oil Pool and Gas Pool to match the unitized interval of the EMSU. In the unitization order, the Division found, among other things, that "the estimated additional costs, if any, of conducting [unitized methods of operation] will not exceed the estimated value of the additional oil and gas so recovered plus a reasonable profit." *Accord* § 70-7-6(A)(3). The Division echoed this finding when it denied Goodnight's Application for the proposed Piazza SWD Well No. 1, by concluding that Empire "provided sufficient evidence for continued assessment of the Unitized Interval for potential recovery of any additional hydrocarbon resources remaining in place." *See* Order No. R-22869-A at 8, ¶ 11. Therefore, it has already been determined that unitized operations in the EMSU will lead to the recovery of oil and gas at a profitable level.

Further, the Commission has jurisdiction to issue orders "to prevent the drowning by water of any stratum or part thereof capable of producing oil or gas or both oil and gas in paying quantities and *to prevent the premature and irregular encroachment of water or any other kind of water encroachment that reduces or tends to reduce the total ultimate recovery of crude petroleum oil...from any pool*;" and "to require wells to be drilled, operated and produced in such a manner as to prevent injury to neighboring leases or properties." Section 70-2-12(B)(4), (7) (emphasis added). The Commission may preclude injection if water encroachment causes waste by "reduc[ing] or tend[ing] to reduce the total ultimate recovery" of hydrocarbons – not only if injection reduces production in paying quantities. Section 70-2-3(A); *see also* § 70-2-2 (prohibiting the products of oil or gas from being handled "in such manner or under such conditions or in such amounts as to constitute or result in waste")

Throughout these proceedings, Goodnight has argued that Empire must prove that its tertiary recovery project is recoverable in paying quantities to prevail. "Production in paying quantities" was recently defined by the Division in its methane gas rule as "the production of a quantity of oil and gas that yields revenue in excess of operating expenses." 19.15.27.7(Q) NMAC. It is well established that whether a well has produced in paying quantities is determined in hindsight, by considering whether the well "pays a profit, even small, over operating expenses… though it may never repay its costs, and the enterprise as a whole may be unprofitable." *Clifton v. Koontz*, 325 S.W.2d 684, 691 (Tex. 1959); *see Maralex Res., Inc. v. Gilbreath*, 2003-NMSC-023, ¶ 9, 134 N.M. 308**.**

Production in paying quantities analyses do not apply to a project, like tertiary recovery, which has not yet been implemented. Goodnight's only economic witness, John McBeath, agreed and testified that he does not believe production in paying quantities applies to "a future project like a ROZ." 04/11 Tr. 169:16-20. According to Mr. McBeath, "paying quantities is a term of art and only applies to whether or not that well can hold a lease." *Id.* 188:13-15.

Despite not actually needing to prove the economics of its tertiary recovery project to prevail on its applications, or defeat Goodnight's, Empire has shown that the ROZ in the EMSU is sufficiently oil saturated to be recoverable through CO_2 flooding, and that a CO_2 flooding project in the EMSU should conservatively yield 15% and may be closer to 30% recovery of the ROZ. *See* 02/27 Tr. 862:20-864:6; 02/28 Tr. 1164:2-19; 04/09 Tr. 154:17-156:18. Mr. West's calculations estimate that this project would result in $1.1 billion in royalties and a half billion dollars in taxes paid to the State of New Mexico. 04/09 Tr. 154:3-7.

Empire presented several successful tertiary recovery projects within the San Andres, including:

- The Seminole field, with similar properties to the EMSU, located approximately 45 miles from the EMSU, which has yielded approximately 68 million barrels from a ROZ; and
- The Tall Cotton field, located about 45 miles from the EMSU, which produced approximately 2,000 bopd.

See 02/27 Tr. 802:9:804:19, 848:20-849-9, 856:14-857:7; *see also* 04/11 Tr. 57:11-20 (Mr. West, testifying that the Seminole field is as "good [an] analogy as what we can get" for a CO_2 recovery project in the EMSU).

Empire's economic modeling shows that a tertiary recovery project in the EMSU would be profitable. *See* 04/09 Tr. 154:17-156:18. Goodnight's initial analysis included capital expenditures and for that reason, concluded that Empire's future CO_2 project would result in millions of dollars of losses. However, at hearing, Mr. McBeath conceded that production in paying quantities would actually require the "exclusion of all capital expenditure and consideration be given only to recurrent revenue against recurrent expense, both actual and anticipated." 04/11 Tr. 171:3-10. Mr. McBeath also admitted that he did not conduct any economic analysis that excludes the capital expenditures of a tertiary recovery project. *See id.* 171:23-172:3. As a result, his analysis is unreliable.

As Empire's witnesses testified and Mr. McBeath conceded, no party will invest in Empire's proposed tertiary project while Goodnight's injection is ongoing. Goodnight's injection must cease for Empire to pursue its project and provide the resulting economic benefits to the State of New Mexico.

V. CONCLUSION

Empire has presented overwhelming evidence that Goodnight's current and proposed injection into the EMSU unitized interval must not be allowed because it is resulting in waste and impairing correlative rights. Accordingly, Empire's applications must be granted, and Goodnight's applications must be denied.

Respectfully submitted,

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CERTIFICATE OF SERVICE

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