

The History of Oil and Gas Conservation Legislation in Arkansas

Phillip E. Norvell*

I. INTRODUCTION

The Arkansas Conservation Act, Act 105 of 1939 (the “Conservation Act”), celebrated its seventy-fifth anniversary in 2014. This legislation imposed a scheme of state regulation on oil and gas production to avoid waste and protect correlative rights. The Conservation Act also created the Arkansas Oil and Gas Commission (AOGC) to administer and enforce the state’s new regulatory scheme.

This article provides a narrative of the history of the Conservation Act’s enactment and its impact on the oil and gas industry within the state. Part II examines the rule of capture, the prodigious economic and physical waste it yielded, and the concept of correlative rights. Part III explores early conservation attempts in the producing states to stem the vast tide of waste. Part IV addresses the early Arkansas experience with waste and the ineffective legislative attempts to solve the matter, including the pivotal events in the Rodessa and Schuler Fields that catalyzed the passage of the Conservation Act. Finally, Part V analyzes a few of the Conservation Act’s major substantive provisions, including the legislation’s initial shortcomings and the subsequent legislative amendments that forged the Conservation Act into an effective scheme of state regulation that comprehensively conserves valuable oil and gas resources.

* Arkansas Bar Foundation Professor of Law, University of Arkansas School of Law. The author thanks Tiffany Godwin, A.J. Gregory, and Stephanie Gregory for their valuable assistance in the research and preparation of this article. Any errors or omissions are the sole responsibility of the author. This article borrows heavily from a prior article on Arkansas oil and gas law. See Phillip E. Norvell, *Prelude to the Future of Shale Gas Development: Well Spacing and Integration for the Fayetteville Shale in Arkansas*, 49 WASHBURN L.J. 457 (2010).

II. THE COMMON LAW BACKGROUND OF UNREGULATED PRODUCTION

A. The Rule of Capture

Unlike hard minerals, oil and gas are fluids or vapors in their natural states. The substances are fugacious and will migrate across boundary lines within the subsurface reservoir. Both are also susceptible to drainage from off-tract wells. The migratory character of oil and gas has proved to be their defining physical characteristic. This led to the venerable rule of capture,¹ which gave landowners an unrestricted right to drill and produce from wells located on-tract without incurring liability for off-tract drainage. Robert E. Hardwicke, an early oil and gas practitioner and commentator on the oil and gas conservation movement, described the rule as follows: “The owner of a tract of land acquires title to the oil and gas which he produces from wells drilled thereon, though it may be proved that part of such oil or gas migrated from adjoining lands.”² The remedy for the hapless landowner being drained by an adjoining neighbor’s well was to “go and do likewise”³ by drilling an offset protection well—the “evil twin” of the rule of capture.

The rule’s adoption in the oil and gas context was premised on a lack of scientific knowledge of the behavior of producing reservoirs that existed during the embryonic days of the industry. Developers knew that oil and gas would migrate across surface boundary lines when produced, but no technology existed that allowed a driller to ascertain the source of production within a reservoir. Consequently, early courts turned to the common law of percolating waters (groundwater) and to the law of obtaining possession to wild animals (*ferae naturae*), both of which applied the rule of capture.⁴ As a basis for applying the rule to oil and gas production, both analogies have

1. See generally Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture—An Oil and Gas Perspective*, 35 ENVTL. L. 899 (2005) (providing a definitive discussion of the rule of capture in oil and gas law).

2. Robert E. Hardwicke, *The Rule of Capture and Its Implications as Applied to Oil and Gas*, 13 TEX. L. REV. 391, 393 (1935); see also Kramer & Anderson, *supra* note 1, at 900 (describing Hardwicke’s definition as “one of the most straightforward formulations of the rule”).

3. *Barnard v. Monongahela Natural Gas Co.*, 65 A. 801, 802 (Pa. 1907).

4. See, e.g., *Pierson v. Post*, 3 Cai. 175, 179 (N.Y. Sup. Ct. 1805) (“We are the more readily inclined to confine possession or occupancy of beasts *ferae naturae* . . . for the sake of certainty, and preserving peace and order in society.”).

proved to be ill-adapted. Subsequent proponents of state oil and gas conservation acts, which were enacted to eradicate the evils associated with unregulated production, viewed the rule of capture as a product of ignorance.⁵ Professor Maurice Merrill, an early oil and gas scholar writing in the early 1960s, observed that state courts adopting the rule of capture did about as well as could be expected under the circumstances.⁶ Despite the problems associated with the rule, it was not without virtue. Modern commentators justify the rule as a reward for those who exercise diligence and take risks, thereby encouraging development of oil and gas reserves.⁷

B. Waste

As the cornerstone of unregulated production, the rule of capture has occasioned much mischief. Because oil and gas is produced from subsurface reservoirs which may frequently underlie numerous separately owned tracts, the rule of capture simply mandates the classic “common pool” exploitation⁸ of the reservoir in which each tract owner, to ensure recovery of his “fair share” of the reservoir, is encouraged to drill as many wells and produce as much oil and gas from the “common pool” as rapidly as possible. Predictably, the unlimited rule of capture

5. See Bruce M. Kramer, *Basic Conservation Principles and Practices: Historical Perspectives and Basic Definitions*, in 1 FEDERAL ONSHORE OIL AND GAS POOLING AND UNITIZATION 1-1, 1-10 (2006) (“The rule of capture was born of necessity and possibly ignorance in 1889 when the Pennsylvania Supreme Court analogized the ownership of fugacious oil and gas to the ownership of groundwater and more importantly, *ferae naturae*.”).

6. See MAURICE H. MERRILL, *THE PUBLIC’S CONCERN WITH THE FUEL MINERALS* 32 (1960) (“‘The Rule of Capture’ has become almost a phrase of contempt. Given the then well-established recognition of the landowner’s right to produce minerals beneath his land, and the existing want of information concerning the properties, the source, and the probable longevity of oil and gas, I hardly see how the judges could have evolved any other set of principles than they did.”).

7. See Gabriela Engler Pinto, *Upstream Oil and Gas Legal Frameworks: Brazil and the United States Compared*, 115 W. VA. L. REV. 975, 996 (2013) (“[T]he rule of capture gives landowners incentive to drill as many wells as quickly as possible because if they do not, others will capture the natural resources beneath their lands.”).

8. See Richard J. Pierce, Jr., *State Regulation of Natural Gas in a Federally Deregulated Market: The Tragedy of the Commons Revisited*, 73 CORNELL L. REV. 15, 16 (1987).

led to enormous economic waste to both the surface and the underground reservoir.⁹

Surface waste involves an above-ground loss of oil due to spills, overflow from earthen storage pits or open oil tanks, and leaks from production and transportation equipment.¹⁰ The rise of the oil and gas industry during the twentieth century caused lands to go to waste, as numerous wells meant excessive surface usage for drilling, production, and transportation. Economic waste was also rampant because unnecessary investment was used to drill and operate needless wells. For example, the East Texas Field contained an estimated 17,200 wells in 1965, and one expert opined that the field could have been efficiently and effectively drained by only 1500.¹¹

The rule of capture also led to subsurface waste.¹² Underground waste occurs when drillers leave behind oil and

9. See Hardwicke, *supra* note 2, at 393-94 (“Obviously, such disorderly methods [associated with offset drilling] result in economic and physical waste, and are the main sources of the evils usually attributed exclusively to the law of capture.”).

10. See HOWARD R. WILLIAMS & CHARLES J. MEYERS, OIL AND GAS TERMS 742 (5th ed. 1981) (defining “surface waste”).

11. WALLACE F. LOVEJOY & PAUL T. HOMAN, ECONOMIC ASPECTS OF OIL CONSERVATION REGULATION 121 (1967).

12. The 2004 Model Oil and Gas Conservation Act defines “waste” as follows:

“Waste” means:

- (A) the inefficient, excessive, or improper use of reservoir energy or unnecessary dissipation of reservoir energy;
- (B) the inefficient storing of oil or gas;
- (C) the locating, drilling, equipping, operating, or producing of an oil or gas well in a manner that causes or tends to cause a reduction in the quantity of oil or gas ultimately recoverable from a reservoir under prudent and proper operations, the drilling of unnecessary wells, or the loss or destruction of oil or gas either at the surface or below the surface;
- (D) the production of oil or gas in excess of pipeline, marketing, or storage capacities, in excess of reasonable market demand, in excess of the amount reasonably required for properly drilling, completing, testing, or operating a well or other facilities for recovering, processing, or transporting oil, gas, or by-products, or in excess of the amount otherwise utilized on the acreage from which the oil or gas is produced; or
- (E) other dissipation, production, or use of oil or gas underground or above ground, or in storage, that is careless, needless, or without valuable result.

MODEL OIL & GAS CONSERVATION ACT § 1(24) (Interstate Oil & Gas Compact Comm’n 2004).

gas after wastefully and inefficiently operating a well. Oil and gas conservation efforts seek to achieve efficient recovery from the oil and gas reservoir, and underground waste defeats that goal. Production that impairs the reservoir's natural energy mechanism, which is needed for efficient recovery, represents one source of underground waste.¹³ Oil and gas reservoirs are distinctly unique as to the pressure mechanism that effectuates production. Gas-cap drives, dissolved-gas drives, water drives, or any combination of the three may be found in an oil and gas reservoir. In gas-cap reservoirs, gas—which is lighter than oil—sits on top of the oil zone. As oil is produced, the gas expands and displaces the oil. This increases reservoir pressure, forcing oil toward the wellbore and up to the surface. In dissolved-gas reservoirs, gas dissolves in the oil. As the oil is produced, the dissolved gas expands to increase reservoir pressure to facilitate production. In water-drive reservoirs—which are known for their potential for high rates of ultimate recovery—oil sits on top of water. As the oil is produced, the water expands and increases the reservoir pressure to promote production.

Oil wells that feature high gas-to-oil ratios in gas-drive reservoirs or high water-to-oil ratios in water-drive reservoirs may unduly dissipate reservoir pressure. Accordingly, their production should be restrained, if not enjoined. A uniform rate of production is necessary to avoid wasted reservoir energy. Consistent production also reduces irregular and non-uniform migrations of fluids that may bypass large deposits of oil or gas, leaving them behind in the reservoir and possibly causing premature abandonment of the field. The oil-water contact line or the gas-oil contact line must move uniformly throughout the reservoir as oil is produced to avoid the “channeling” or “coning” that traps or bypasses oil or gas that may never be recovered.

Like surface and economic waste, underground waste was rampant under the unregulated production regime promoted by the rule of capture.¹⁴ Rapid and indiscriminate production from

13. See, e.g., *The Origin, Occurrence, and Production of Oil*, in OIL FOR TODAY—AND FOR TOMORROW 12, 12-31 (1953) (providing an extended discussion of reservoir mechanics relating to production).

14. See *id.* at 31; see also *id.* at 27-28 (“Efficient recovery of the oil from a reservoir is not taken care of by chance; it may be fulfilled only through careful and deliberate action by the producers. Experience has shown that one of the most essential factors in meeting these requirements is control of the rate of production. Excessive rates of withdrawal lead

legions of wells, most of which were unnecessary for efficient recovery, depleted reservoir pressure and left behind a substantial amount of oil. The wide-open flow of wells—the practice of early operators whose vocabulary did not contain the word “choke”—exacerbated the problem. Likewise, developers wasted gas with seeming impunity. In the early days of the industry, there was no market for gas, and many considered it a worthless by-product of oil production. Moreover, a general belief existed that if a well initially produced gas, the well needed to be “blown out”—to deplete the gas in the reservoir by venting the wells—before the well could produce oil.¹⁵ Not only did venting substantial quantities of gas physically waste a valuable product, it also dissipated reservoir pressure.

The perils of underground waste were not known during the early days of the oil and gas industry. Unlike surface spills or evaporation from surface pits, underground waste could not be observed. Bottom-hole pressure tests revealed that diminished production was related to declining pressure, but this obvious conclusion only became prevalent in the late 1920s. Petroleum engineering—the science of reservoir performance—was in a nascent state of development. However, an awareness of reservoir characteristics and behavior was growing.

C. The Doctrine of Correlative Rights

The doctrine of correlative rights¹⁶ developed alongside the theory and science of underground waste. The doctrine is

to rapid decline of reservoir pressure, to release of dissolved gas, to irregularity of the boundary between invaded and non-invaded sections of the reservoir, to dissipation of gas and water, to trapping and by-passing of oil, and, in extreme cases, to complete loss of demarcation between the invaded and non-invaded portions of the reservoir, with dominance of the entire recovery by inefficient dissolved-gas drive. Each of these effects of excessive withdrawal rates reduces the ultimate recovery of oil.”)

15. J. Scott Parker, *A Changing Landscape: Environmental Conditions and Consequences of the 1920s Union County Oil Booms*, 60 ARK. HIST. Q. 31, 38 (2001).

16. *Ohio Oil Co. v. Indiana* is generally considered the fount of the correlative rights doctrine. See 177 U.S. 190 (1900). Justice White, who authored the Court’s opinion, observed the following:

But there is a co-equal right in them all to take from a common source of supply, the [oil and gas] which in the nature of things are united, though separate. It follows from the essence of their right and from the situation of the things, as to which it can be exerted, that the use by one of his power to seek to convert a part of the common fund to actual possession may result in an undue proportion being attributed to one of the possessors of the right, to the detriment of the others, or by waste by one or more, to the annihilation of

premised on the recognition that mineral owners of tracts which overlie the reservoir share “rights and duties . . . with regard to operations in a common source of supply.”¹⁷ Each landowner has a right to produce his fair share of the common source of supply and a duty not to negligently or intentionally damage the common source of supply. Negligent¹⁸ or intentional¹⁹ spoliation of the common source of supply incurs liability. Likewise, surreptitious production in excess of a well allowable established by a conservation agency’s proration order creates liability for breach of the correlative rights doctrine.²⁰

Described as an exception to the rule of capture,²¹ the correlative rights doctrine recognizes the need to maintain and utilize reservoir pressure in order to obtain maximum ultimate recovery. The doctrine also recognizes that a landowner’s property interest is not merely in the oil and gas in that portion of the common source of supply that underlies his tract. Rather,

the rights of the remainder. Hence it is that the legislative power, from the peculiar nature of the right and the objects upon which it is to be exerted, can be manifested for the purpose of protecting all the collective owners, by securing a just distribution, to arise from the enjoyment by them, of their privilege to reduce to possession, and to reach the like end by preventing waste.

Id. at 209-10.

17. See 1 EUGENE KUNTZ, A TREATISE ON THE LAW OF OIL AND GAS § 4.3 (1987). Another prominent scholar described the doctrine as follows:

These existing property relations, called the correlative rights of the owners of the land in the common source of supply, were not created by the statute, but held to exist because of the peculiar physical facts of oil and gas. The term ‘correlative rights’ is merely a convenient method of indicating that each owner of land in a common source of supply of oil and gas has legal privileges as against other owners of land therein to take oil and gas therefrom by lawful operations conducted on his own land limited, however, by duties to other owners not to injure the source of supply and by duties not to take an undue proportion of the oil and gas. In addition, of course, to this aggregate of legal relations, each landowner has duties to the public not to waste the oil and gas.

1 W.L. SUMMERS, THE LAW OF OIL AND GAS § 63 (2d ed. 1954).

18. See *Elliff v. Texon Drilling Co.*, 210 S.W.2d 558, 563 (Tex. 1948) (“[T]he negligent waste and destruction of petitioners’ gas and distillate was neither a legitimate drainage of the minerals from beneath their lands nor a lawful or reasonable appropriation of them.”).

19. See *Louisville Gas Co. v. Ky. Heating Co.*, 77 S.W. 368, 369 (Ky. 1903) (“He cannot be allowed deliberately to waste the supply for the purpose of injuring his neighbor.”).

20. See *Wronski v. Sun Oil Co.*, 279 N.W.2d 564, 571 (Mich. Ct. App. 1979).

21. See *Kramer & Anderson*, *supra* note 1, at 911.

his interest extends to the right to “make common use of the expulsive forces which constitute the reservoir energy.”²² Reservoir energy, like oil and gas, is part of the common source of supply.²³ Stated another way, oil, gas, and reservoir energy are a “package” that comprise a landowner’s property interest in the oil and gas estate.

The emergence and acceptance of the correlative rights doctrine signifies the dual purposes of oil and gas conservation acts—the prevention of waste and the protection of correlative rights. These two objectives are “coequals, each worthy of pursuit in its own right, one for the sake of what may be called *economy*, the other for the sake of *equity*.”²⁴ However, some opine that in the event of a conflict between the prevention of waste and the protection of property rights under the correlative rights doctrine, the former prevails.²⁵

III. THE EARLY CONSERVATION PRACTICES

The depressed price for crude oil was the industry’s paramount problem during the era of unregulated production and the rule of capture. The race to drill as many wells as possible and to produce as much oil as possible yielded production in excess of both demand and transportation capabilities. The industry thus experienced precipitous declines in the price of crude. Many then began to look toward state control of production to eliminate the problem of surplus capacity. Under the guise of conservation, reformers targeted the waterbed rule of capture to achieve this objective. They sought to eliminate economic waste, but their primary goal was market stabilization. Though it was inevitable that regulation would increase the price of oil, state efforts would prove controversial. The effects caused by relating “distressed crude oil” to physical waste were real:

The inevitable result of the rule of capture’s complete lack of legal restraint has been to force producers into one drilling race after another, in which each sought to drill as

22. *The Origin, Occurrence, and Production of Oil*, *supra* note 13, at 31.

23. *Id.*

24. LOVEJOY & HOMAN, *supra* note 11, at 26 (quoting ERICH W. ZIMMERMANN, CONSERVATION IN THE PRODUCTION OF PETROLEUM 24 (1957)) (emphasis added).

25. *See id.* at 27. The implication is that “[p]revention of physical waste appears as the primary aim.” *Id.*

many wells as possible, as quickly as possible, in order to capture for himself the lion's share of the spoils. Nearly every discovery of an important new oil field brought a mad rush of drilling that often produced more oil than the market could absorb. Whenever this occurred, the unhappy operator who could not find a buyer for his oil nevertheless continued to produce his wells rather than have his more fortunate neighbors drain oil from his lands. In field after field, with no other facilities available, this surplus oil was "stored" in pits dug out of raw earth, and even in open ditches; appalling quantities of oil were lost through evaporation and seepage, surface and underground waters were polluted, and serious fire hazards were created, sometimes with disastrous results.²⁶

A. Prorationing

Prorationing is an obvious remedy for the problem of "distressed oil." In market-demand prorationing, a state conservation agency first restricts statewide production to the estimated market demand and then allocates the statewide total back to fields, reservoirs, and finally to individual wells.²⁷ Thus, every producing well is assigned an "allowable." This seeks to accumulatively reduce the state's production to equal the market demand. Oklahoma's market-demand law, passed in 1915, was the first proration statute in the country.²⁸ Legislators passed the law in response to the discovery of the huge Healdton and Cushing Fields, where production glutted an already saturated market. The law defined waste to include "production of crude oil or petroleum in excess of transportation or marketing facilities or reasonable market demand"²⁹ and also authorized the state's conservation agency to prorate production from any common source of supply to avoid such waste.³⁰ Texas passed a similar market-demand proration statute in 1919.³¹

26. George W. Hazlett, *Property Rights and Oil Production*, in OIL FOR TODAY—AND FOR TOMORROW, *supra* note 13, at 32, 39-40.

27. LOVEJOY & HOMAN, *supra* note 11, at 128.

28. See 1915 Okla. Sess. Laws 28. Though enacted in 1915, the law was not used until the 1930s.

29. 1915 Okla. Sess. Laws at 29.

30. For a discussion of the 1915 Proration Act and its amendments, see 1 W.L. SUMMERS, THE LAW OF OIL AND GAS § 6.19 (3d ed. 2004).

31. See 1919 Tex. Gen. Laws 285.

Prorating laws can also limit production from wells in a reservoir to a rate of that avoids physical waste without regard to market demand. Rapid and indiscriminate rates of production may dissipate reservoir pressure and cause waste of underground oil reserves. Maximum efficient rates of production (MER) and maximum ultimate recovery represent types of production controls that seek to alleviate this problem of underground waste. MER refers to the “highest sustainable rate at which a field can be produced for a designated period without appreciable loss in ultimate oil recovery.”³² The central tenet of MER prorating is that there exists a maximum efficient rate of production that will yield maximum ultimate recovery based upon the characteristics of a particular reservoir.³³ There is probably no single rate of production that will yield maximum ultimate recovery, but rather a *range* of production rates that will attain efficient operation and maximum recovery.³⁴

Market-demand and MER prorating can be administered jointly in a state’s prorating scheme. A well allowable under market-demand prorating cannot exceed the allowable for that same well under MER prorating.³⁵ Should the MER be greater, an inefficient rate of production could result, causing possible underground waste.³⁶ If the market-demand allowable is below the MER allowable, then the market-demand allowable is operative. However, joint administration of MER and market-demand prorating may not have been the general practice.³⁷

B. Ratable Taking

Market-demand or MER prorating can result in physical waste if oil is not purchased ratably from each producing well in a common source of supply. Ratable taking requires each purchaser to equally spread out the amount of its purchase between each producing well in a reservoir. Otherwise, some wells could produce more oil and gas, while others produce less or none. This creates a production imbalance that may create an irregular oil-water or gas-oil contact line that traps or bypasses

32. LOVEJOY & HOMAN, *supra* note 11, at 204.

33. *Id.* at 128.

34. *Id.* at 203.

35. *Id.* at 128.

36. *See id.* at 129-30.

37. LOVEJOY & HOMAN, *supra* note 11, at 128-29.

some of the oil in the reservoir. Additionally, producing tracts may drain non-producing tracts in violation of correlative rights if ratable taking is not effectuated. The statutory remedy is typically a ratable-take statute—sometimes referred to as a common-purchaser statute—that requires a purchaser to take equally from all wells in the field. Oklahoma enacted the first ratable-take statute, which applied only to gas, in 1913.³⁸

C. Well-Spacing Requirements

Well-spacing requirements are also central to the control of production and the abatement of the enormous economic and physical waste that followed the rule of capture. These laws limit the number and location of wells that can be drilled in a reservoir, thus eliminating unnecessary wells. Relying on its general statutory authority to make rules and regulations to prevent waste of oil and gas, the Texas Railroad Commission promulgated Rule 37, the state's well-spacing regulation, in 1919.³⁹ The Rule originally prohibited the drilling of a well within 300 feet of any other well or closer than 150 feet from any property line.⁴⁰ This basically established a spacing pattern that prohibited drilling on a tract of less than two acres. Today, most state conservation agencies may grant exceptions to well-spacing rules in order to prevent waste and protect correlative rights.⁴¹ In the years since its original enactment, Rule 37 has been much amended as the size of spacing patterns increased.⁴²

D. Forced Integration or Compulsory Pooling

Forced integration—known in most other oil and gas jurisdictions as “compulsory pooling”—complements the establishment and operation of spacing or drilling units under well-spacing laws. Because the drilling unit encompasses an area limited to a single well for the common source of supply, some legal mechanism was needed to merge or pool separately owned tracts situated within the unit. The legal effect is one

38. 1913 Okla. Sess. Laws 439 (codified at OKLA. STAT. ANN. tit. 52, § 231 (West 2014)).

39. BRUCE M. KRAMER & PATRICK H. MARTIN, *THE LAW OF POOLING AND UTILIZATION* § 3.02 (3d ed. 2014).

40. *Id.*

41. *Id.*

42. For the current version of Rule 37, see 16 TEX. ADMIN. CODE § 3.37 (2015).

tract for the purposes of oil and gas development. Voluntary pooling achieves the desired result. Oil and gas lessees (typically referred to as working-interest owners) and any unleased mineral owners of separately owned tracts may agree on a plan of development for the drilling and operation of the unit well and voluntarily pool their interests.⁴³ Consequently, production from a well located anywhere on the unit satisfies the habendum clause's secondary term requirement of production, regardless of the producing well's location.⁴⁴ Likewise, voluntary pooling apportions royalty on a surface-acreage basis.⁴⁵

Forced integration is necessary to permit development of a drilling unit where the working-interest owners and unleased mineral owners fail to voluntarily agree on a development plan. Courts refused to judicially effectuate pooling—known as “equitable pooling”—to permit a developing party in the unit to drill a well when non-consenting working-interest owners refused to voluntarily pool.⁴⁶ Thus, non-consenting parties could thwart development in the absence of state compulsion. Forced integration statutes typically have the legal effect of integrating the separately owned tracts within the drilling unit so that they are treated as one tract for the purposes of oil and gas development. Likewise, state conservation acts typically provide that production from any well on the unit satisfies the habendum clause's production requirement, and these laws also apportion royalty on a surface-acreage basis.⁴⁷

E. Unitization

Unitization of oil and gas reservoirs involves the integration of the common source of supply to permit its

43. Arkansas maintains a concise pooling statute. See ARK. CODE ANN. § 15-72-303(a) (Repl. 2009).

44. See *Brixey v. Union Oil Co. of Cal.*, 283 F. Supp. 353, 359 (W.D. Ark. 1968) (“Under the law of Arkansas, and in the majority of jurisdictions where the issue has been determined, where only a portion of the leased land is unitized or pooled with land not covered by the lease and drilling is commenced within the unit, although not on the land covered by the lease, this is sufficient to keep alive and extend the *entire* lease including lands outside of the area unitized.”).

45. See 4 KUNTZ, *supra* note 17, § 48.3(a)(3).

46. For a discussion of equitable pooling in Arkansas, see KRAMER & MARTIN, *supra* note 39, § 7.02.

47. See *id.*

development and operation as a single unit.⁴⁸ Unitization converts the leasehold and mineral interests in each individual tract or production unit into an interest in the unitized area. This allows developers to operate without regard to surface property lines. Reservoir characteristics determine the optimum number and location of wells and the MER rate of production. Unitization also seeks to avoid the drilling of wells that yield inefficient gas-to-oil or water-to-oil ratios.

In the early 1920s, industry giant Henry L. Doherty⁴⁹ championed a federal statute to compel unitization for the development and operation of all oil and gas reservoirs. In this era of prodigious waste, Doherty believed that crude oil producers would never abandon unregulated production and that the producing states would never adopt effective conservation laws.⁵⁰ Under Doherty's plan, fieldwide unitization at the federal level would obviate the need for well-spacing, prorationing, and ratable-take statutes. The industry, however, felt that "there was no evil then known which was so great as to justify federal control or regulation" of oil and gas production.⁵¹ Though Doherty was a prominent voice for reform, he proved to be no prophet for federal unitization.

Unitization can occur voluntarily or by force. Voluntary unitization involves an agreement of the working and mineral interests in all or a part of a reservoir to jointly develop the unit or engage in enhanced recovery operations.⁵² This requires a plan of development, so the parties must analyze the engineering and economics of the proposed project. Should the parties agree to begin operations, a participation formula will be developed to address production and costs for the unit. Unlike pooling, which allocates production and costs on a surface-acreage basis, unitization allocates production and costs for the separately owned tracts or production units based on their potential for oil productivity. Thus, the participation formula for each tract may consider a variety of factors, such as tract acreage, net acre feet

48. For an exhaustive list of literature on voluntary unitization, see *id.* § 17.01 n.1.

49. See generally ROBERT E. HARDWICKE, *ANTITRUST LAWS ET AL. V. UNIT OPERATION OF OIL OR GAS POOLS* 1-34 (rev. ed. 1961) (providing an overview of Doherty's views and activities on regulation).

50. See *id.* at 6-7.

51. *Id.* at 22.

52. Owen L. Anderson, *Mutiny: The Revolt Against Unsuccessful Unit Operations*, 30 *ROCKY MTN. MIN. L. INST.* 13-1, 13-4 (1984).

of pay, volume of oil in place, differences in porosity in the field, current and cumulative production, and projected recovery from each well. Accordingly, forming a unitization project is often a lengthy and involved process.

In the early days, unitization was a hard sell.⁵³ Some working-interest and mineral owners rebuffed the participation formula. Others believed they could fare better on their own. Parties also feared the excessive costs associated with unit operations.

During the 1940s, the industry lacked the experience and knowledge needed to properly evaluate a unit interest to be exchanged for an interest in a wholly owned lease. Today, however, technological and scientific advances have obviated this problem. Compulsory unitization is required, or should be required, as a remedy for the non-consenting interests whose refusal to execute a unitization agreement impedes voluntary unitization. Louisiana is reputed to have adopted the first compulsory unitization statute, but it was limited to gas recycling operations.⁵⁴ Oklahoma enacted its original compulsory unitization statute in 1945.⁵⁵

F. The 1930s: Distressed Oil and the Interstate Oil Compact

The discovery of the Oklahoma City Field and the East Texas Field in the early 1930s flooded distressed crude into an already depressed market,⁵⁶ causing the price of oil to fall to \$0.10 a barrel. During this time, the Governors of both Texas and Oklahoma called up the National Guard to close the Oklahoma City and East Texas Fields to prevent further physical

53. *Investigation of Concentration of Economic Power: Hearing on P.R. 113 Before the Temp. Nat'l Econ. Comm.*, 76th Cong. 7294 (1939) (statement of John B. Dailey) (“[U]nitized operation,’ in oil fields, which in fact means ‘monopolized operation’ under a unified operating interest whereby everybody but the monopolizers get crucified.”).

54. KRAMER & MARTIN, *supra* note 39, § 18.02; *see also* 1940 La. Acts 615 (relevant legislation).

55. *See* 1945 Okla. Sess. Laws 161.

56. For an abbreviated version of the industry’s struggle with distressed crude oil, the formation of the Interstate Oil Compact, and the enactment of comprehensive state oil and gas conservation acts, *see* Earl Foster, *Maximum Oil Production Through Conservation Laws*, in *OIL FOR TODAY—AND FOR TOMORROW*, *supra* note 13, at 70, 71-78. For detailed treatment of the subject, *see* HARDWICKE, *supra* note 49, at 206-10.

waste.⁵⁷ The problem was so severe that producing states began to consider an interstate compact that would authorize collective action to deal with the problems of waste and excess market demand. The desire to avoid federal intervention motivated this state action on oil and gas to avoid conservation, at least in part.

The objective of the Interstate Oil Compact (IOC) was to establish a compulsory system of market-demand proration at the state level in order to stabilize the price of oil.⁵⁸ Congress approved the IOC in 1935, but the organization assumed an education and advisory role to accumulate information on oil and gas conservation, assist member states in enacting sound oil and gas conservation laws, and educate the public on the importance of the conservation of oil and gas resources.⁵⁹ The Interstate Oil Compact Commission (IOCC), the governing body of the IOC, was more successful in disseminating information on physical and economic waste created by unregulated production and encouraging the prorationing and well-spacing regulations. The arrival of the IOCC signified the growing knowledge on the science of oil and gas reservoirs and prudent reservoir management to avoid underground waste.

Consequently, the 1930s saw the passage of important oil and gas conservation acts at the state level. Oklahoma enacted a comprehensive conservation act in 1933,⁶⁰ and Louisiana⁶¹ and New Mexico⁶² adopted similar legislation in 1935. Admittedly, comprehensive state conservation acts that adequately addressed the waste of valuable natural resources were slow to materialize. As early as 1925, the industry generally knew that time-honored methods of production were inefficient.⁶³ Ignorance of the prodigious underground waste that occurred from premature dissipation of reservoir pressure was no longer an excuse for inefficient production practices. Unwillingness to submit to governmental regulation and resistance to change proved

57. See WALTER RUNDELL, JR., *EARLY TEXAS OIL: A PHOTOGRAPHIC HISTORY, 1866-1936*, at 227 (1977).

58. See Barth P. Jiggs Walker, *Discussion: A Model Oil and Gas Conservation Law*, 26 TUL. L. REV. 267, 270 (1952).

59. See *id.* at 267.

60. See 1933 Okla. Sess. Laws 278.

61. See 1935 La. Acts 36.

62. See 1935 N.M. Laws 137.

63. HARDWICKE, *supra* note 49, at 15.

difficult to overcome in the battle for adequate conservation regulation. Hardwicke observed this problem:

Undoubtedly, the great majority of oil men of that time were skeptical as to the advisability of abandoning long established viewpoints and practices (drill and produce according to your own ideas of efficiency and economics; drain oil from neighboring lands and protect your own lands against adverse drainage as best you can).⁶⁴

This period ushered in a system of market-demand prorationing that lasted until domestic supply changed in the early 1970s. No longer did supply exceed demand; instead, demand began to outpace supply. Market-demand prorationing thus dropped out of the system, and MER prorationing reigned supreme.

IV. WASTE AND CONSERVATION LEGISLATION IN ARKANSAS

A. Physical Waste

The rule of capture was not benign in Arkansas. The history of oil and gas production in the state is replete with examples of excessive well density, undue surface damage, and physical waste. W. Henry Rector, the author of a tract on the history of Arkansas's early oil and gas conservation laws,⁶⁵ summed up the waste of oil and gas that occurred in the El Dorado and Smackover Fields, which were discovered in 1921 and 1922, respectively:

The manner in which the El Dorado and Smackover fields were operated is a disgrace to the industry. Millions of barrels of oil were allowed to escape, polluting the waters of Smackover Creek and thereafter the Ouachita River. The conservation of gas produced with the oil was unheard of, billions of cubic feet being allowed to go to waste. The excuse was that the wells were oil wells; that the gas was merely incidental; that the oil could not be lifted without liberating the gas, and that as the production of oil was the supreme object of the operators, they could not be concerned with the gas. Only a small portion of the

64. *Id.* at 22.

65. See W. Henry Rector, *Legal History of Conservation of Oil and Gas in Arkansas*, in *LEGAL HISTORY OF CONSERVATION OF OIL AND GAS* 16 (1938).

gas produced was devoted to utilitarian purposes. Oil wells and gas wells producing richly saturated gas would sometimes catch fire and be allowed to burn for weeks at a time. Great craters formed in portions of Smackover field and raging infernos consumed billions of feet of gas, creating conflagrations which could be seen for fifty miles.⁶⁶

B. Act 166 of 1917

Arkansas's early attempts to conserve oil and gas distinctly confronted the problem of waste. The first legislative response came in Act 166 of 1917,⁶⁷ which addressed shallow gas production in Sebastian County. Act 166, *inter alia*, required the confinement of water formations in the drilling of wells to avoid flooding the productive reservoir,⁶⁸ mandated the plugging of abandoned wells,⁶⁹ prohibited the long-term flaring of gas,⁷⁰ and limited the production of gas to less than of 20% of the well's open-hole capacity.⁷¹ This final requirement likely sought to prevent the loss of "back pressure" that could cause water to encroach on the producing formation.⁷² Act 166 also created the Office of Gas Inspector⁷³ and provided for the assessment of fines in the event of a violation.⁷⁴

66. *Id.* at 19.

67. *See* Act 166, 1917 Ark. Acts 890.

68. § 1, 1917 Ark. Acts at 891.

69. § 3, 1917 Ark. Acts at 892.

70. § 8, 1917 Ark. Acts at 895.

71. § 18, 1917 Ark. Acts 900-01.

72. The purpose of this requirement was explained in *Nowata County Gas Co. v. Henry Oil Co.*, wherein the Eighth Circuit Court of Appeals, applying Oklahoma law, prohibited the taking of more than 25% of the daily natural flow from a gas well:

When natural gas is permitted to flow freely, it tends to drain the gas from the underlying sands in the neighborhood of the well too rapidly, with the result that the water below the gas sands finds its way up towards the outlet of the gas at the base of the well, cuts off the lateral inflow of the gas, and drowns the well. If the outflow of the gas is under pressure, the lateral flow towards the well will be more extensive and long continued, and in the end the gas will be more completely removed from the gas sands, and the gas field more thoroughly exhausted.

269 F. 742, 748 (8th Cir. 1920).

73. Act 166, § 12, 1917 Ark. Acts 890, 897.

74. *See, e.g.*, § 13, 1917 Ark. Acts at 897-98 (fining those who failed to comply with the Gas Inspector's written directions).

C. Act 664 of 1923

The discovery of the Smackover Field in 1922 prompted the Arkansas General Assembly to expand the prohibition on waste in 1923.⁷⁵ Although entitled, in part, an “Act to Conserve Crude Oil or Petroleum and Natural Gas,” the overwhelming emphasis was placed on the prevention of waste in gas production. Act 664 directed all pipeline companies, gas distributors, and operators to prevent all waste of oil and gas in their respective operations, including leakage and spillage from their equipment and facilities. The law also proscribed production “in any manner or under any such conditions as to constitute waste.”⁷⁶ Act 664 specifically defined waste as the emitting or flaring of natural gas, the drowning of a commercial gas stratum with water, underground waste, and the wasteful utilization of gas.⁷⁷ Moreover, Act 664 expressly prohibited the use of reservoir gas to flow oil to the surface when the gas could be “separated” from the oil during production.⁷⁸ Other than surface waste, the only forbidden waste of oil was underground waste, which the General Assembly did not specifically define.⁷⁹ In lieu of a market-demand proration scheme for gas, Act 664 provided that when reservoir production exceeded market demand, a producer could only take his proportionate share of the natural flow that could be marketed without waste.⁸⁰ Act 664 also imposed two schemes—“common purchaser” and “ratable take”—to govern the purchase of gas production.⁸¹

Conspicuously absent from Act 664 was the regulation of oil production. The law imposed no well-spacing, unitization, market-demand prorationing, or ratable-take obligations on oil developers. The Smackover Field was developed under the rule of capture and experienced the physical and economic waste associated with legions of unnecessary wells. However, Act 664 vested the Arkansas Railroad Commission, later succeeded by

75. Act 664, 1923 Ark. Acts 555.

76. § 1, 1923 Ark. Acts at 556.

77. § 2, 1923 Ark. Acts at 557.

78. § 16, 1923 Ark. Acts at 562.

79. See § 2, 1923 Ark. Acts at 557.

80. Act 664, § 4, 1923 Ark. Acts 555, 557.

81. See §§ 5–6, 1923 Ark. Acts at 558–59.

the Board of Conservation (the “Board”)⁸² with the authority to administer the Act’s provisions and promulgate all necessary rules and regulations to conserve oil and gas.⁸³ Arguably, the Arkansas Railroad Commission already possessed the authority to implement production controls on its own, but no such administrative regulations were enacted.

The Smackover Field appears to be comprised of associated oil and gas reservoirs. In 1923, gas was considered a waste product without a market, and wanton venting or flaring of the gas was the rule of the day. In addition to the waste of gas, the dissipation of reservoir pressure by venting and flaring caused the underground waste of oil. If the Board had the authority to enforce Act 664’s prohibitions against venting or flaring, enforcement would have limited, if not prohibited, oil production—then the only play in the Smackover Field. Needless to say, Act 664 was never enforced. Some blame the lack of enforcement on a 2.5% severance tax on the market value of oil and gas levied by the General Assembly shortly before the passage of Act 664.⁸⁴ Enforcement would have greatly reduced the flush oil production, decreasing the severance revenues that were filling the coffers of the state’s treasury and the pockets of operators.

D. Act 234 of 1933

The Arkansas General Assembly largely re-enacted the substantive provisions of Act 664 as Act 234 of 1933.⁸⁵ A new Board of Conservation was created and vested with administrative authority.⁸⁶ The five members of the Board were to be “experienced in, and having a fair knowledge of the oil and gas industry.”⁸⁷ “Waste,” as defined and proscribed in Act 234, was identical to Act 664.⁸⁸ The “common-purchaser,” “ratable-take,” and market-demand prorationing provisions for gas were

82. The Administration of the Act was transferred from the Arkansas Railroad Commission to the four-member Board in 1927. *See* Act 221, § 1, 1927 Ark. Acts 715, 715.

83. Act 664, § 20, 1923 Ark. Acts 555, 564.

84. *See* Act 118, 1923 Ark. Acts 67.

85. Act 234, 1933 Ark. Acts 720.

86. § 4, 1933 Ark. Acts at 721-22.

87. § 2, 1933 Ark. Acts at 721-22.

88. *See* § 6, 1933 Ark. Acts at 722.

also identical.⁸⁹ Act 234 authorized the Board to promulgate rules and regulations.⁹⁰ Ominously, however, its authority to impose further administrative control over oil and gas production by rule was excluded.

1. *The Rodessa Field*

Act 234 and the Board experienced a lamentable year in 1937. The Rodessa Field, initially discovered in 1935, spanned from Jefferson, Texas to Caddo Parish, Louisiana and was extended into Miller County, Arkansas by a discovery well in June 1937.⁹¹ At the time, the Rodessa Field was the most important oil and gas discovery in Arkansas since 1925. The discovery well revealed the reservoir's large gas cap, and to attain optimum recovery from the reservoir, gas production needed to be minimized.⁹² Both Louisiana and Texas regulated production in their respective shares of the tri-state field with well-spacing and prorationing regulations.⁹³ When the Rodessa Field was discovered in Arkansas, however, the Board was largely dormant due to a lack of funding.⁹⁴ In fact, the Board employed only two men—a field man and a stenographer⁹⁵—and did not have any geologists or petroleum engineers on staff. Clearly, the agency was not adequately prepared to deal with the challenge presented by the Rodessa Field. Moreover, Act 234 was inadequate to address the problem of waste and the protection of correlative rights.⁹⁶ Nevertheless, after ten wells were completed, the Board issued an order that imposed prorationing in the Arkansas portion of the field consistent with the Texas and Louisiana regulations.⁹⁷ Furious landowners, operators, royalty owners, and the local press raised a hue and

89. See § 9, 1933 Ark. Acts at 723-24.

90. Act 234, § 4, 1933 Ark. Acts 720, 721.

91. Gerald Forbes, *Brief History of the Petroleum Industry in Arkansas*, 1 ARK. HIST. Q. 28, 36 (1942).

92. See *id.*

93. See *id.*

94. See *id.*

95. *Id.*

96. *Petroleum Investigation: Hearing on H.R. 290 and H.R. 7302 Before the S. Comm. on Interstate & Foreign Commerce*, 76th Cong. 1007 (1940) (statement of O.C. Bailey, Chairman, Arkansas Oil and Gas Commission).

97. Alec M. Crowell, *Rodessa an Object Lesson in Control*, OIL & GAS J., Sept. 29, 1938, at 25, 28.

cry against the order.⁹⁸ Mass protests were held, and affected parties implored the Governor to intervene.⁹⁹ Three days before the order was to go into effect, a court enjoined the Board from implementing its provisions.¹⁰⁰ One commentator argued that market-demand prorationing had nothing to do with physical waste and everything to do with price fixing.¹⁰¹

The injunction allowed unrestrained production to continue for approximately one year.¹⁰² During this period, the Rodessa Field in Arkansas lost 76% of its reservoir pressure, while the Louisiana and Texas portions lost 34% and 14%, respectively.¹⁰³ The pressure loss was caused by excessive and non-ratable flow rates¹⁰⁴ from wells and dense well spacing.¹⁰⁵ In 1938, the Arkansas portion of the field produced an estimated \$7 million in oil, but the underground waste caused by the unregulated production resulted in \$25 million in non-recoverable reserves.¹⁰⁶ Approximately 1300 acres of the estimated 3500-acre field were developed by ninety-eight wells by the end of the one-year period of unregulated production.¹⁰⁷ The diminished reservoir pressure created by the closely spaced wells and open-flow production made it uneconomical to develop the remainder of the acreage.¹⁰⁸

2. *The Schuler Field*

The controlled production of the Rodessa Field in Louisiana and Texas was substantially more effective than the uncontrolled production seen in Arkansas. This lesson was not lost on the parties who discovered the Schuler Field in April

98. *See id.*

99. *Id.*

100. *Id.* at 105.

101. *See id.* at 106.

102. Crowell, *supra* note 97, at 105.

103. *Id.* One commentator suggested that Louisiana's reservoir performance might have been better but for the fact that off-set wells were permitted to produce in excess of the state's fixed allowables in order to prevent drainage from Arkansas's open-flow wells. *See Forbes, supra* note 91, at 37.

104. Crowell, *supra* note 97, at 106.

105. The purchasers of crude in the field refused to buy the excessive output from the Arkansas wells. Forbes, *supra* note 91, at 37.

106. *Id.* at 38.

107. Crowell, *supra* note 97, at 106.

108. *Id.*

1937.¹⁰⁹ Royalty owners, operators, and landowners from the Schuler Field petitioned the Board for a hearing to address the problems of uncontrolled production.¹¹⁰ However, the Board was without jurisdiction to enforce well-spacing rules, and its authority to order prorationing was questionable following the Miller County injunction.¹¹¹ Furthermore, the Board lacked the funding and engineers needed to adequately implement regulations.¹¹² Royalty owners, operators, and landowners thus agreed to hire, at their own expense, the necessary personnel for the Board to promulgate and implement regulations.¹¹³ The group also voluntarily agreed to abide by the Board's rules and regulations.¹¹⁴ After the Board consented, funds were advanced, engineers hired, a permit issued, and well-spacing and prorationing regulations promulgated.¹¹⁵ The arrangement proved successful, and the Schuler Field avoided the tragedy that plagued the Rodessa Field in Arkansas.

This voluntary scheme of controlled production, however, was only a stopgap measure designed to avoid irreparable physical waste and violations of correlative rights so that the Arkansas General Assembly could enact an adequate and comprehensive conservation law. During the interval, a committee of legislators, oil and gas operators, and members of the Board drafted legislation to replace Act 234.¹¹⁶ O.C. Bailey, then the Chairman of the Board and later the first Chairman of the AOGC, reported that the drafting committee adopted the "best features" of conservation laws from other states.¹¹⁷ Bailey attended the IOGC's initial meetings and was likely well versed on the model legislation drafted by the organization beginning in the early 1930s. Bailey opined that the drafting committee's work product, which would later become the Conservation Act, was "the most modern and comprehensive conservation statute adopted by any state up to that time."¹¹⁸

109. Forbes, *supra* note 91, at 38.

110. *Id.* at 37-38. The Schuler Field was the first controlled field in Arkansas.

111. *See id.* at 36-37.

112. *See id.*

113. *Id.* at 37.

114. Forbes, *supra* note 91, at 37.

115. *Id.*

116. *See* FED. POWER COMM'N, NATURAL GAS INVESTIGATION 1-2 (1945).

117. *Id.* at 2.

118. *Id.*

Bailey's view was not universally accepted. The period between the implementation of the voluntary conservation scheme and the passage of the Conservation Act was "a period of vilification, misunderstanding, scurrilous newspaper editorials, and vitriolic public expression of opinion on the question of proration."¹¹⁹ The adoption of well spacing, forced integration, and prorationing that ended the era of unregulated production under the rule of capture did not occur without a struggle.

V. THE ARKANSAS OIL AND GAS CONSERVATION ACT: ACT 105 OF 1939

Act 664 was doomed as an effective oil and gas conservation law. The lack of comprehensive coverage, particularly the absence of a prorationing statute for oil, a common-purchaser or ratable-take statute, and a well-spacing rule to limit the density of drilling, left the industry as it began—unregulated and vulnerable to waste and instability. The Arkansas General Assembly passed the Conservation Act¹²⁰ to correct these deficiencies and to provide a comprehensive regulatory scheme to prevent waste and protect correlative rights. The Conservation Act mirrored many of the numerous state oil and gas conservation statutes passed during the 1930s that sought to remedy the evils associated with common pool exploitation. These laws modified the rule of capture and regulated the drilling and production of oil and gas.

The Conservation Act expressly controlled and regulated all common sources of supply discovered after January 1, 1937.¹²¹ Although the Conservation Act was passed on February 20, 1939, the General Assembly specifically designed the law to be retroactive.¹²² The obvious reason for the limited retroactivity is that the Board had regulated, or attempted to regulate, the Rodessa and Schuler Fields discovered before that time. Surely, a majority of the parties in the Schuler Field—some of which had participated in the drafting of the Conservation Act—wanted statutory protection. At the time of

119. Forbes, *supra* note 91, at 37.

120. See Act 105, 1939 Ark. Acts 219 (codified as amended at ARK. CODE ANN. §§ 15-72-101 to -1003 (Repl. 2009 & Supp. 2013)).

121. § 6, 1939 Ark. Acts at 221.

122. See § 6, 1939 Ark. Acts at 221.

the law's enactment, the number of wells in uncontrolled fields exceeded the number of wells in controlled fields. The Conservation Act, and subsequent amendments thereto, have had a profound impact on the history of oil and gas production in Arkansas. The author gave extensive treatment to the Conservation Act's drilling-unit and forced-integration provisions in a prior article.¹²³ This Part covers other substantive portions of the legislation, including its prorationing rules, ratable-take provisions, and compulsory unitization features.

A. The Arkansas Oil and Gas Commission

The Conservation Act created the AOGC.¹²⁴ Today, the AOGC is authorized to promulgate rules and regulations to ensure that the law is properly administered and enforced.¹²⁵ The Conservation Act, as well as the AOGC's rules and regulations, are enforced by a daily fine of no more than \$2500 for each violation.¹²⁶ The Conservation Act sanctions "illegal oil," "illegal gas," and "illegal product,"¹²⁷ and prohibits the subsequent sales, purchases, or refinements of illegal oil, gas, or product.¹²⁸ A tax on production of liquid hydrocarbons funds the administration and enforcement of the Conservation Act, including all AOGC activities.¹²⁹

B. Prevention of Waste and Protection of Correlative Rights

The Conservation Act's stated purpose is to prevent waste and protect correlative rights.¹³⁰ The physical waste of oil and

123. See Norvell, *supra* note *, at 461-73.

124. Act 105, § 2, 1939 Ark. Acts 219, 219-20.

125. See ARK. CODE ANN. § 15-71-110 (Repl. 2009) ("Powers and duties—Rules and regulations").

126. ARK. CODE ANN. § 15-72-103(a)(1)(A) (Supp. 2013). The Conservation Act also provides for additional penalties. See ARK. CODE ANN. § 15-72-104(a) (Repl. 2009).

127. See ARK. CODE ANN. § 15-72-102(4)–(6) (Repl. 2009) (defining these terms).

128. See ARK. CODE ANN. § 15-72-401 (Repl. 2009).

129. ARK. CODE ANN. § 15-71-116 (Repl. 2009).

130. The Conservation Act's "declaration of policy" currently reads as follows:

In recognition of past, present, and imminent evils occurring in the production and use of oil and gas as a result of waste in the production and use thereof in the absence of coequal or correlative rights of owners of crude oil or natural gas . . . this law is enacted for the protection of public and

gas is explicitly proscribed,¹³¹ but the Conservation Act also expressly prohibits the following types of “waste”:

(A) The inefficient, excessive, or improper use or dissipation of reservoir energy and the locating, spacing, drilling, equipping, operating, or producing of any oil or gas well or wells in a manner which results, or tends to result, in reducing the quantity of oil or gas ultimately to be recovered from any pool in this state;

(B) The inefficient storing of oil and the locating, spacing, drilling, equipping, operating, or producing of any oil or gas well or wells in a manner causing, or tending to cause, unnecessary or excessive surface loss or destruction of oil or gas;

(C) Abuse of the correlative rights and opportunities of each owner of oil and gas in a common reservoir due to nonuniform, disproportionate, and unratable withdrawals causing undue drainage between tracts of land;

(D) Producing oil or gas in such manner as to cause unnecessary water channeling or coning;

(E) The operation of any oil well or wells with an inefficient gas-oil ratio;

(F) The drowning with water of any stratum or part thereof capable of producing oil or gas;

(G) Underground waste however caused and whether or not defined;

(H) The creation of unnecessary fire hazards;

(I) The escape into the open air of gas in excess of the amount that is necessary for the efficient drilling or operation of a well producing both oil and gas;

(J) The use of gas for the manufacture of carbon black; and

(K) Permitting gas produced from a gas well to escape into the air.¹³²

private interests against such evils by prohibiting waste and compelling ratable production.

ARK. CODE ANN. § 15-72-101 (Repl. 2009).

131. ARK. CODE ANN. § 15-72-105 (Repl. 2009) (“Waste of oil or gas as defined in this act is prohibited.”).

132. ARK. CODE ANN. § 15-72-102(15)(A)–(K) (Repl. 2009).

C. Proration and Ratable Take

The Conservation Act authorized prorationing for oil, gas, or both.¹³³ The legislation also allowed the AOGC to restrict production of oil or gas in the reservoir and to prorate the allowable among producers.¹³⁴ Unlike its predecessor from 1933, MER prorationing is authorized, as the law's current language simply authorizes the AOGC to prorate production from any field or pool to prevent waste.¹³⁵ Omitted, however, is language usually contained in market-demand prorationing laws that expand the definition of waste to include production "in excess of transportation or market facilities or reasonable market demand."¹³⁶ The Arkansas General Assembly opted to "bail out" on market-demand prorationing. Ostensibly, the criticism of market-demand prorationing seen in the Rodessa and Schuler Field battles killed any possibility of a market-demand prorationing scheme in the Conservation Act.

However, well allowables were not assigned solely on the principles of MER and ultimate maximum recovery. Production from uncontrolled fields proved difficult to overcome. The Conservation Act now requires the AOGC to determine the aggregate amount of the statewide production from controlled reservoirs by MER prorationing.¹³⁷ The Conservation Act does not specify how the aggregate amount of production from the uncontrolled fields is to be determined, but it must to be calculated. Once the statewide total of oil or gas production is established, that amount is to be allocated between the controlled and uncontrolled reservoirs on a "reasonable basis."¹³⁸ "Small wells" in uncontrolled fields are now given a "sufficient allowable," or a "living allowable," that does not accelerate or encourage premature abandonment.¹³⁹

The question is fairly presented as to whether the AOGC uses market-demand prorationing to determine the aggregate statewide production from both controlled and uncontrolled fields. As to controlled production, the AOGC only limits a

133. See Act 105, § 11, 1939 Ark. Acts 219, 227.

134. See § 16, 1939 Ark. Acts at 234-35.

135. ARK. CODE ANN. § 15-71-110(d)(10) (Repl. 2009).

136. See TEX. NAT. RES. CODE ANN. § 86.012(a)(7) (West 2013).

137. See ARK. CODE ANN. § 15-71-324(a) (Repl. 2009).

138. ARK. CODE ANN. § 15-72-324(a).

139. ARK. CODE ANN. § 15-72-324(a).

well's allowable if the market-demand allocation is below its MER allocation. Although Arkansas is not usually listed as one of the market-demand prorationing states,¹⁴⁰ some have hinted that the AOGC has engaged in the practice. These suspicions surround Order No. 38-39,¹⁴¹ issued by the AOGC on August 16, 1939, which suspended the pending schedule of production allowables and shut down all producing wells in controlled fields.¹⁴² Presumably, the emergency order sought to determine whether physical waste was occurring and whether some wells were incapable of producing their allowable.¹⁴³ The order noted that the AOGC had previously been asked to refrain from reducing allowables to retard the decline in reservoir pressure because the industry was in a period of "high oil consumption."¹⁴⁴ Moreover, the AOGC would soon hear evidence on the "bona fide ratable outlet" for oil and gas in the various controlled fields for the forthcoming months.¹⁴⁵ The validity of the emergency order was ultimately appealed to the Arkansas Supreme Court, which held the AOGC had the authority to issue emergency orders without first conducting a hearing.¹⁴⁶ Although the opinion never mentioned market-demand prorationing or the AOGC's general power to prevent waste, the case has been cited for the proposition that the conservation agency has the implied right to engage in market-demand prorationing pursuant to its general statutory authority to prevent waste.¹⁴⁷

The traditional common-purchaser or ratable-take rules, which complement prorationing statutes in many conservation laws, are not featured in the Conservation Act. Instead, the law defines waste to include the "[a]buse of the correlative rights

140. In 1965, twelve states employed market-demand statutes—Alabama, Florida, Iowa, Kansas, Louisiana, Michigan, New Mexico, North Carolina, North Dakota, Oklahoma, Texas, and Washington. The top five market-demand states at the time were Kansas, Louisiana, New Mexico, Oklahoma, and Texas, which collectively comprised 70% of crude oil production in the United States. LOVEJOY & HOMAN, *supra* note 11 at 129.

141. *See* ARK. OIL & GAS COMM'N, ORDER NO. 38-39: GENERAL SHUT-DOWN ORDER OF OIL WELLS IN REGULATED FIELDS IN THE STATE OF ARKANSAS (1939).

142. *Id.* at 2.

143. *Id.* at 1.

144. *Id.*

145. *Id.* at 3.

146. *See* Lion Oil Ref. Co. v. Bailey, 200 Ark. 436, 439-41, 139 S.W.2d 683, 685-86 (1940).

147. *See* EUGENE O. KUNTZ, OIL AND GAS LAW: CASES AND MATERIALS 89 (1986).

and opportunities of each owner of oil and gas in a common reservoir due to nonuniform, disproportionate, and unratable withdrawals causing undue drainage between tracts of land.”¹⁴⁸ Consequently, the AOGC can make rules and regulations to prevent waste or violations of correlative rights by non-uniform withdrawals, but it is not authorized to compel purchasers to take and purchase ratably from all wells in a common source of supply. Thus, the AOGC’s ability to compel a purchaser to take ratably is dubious.

D. Compulsory Unitization

The Conservation Act, as originally enacted, did not provide for compulsory unitization. The consequence of this omission was highlighted by subsequent events that occurred in the McKamie-Patton Field. The field—discovered in 1940 and covering some 5000 acres—experienced a precipitous drop of reservoir pressure in the late 1940s.¹⁴⁹ Some operators promoted a voluntarily unitization plan for gas reinjection to enhance reservoir pressure, which they hoped would avoid a substantial loss of oil and gas reserves.¹⁵⁰ Even though 97% of the working interests and 96% of the royalty owners executed the plan, it failed due to a holdout among the minority-interest owners.¹⁵¹ The AOGC, upon petition by the proponents of the voluntary plan, issued an order requiring unitization.¹⁵² In *Dobson v. Arkansas Oil & Gas Commission*, the Arkansas Supreme Court invalidated the AOGC’s order, holding that the agency had no jurisdiction to compel fieldwide unitization.¹⁵³

Shortly thereafter, Act 134 of 1951¹⁵⁴ added a compulsory unitization provision to the Conservation Act. Arkansas law now requires the AOGC to determine whether the following criteria are satisfied before issuing an order requiring compulsory unitization: (1) whether 75% of the working, royalty, and overriding royalty interests from the total proposed

148. ARK. CODE ANN. § 15-72-102(15)(C) (Supp. 2013).

149. *Dobson v. Ark. Oil & Gas Comm’n*, 218 Ark. 160, 161-62, 235 S.W.2d 33, 34 (1950).

150. *Id.* at 163, 235 S.W.2d at 35.

151. *Id.* at 163-64, 235 S.W.2d at 35.

152. *Id.* at 161, 235 S.W.2d at 34.

153. *See id.* at 164-65, 235 S.W.2d at 36.

154. *See* Act 134, 1951 Ark. Acts 286.

unit area have executed the agreement;¹⁵⁵ (2) whether the unit operation is reasonably necessary to prevent waste, increase ultimate recovery, and protect correlative rights;¹⁵⁶ and (3) whether the value of the additional oil to be recovered from the proposed unit operation will exceed the additional costs incident to conducting the operation.¹⁵⁷

The Conservation Act further requires that the AOGC's order be "fair and reasonable,"¹⁵⁸ and the participation formula must provide that each separately owned tract receive its fair share of the production of the unit area.¹⁵⁹ The Conservation Act specifically prohibits the AOGC from adopting or implementing any allocation formula not based on the relative contribution, exclusive of the production equipment, made by each separately owned tract.¹⁶⁰

A postscript on the Schuler Field makes a salient point on field-wide unitization:

A classic example of the success of pressure maintenance by the injection of gas and water was the Shuler Field in Union County, Arkansas. This field was discovered in 1937 and unitized four years later. Had the field been unitized at the time of its discovery or soon thereafter, the drilling of seventy-one wells could have been avoided. During the four years of primary operation, billions of cubic feet of rich gas were vented into the air. Prior to unitization, the field produced a total of approximately 16 ½ million barrels of oil with a drop of reservoir pressure from 3,548 to 1,625 pounds or a difference of 1,923 pounds. Thus, during those four years, 55 percent of the vital reservoir pressure was expended in the production of 11 percent of the total oil in place.

During the first eight years of operation under the unitization plan, 30 million barrels of additional oil was produced with a pressure drop of only 185 pounds. Under primary operation the field would have long since been exhausted, whereas, by as late as 1954 it was still producing well over 5,500 barrels of oil per day. Through

155. ARK. CODE ANN. § 15-72-309(a)(1) (Repl. 2009).

156. ARK. CODE ANN. § 15-72-309(a)(2).

157. ARK. CODE ANN. § 15-72-309(a)(3).

158. ARK. CODE ANN. § 15-72-310 (Repl. 2009).

159. ARK. CODE ANN. § 15-72-310(2).

160. ARK. CODE ANN. § 15-72-310(2).

January 1, 1953, the field had produced over 71 million barrels of oil. The estimated recovery as a result of unitized operations is approximately 100 million barrels of oil, a recovery of close to 90 percent of the oil in place.¹⁶¹

The unitization of a field that shows promise for a pressure-maintenance project should be implemented as early after discovery as possible in order to maximize ultimate recovery from the reservoir. The “sooner the better” is the lesson to be learned from the Schuler Field.

VI. CONCLUSION

The Conservation Act and its major amendments have been successful in regulating oil and gas production to eliminate economic and physical waste. Reservoirs discovered following the passage of the Conservation Act have been controlled, and well spacing and MER prorationing have eliminated the excessive density and rates of production that occasioned so much economic and physical waste during the era of uncontrolled production. A fair and balanced statutory remedy of forced integration has blunted the ability of non-consenting interests to impede the drilling of exploratory and development wells. Well spacing and forced integration have provided the framework for the oil and gas drilling transaction in Arkansas. The established exploratory unit has provided certainty as to the location and geographic extent of prospective play. Forced integration has established the relative rights of the working interests and mineral and royalty interests within the unit. Unitized reservoirs and fields are not uncommon in south Arkansas, either early in the life of pressure-maintenance projects or as belated secondary-recovery operations. The productive life of the field or reservoir is extended, and recovery is enhanced. Compulsory unitization either created the unitized project, or its threat facilitated its creation by voluntary unitization.

The Conservation Act proved sufficiently flexible to accommodate state regulation of production from unconventional reservoirs in Arkansas. The Act's ample rule-

161. KRAMER & MARTIN, *supra* note 39, § 2.03[1]. Commentators frequently spell the name of the Schuler Field as “Shuler.” Because the AOGC generally uses “Schuler,” this article defers to the AOGC spelling.

making authority vested in the AOGC, which the agency has exercised wisely, permits the imposition of rules to govern the regulation of the development of the Fayetteville Shale deposition. The AOGC's statewide rules for Fayetteville Shale development accommodated horizontal drilling and hydraulic fracturing that proved necessary to economically complete wells in the Fayetteville Shale. Approximately 5000-plus producing wells, mostly horizontal, have been completed in the B-43 area.¹⁶² As a consequence, Arkansas is the eighth-largest producer of natural gas in the United States.¹⁶³

There is much success to attribute the Conservation Act and other post-1939 oil and gas conservation. However, the pre-1939 losses still cast a deep shadow over the industry in Arkansas. The Smackover Field was Arkansas's "giant" oil and gas field, spanning in excess of 25,000 acres.¹⁶⁴ At its peak year of production—1925—it was the leading oil-producing field in the world.¹⁶⁵ The sheer amount of oil wasted—mostly attributable to underground waste caused by a loss of gas pressure—was enormous. In 1938, O.C. Bailey opined that one billion barrels of recoverable reserves were left behind in the Smackover Field as a result of waste.¹⁶⁶ Basically, the Smackover Field was ruined.

It is difficult to fault the pioneer operators who committed the waste in the early 1920s. They were ignorant as to oil and gas reservoir mechanics, efficient rates of production, and pressure-maintenance principles pioneered by early petroleum engineers. The truth of the matter is that Arkansas's misfortune with Smackover and the smaller oil fields discovered in the 1920s was based on fortuitous circumstances. The Smackover Field was discovered prior to the development of efficient reservoir management to avoid underground waste by the science of petroleum engineering. The Smackover Field turned

162. Tony Scott, *Fayetteville Tails Generating Positive Cash Flow?*, BTU ANALYTICS (Sept. 18, 2014), <https://btuanalytics.com/fayetteville-long-tails-generating-positive-cash-flow/>.

163. *Rankings: Natural Gas Marketed Production, 2013*, U.S. ENERGY INFO. ADMIN., www.eia.gov/state/rankings/#/series/47 (last visited Apr. 12, 2015).

164. Parker, *supra* note 15, at 34.

165. *Id.*

166. O.C. Bailey, *Arkansas Gas and Oil Resources*, in 5 THE SOUTHERN CONSERVATIONIST AND AMERICAN TUNG OIL 8, 8 (1938).

out to be the industry's lesson on how not to do it for the big discoveries of the late 1920s and early 1930s.

Consequently, in Arkansas, the ubiquitous language in the modern parlance of oil and gas conservation—"prevent waste and protect correlative rights"—is not simply a recitation of theory, it is our experience. The loss of one billion barrels of oil to the future economy of the State of Arkansas has not been a small price to pay. Regrettably, the tragic legacy of Arkansas's early oil and gas development is "indelibly woven into the fabric of conservation and controlled production history."¹⁶⁷

167. Crowell, *supra* note 97, at 26.