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"Well Plugging Obligations: The Operator's Liability to the State and Third Parties"

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I. The Problem of Unplugged Oil and Gas Wells

A. Physical waste of oil, gas and coal reserves.

The failure to properly plug an abandoned oil or gas well may result in actual physical waste of oil and gas reserves because of the following: water may migrate from the unplugged well to the producing formation and "flood out" producing wells or force migration of oil and gas into nonproductive areas; and, gas may dissipate into the air from the wellhead, i.e., purging, which may reduce the reservoir pressure and result in less than maximum ultimate recovery from the reservoir. See, Forbes v. United States, 125 F.2d 404 (9th Cir. 1942). Migration of oil, gas or water from an unplugged well into coal seams may interfere with or prevent mining of coal reserves. Mine shafts may be flooded by salt water or invaded by migrating gas which may result in injury to miners as well as physical waste of coal reserves.

B. Groundwater pollution.

Salt water originating in the unplugged well bore may migrate up the hole and contaminate fresh water formations. Such salt water intrusion into fresh water formations is typically a result of pressurization of the formation penetrated by the unplugged well due to salt water disposal or waterflood operations.

C. Surface damage.

The purging of salt water or oil from the unplugged well may damage the soil, crops, livestock and improvements. See, Annotation, Liability for Injury to Property Occasioned by Oil, Water or the Like, Flowing from Well, 19 A.L.R.2d 1025 (1951).
D. Personal injury.

Gas purging from an unplugged well may cause personal injury. *Magnolia Petroleum Co. v. Witcher*, 141 Okla. 175, 284 P. 297 (1929). Toxic substances sometimes found in oil and gas reserves, such as H2S, may result in death.

II. The Statutory Requirement to Plug Abandoned Wells

A. "Requirement that Dry or Abandoned Wells be Plugged," Ark. Code Ann. § 15-72-216 (1987), reads as follows:

1. "Each abandoned well and each dry hole promptly shall be plugged in the manner and within the time required by regulations to be prescribed by the commission. The owner of the well shall give notice, upon a form the commission may prescribe, of the drilling of each dry hole and of the owner's intention to abandon."

2. "No well shall be abandoned until the notice has been given and no fee shall be required to be paid with this notice."

B. "Plugging Dry or Abandoned Well by Another," Ark. Code Ann. § 15-72-218 (1987), is a "self help" provision, *inter alia*, which prescribes the following:

"Any person" injured or threatened with injury by the failure of a well to be plugged in compliance with § 15-72-217, infra, may, after proper notice, enter upon the premises, plug the well and recover the costs of plugging, court costs and attorney's fees from the person with the "duty to plug the well." The act also impresses a lien upon the well equipment and leasehold interest of the owner or operator of the well to ensure recovery of the statutory damages.

C. The method of plugging a "dry" or "abandoned" well in which "oil or gas bearing stratum" has been found, to be supervised by an "Oil and Gas Inspector" is prescribed by Ark. Code Ann. § 15-72-217 (1987), "Plugging Dry or Abandoned Well by Lessee or Operator," which, in relevant part, reads as follows:

1. Beginning at the bottom, the hole shall be solidly plugged with a substance *** of one-third (1/3) *** cement and two-thirds (2/3) *** of sand properly mixed with water to a point twenty-five
feet (25') above top level of the oil or gas bearing sand. At that point, a seasoned wooden plug two feet (2') in length and the diameter of the hole shall be placed. Thereafter the hole shall be filled solidly with twenty-five (25') of sand balings. Then a seasoned wooden plug two feet (2') long, and the diameter of the hole shall be placed and driven firmly into the sand balings.

2. Should there be more than one (1) oil or gas bearing sand *** after plugging the bottom sand in the well *** the well shall be filled with sand balings within ten feet (10') of the bottom of the next sand *** when this sand and each succeeding sand shall be plugged in the manner set out in subdivision (1) *** until all of the oil and gas bearing sands in the well have been plugged ***.

III. The Arkansas Oil and Gas Commission Regulations Governing Well Plugging.

A. Statutory basis for the Commission's jurisdiction.

1. Rule making authority for well plugging.

Ark. Code Ann. § 15-71-110(c)(1)(A) (1987) authorizes the Commission to promulgate reasonable rules to, inter alia, require the plugging of wells in a manner which avoids the migration of oil or gas from one strata to another, the intrusion of water into an oil or gas stratum, and the pollution of freshwater supplies by oil, gas or salt water.

2. Bond requirement authority.

Ark. Code Ann § 15-71-110(c)(1)(B) (1987) authorizes the Commission to promulgate rules that require a bond to secure the plugging of each "dry" or "abandoned" well.

B. Well plugging regulations of the Commission.

1. Duty to protect oil, gas and water.

Rule B-6 requires that before any well, or any producing formation therein, shall be abandoned the "owner or operator" shall use the "means, methods and procedure (sic)" necessary to prevent water encroachment in any oil or gas bearing
formation and to prevent waste or contamination to any underground or surface water "suitable for domestic or irrigation purposes."

2. Notice of abandonment and Commission supervision of the well plugging.

Rule B-7 requires that an "Application to Abandon" be filed with the Commission for any well to be abandoned that was drilled in "search of oil or gas." The application specifies the time and place of plugging. Upon receipt of the application, the Commission is to issue a "Plugging Permit" and send a representative to supervise the operation.

Rule B-5 (5) requires the application to abandon to be filed within 5 days of the actual completion of the well, or within 5 days of the filing of the requisite Well Completion Report. Rule B-7 also requires the plugging operation to be performed prior to the time the equipment used to drill the well is released from the well site.

Rule B-9 requires an affidavit to be filed with the Commission within five (5) days of the completion of the plugging operation which describes in "detail" the method used to plug the well.


Rule B-8 specifies the manner in which the well is to be plugged. Essentially, each producing formation, and all water bearing strata, as well as the surface hole, must be effectively sealed. More specifically, Rule B-8 (A) requires filling the bottom hole to the top of the deepest producing formation, and placing a cement plug (not less than 100' in length) or a bridge plug inside the casing immediately above each producing stratum. Section (B) requires that a cement plug be placed inside the base of the surface casing when such surface casing has been cemented below the base of the freshwater formation as required by Rule B-15. When surface casing has not been cemented below the freshwater sands, a cement plug must be placed approximately fifty feet (50') below all such freshwater strata. Section (C) requires the placing of a plug at the surface in such a manner that it will not interfere with
cultivation. Section (D) requires that the intervals between plugs be filled with an approved heavy mud-laden fluid.

Section (E) provides that, in addition to the surface plug, an uncased well drilled by a rotary rig shall be plugged with a cement plug placed immediately above the smackover limestone zone, and any other known productive zone in the area, with the hole filled with heavy mud up to the base of the surface casing where a cement plug is to be placed. However, if the surface casing is not cemented through the base of the fresh water stratum, a cement plug is to be placed fifty feet (50') below the fresh water strata.

Finally, section (F) provides any method of plugging other than the prescribed methods may be used if approved by the Commission.

4. Permit and bonding requirements for casing pullers and salvage operators.

Rule B-12 requires a permit and a $5000 surety bond for anyone engaged in pulling casing for compensation or purchasing abandoned wells with the intent to salvage the casing. Failure to plug a well from which the casing has been pulled without compliance with the well plugging rules results in the forfeiture of the bond. The permit may be issued for a term of not less than one (1) year, nor more than three (3) years, with the bond being co-extensive with the term. The permit is also non-transferable. A willful violation of Rule B-12 incurs a penalty not to exceed $1000 a day for each day of violation.


A. Proof of financial responsibility.

Rule B-2 requires an applicant for a drilling permit to submit an affidavit of financial responsibility, subscribed under oath, stating that the applicant owns within the State of Arkansas assets in excess of liabilities sufficient to enable compliance with the surface owner damage protection act, Ark. Code Ann. § 15-72-213 (1987), (being more commonly known as Act 902 of 1983).
The surface owner protection act, inter alia, impresses a lien on the well equipment and production runs of the operator to secure payment of damages for surface injury occasioned by operator neglect. The surface owner must give written notice to the Commission of the surface damage claim within one (1) year of the issuance of the drilling permit. The surface owner's lien is also expressly subordinated to the right of the Commission to secure compliance with the well plugging act, Ark. Code Ann. § 15-72-216 (1987), under the proof of financial responsibility.

B. The surety bond or letter of credit.

In lieu of the affidavit of financial responsibility, Rule B-2 permits the applicant for a drilling permit to post a surety bond or an irrevocable letter of credit in the sum of $15,000 to ensure compliance with the surface owner protection act, Ark. Code Ann. § 15-72-213 (1987). The bond or letter of credit remains in effect until the requirements of the surface owner protection act have been satisfied. Typically, if surface owner claims are not filed within the requisite one (1) year period, the surety bond or letter of credit is canceled by the Director of Production and Conservation and the operator then furnishes the affidavit of financial responsibility.

C. Assumption of liability by successor operator.

Pursuant to Ark. Code Ann. § 15-72-204 (1987) and, also, Rule B-2(a), proof of financial responsibility is only required as a condition to the issuance of the drilling permit. Thus, the operator who acquires an existing well by assignment is not required to furnish proof of financial responsibility. Legislation has been proposed in this legislative session to amend Ark. Code Ann. § 15-72-213 to require a successor operator of any existing well to furnish proof of financial responsibility.

D. Bonding of pre-existing wells: wells drilled prior to the bonding requirement.

The Arkansas Oil and Gas Conservation Act, (commonly referred to as Act 105 of 1939), which authorized the newly created Oil and Gas Commission to promulgate rules governing well plugging, including a bonding provision, Arkansas Acts 105 of 1939, Sec. 11, was enacted in 1939. Presumably, some wells drilled prior
to that date are still in operation. The operator of any such "pre-existing well" is not required to furnish proof of financial responsibility. Thus, "pre-existing wells," destined only to be abandoned, will remain free of the proof of financial responsibility requirements, denying the state the benefit of the security to facilitate proper plugging. In contrast, the Illinois Oil and Gas Act, Ill. Ann. Stat. ch. 96 1/2 para. 5409, by amendment, 1945 Ill. Laws para. 1091, § 1, requires "each manager or operator who has acquired or may hereafter acquire any well drilled for these purposes which has not theretofore been plugged and abandoned" to post the usual proof of financial responsibility.

E. Civil penalties.


2. A fine of not more than $2500 a day for each violation may be incurred for violation of any Commission rule, including rule B-8, infra, which prescribes the method of plugging abandoned wells. Ark. Code Ann. § 15-72-103(a) (1987).

V. The Liability of the Operator to the State

A. Liability on the requisite security.

1. The affidavit of financial responsibility.

Most state conservation statutes require performance bonds as the sole method of securing compliance with the well plugging obligation. Thus, no reported case has been found which analyzes the rights of the conservation agency pursuing the assets of an operator pursuant to the affidavit of financial responsibility for failure to comply with the plugging operation.

The surety bond cases, discussed below at V (A) (2) et seq., may indicate a willingness of the courts to liberally construe the rights, if any, of the agency pursuant to the affidavit of financial responsibility.

2. The state is not required to prove damage in a suit on the bond.
In People ex re. Schull v. Massachusetts Bonding & Ins. Co., 4 Ill.2d 23, 122 N.E.2d 185, 4 O. & G.R. 126 (1954), the defendant surety executed a bond which was conditioned upon the principal complying with the oil and gas conservation act, which required restoration of the well site to its pre-drilling condition. The principal failed to restore the surface and the Department of Mines and Minerals (department) sued the defendant surety on the bond. After the complaint was filed, the defendant, at its own expense, had the surface restored to the satisfaction of the department. The defendant then argued that the department could not recover on the bond in the absence of any injury occasioned by the breach of the condition of the bond. The trial court rejected the defendant's argument and entered judgment for the Department for the full amount of the bond. The Illinois Supreme Court affirmed the trial court's judgment on appeal, holding that the bond was a "penalty bond," intended to secure compliance with the law, as opposed to an "indemnity bond," intended to indemnify the state for damages sustained due to the violation of the statute. The court observed that to construe the bond as an "indemnity bond," i.e., limiting the surety's obligation to actual damages sustained by the public body, would frustrate the statutory purpose and reduce the requirement of a bond to an "empty formality." Contra State v. Alpha Oil & Gas, Inc., 747 S.W.2d 378 (Tx. 1988).

3. Operator's liability to surety for the amount of the bond in the event of forfeiture.

The contract of indemnity provides that the principal, the operator, will indemnify the surety for any losses sustained by the latter when the bond is forfeited due to the failure of the former to comply with the statute. See generally, State v. Duchscherer, 35 A.D.2d 7, 312 N.Y.S.2d 45, 36 O. & G.R. 79 (1970).

B. Right of conservation agency to plug the well and sue the operator for the costs.

Some oil and gas conservation acts provide that the state may enter the land and plug the well and charge the costs to the operator. Section 75 (1)(C) of the New York Conservation Act provides as follows:
*** the department shall have the power to: (K)
Enter, take temporary possession of any abandoned
well, and plug the same as provided in its
plugging rules and regulations, whenever any
operator shall neglect or refuse to comply with
such rules and regulations. Such plugging by the
department shall be at the expense of the operator
whose duty it shall be to plug the well.

For application of the statute, see generally, State v.
Duchscherer, 35 A.D.2d 7, 312 N.Y.S.2d 45, 36 O. &

C. Right of the state to compel the operator to replug an
improperly plugged well.

Although the Arkansas plugging act and Commission
regulations do not specifically provide that the
Commission may compel the operator to replug an
improperly plugged well, authority for that
proposition exists. In Currey v. Corporation Comm'n,
617 P.2d 177, 68 O. & G.R. 274 (Okla. 1979), two wells
which had been abandoned and plugged by the operator,
the defendant, in the mid-1950's were discovered twenty
(20) years later to be purging salt water onto the
surface at the rate of forty (40) barrels per day.
The Corporation Commission determined that the wells
had been improperly plugged and ordered the defendant
to replug the wells. Although the Oklahoma well
plugging statute did not specifically authorize the
Commission to compel the operator to subsequently
replug an improperly plugged well, the court, relying
upon an amendment establishing the "orphan" well
plugging fund which made reference to "replugging or
repairing the well *** to prevent further pollution,"
held that the Commission had such authority.
Subsequently, in Ashland Oil, Inc. v. Corporation
Comm'n, 595 P.2d 423, 63 O. & G.R. 331 (Okla. 1979),
the operator plugged two wells in 1946 and 1959,
respectively, in violation of the Commission's rules to
protect groundwater by failing to set a cement plug
below the fresh water strata. However, the Commission's
inspectors who supervised the plugging of the wells had
approved the defendant's plugging procedure.
Thereafter, in the 1970's, the wells were purging salt
water and polluting a freshwater formation which was
used for a domestic water supply. The court affirmed
an order of the Commission requiring the defendant to
replug the wells. In so doing, the court concluded
that the Commission had no authority to waive the
applicable regulations and, thus, was not bound by the
ultra vires action of their employees. Likewise, the
Commission was not estopped from requiring replugging of the wells in compliance with the rules. Finally, the failure to have yet ordered other operators in the area with identically plugged wells to replug their wells did not render the Commission's order arbitrary and unenforceable.

D. Liability to the state is incurred when environmental harm or physical waste of minerals occurs even though the operator has complied with the well plugging act.

In *State v. Duchscherer*, 35 A.D.2d 7, 312 N.Y.S.2d 45, 36 O. & G.R. 79 (1970), the defendant operator plugged and abandoned several unprofitable wells. After the initial plugging efforts, three (3) of the wells continued to purge gas. After making several unsuccessful attempts to seal the leaks by replugging the wells, the defendant "gave up," declining to undertake any more replugging efforts. The wells continued to leak gas. Pursuant to the statute, Sec. 75 (C) of the Conservation Act, the Conservation Department engaged a contractor who replugged the wells and then sued the defendant to recover the costs. In the suit, the defendant argued, inter alia, that, following accepted procedures, he had plugged and subsequently replugged the wells in strict compliance with the Department's regulations and, thus, had fulfilled his responsibility under the plugging act. The Court of Appeals, affirming the lower court's judgment for the Department, rejected the defendant's defense, holding that the defendant's responsibility under the statute was not merely to follow the Department's regulations but to plug the well to prevent the escape of gas. The court emphasized the plugging statute, i.e., "the legislative safeguard against environmental pollution and destructive and dangerous gas blowouts and fires," must be strictly enforced.

VI. Liability of the Operator to Third Parties

A. Violation of the well plugging acts.

1. Abandonment of the well.

The Arkansas Well Plugging Act, Ark. Code Ann. § 15-72-216(a) (1987), requires each "abandoned well" and "dry hole" to be plugged pursuant to Rule B-6 after notice of the intent to abandon, which is a condition precedent to abandonment, is given to the Commission. However, neither the statutes, nor the rules of the Commission define
an "abandoned well." The problem of definition is generally encountered when a well is non-producing, or incapable of being completed as a producing well, but the operator refuses to plug the well, alleging that it has not been "abandoned," but only ostensibly "temporarily shut-in" or "awaiting other completion efforts."

**Seaboard Oil Co. v. Commonwealth**, 237 S.W. 48 (Ky. Ct. Ap. 1922), is the leading case on abandonment. There the defendant was fined $300 in the Circuit Court for failure to comply with the Kentucky Well Plugging Act, a predecessor statute to Ky. Rev. Stat. Ann. § 353.180. The evidence indicated that the defendant operator had drilled a well on the lease premises which showed a meager trace of oil in the well bore. The defendant did not then test the well's productivity by pumping but delayed the test until other wells projected to be drilled on the lease in the future could be tested. Apparently, the defendant was motivated to run the pumping test at the same time on all the wells to be drilled on the premises so that the same power source could be utilized. However, the defendant was waiting on the results of other wells being drilled on adjacent tracts before deciding whether to further drill, or, if so, where to drill on the lease premises. In any event, the defendant did not complete the well as a producer or pull the casing. Also, the defendant moved the drilling rig from the lease. On appeal of the fine, the defendant argued, *inter alia*, that the failure to pull the casing precluded a finding of abandonment of the well, which was a prerequisite to imposition of the fine. The court affirmed the conviction. In so doing, it adopted an objective standard of abandonment, i.e., evidence of an act of abandonment with the intention to abandon, inferred from the circumstances surrounding the events, including the conduct of the parties, regardless of the claimed mental intent of the operator. The court also noted that abandonment was a question of fact for the jury. Further, the court opined that pulling the casing would constitute *ipso facto* abandonment, i.e., abandonment as a matter of law.

Applying the common law standard of abandonment, i.e., an act plus intent of abandonment, as a question of fact to be determined by the jury in a judicial proceeding, is an inefficient, haphazard
manner of enforcing the proper plugging of dry holes and depleted or uneconomic oil and gas wells. Administratively determined criteria which specifically delineates the circumstances under which nonproducing wells may be temporarily shut-in or permanently plugged provides the operator with more certainty as to its rights and obligations and provides the public with more protection of natural resources and the environment.

Some conservation acts do definitively define "abandoned well" for purposes of the well plugging acts and agency regulations. For example, Ky. Rev. Stat. Ann. § 353.510 (12) defines "abandoned well" as one which has "never been used, or which, in the opinion of the department (conservation agency), will no longer be used for the production of oil or gas, or for the injection or disposal of fluid therein."

2. Failure to comply with the well plugging acts is negligence per se.

In Nisbet v. Van Tuyll, 224 F.2d 66, 51 O. & G.R. 15 (7th. Cir. 1955), the defendant, the assignee of the lessee of the oil and gas lease, drilled a dry hole through a workable coal seam. The defendant allegedly failed to properly plug the well pursuant to the Kentucky well plugging act, Ky. Rev. Stat. Ann. § 353.120. Subsequently, the plaintiff, the lessor, executed a coal lease on the land to the West Kentucky Coal Company. When the coal company started mining the coal, water and gas from the abandoned well leaked into the mine, halting the mining operations. Plaintiffs, at a cost of $7500, properly replugged the abandoned well so that the coal mining operations could be resumed. Then, alleging negligence in the failure to properly plug the abandoned well pursuant to the statute, plaintiffs sued the defendant to recover the replugging costs. In reversing the trial court's granting of summary judgment to the defendant, the Circuit Court of Appeals held, inter alia, that violation of the statute was "negligence per se." Thus, to recover, plaintiff needed to prove only that the defendant's violation of the statute was the proximate cause of plaintiff's damage. Additionally, the court held that the Kentucky statute, Ky. Rev. Stat. Ann. § 353.990, providing
criminal and civil penalties for violation of the act, did not preclude the existence of the private cause of action for violation of the statute.

3. Proximate cause of injury may be established by circumstantial evidence.

In *Palmer Corp. v. Collins*, 284 S.W. 97 (Ky. 1926), plaintiff owned an oil and gas lease adjacent to the defendant's lease. The defendant abandoned, without plugging, two wells on his lease in conformity with the well plugging act. Immediately thereafter, plaintiff, whose wells had not previously produced water, discovered water in his battery tanks. Plaintiff examined the defendant's two unplugged wells and discovered that they were "open and full of water." Plaintiff informed the defendant who agreed to plug the wells but was prevented from doing so for two (2) months due to lack of equipment. After the defendant's wells were properly plugged and the water had been removed from the wells, the water did not reappear in plaintiff's wells. Plaintiff sued the defendant for the costs of removing the water from his wells. The Court of Appeals sustained the trial court's judgment in favor of plaintiff. In so doing, the court held, *inter alia*, that direct proof that the water in the plaintiff's wells was due to the defendant's failure to properly plug his well was not required. The fact that the plaintiff had no trouble with water in his wells prior to the defendant's failure to properly plug his abandoned wells, and when the defendant's wells were properly plugged and the water was removed from plaintiff's wells, the water did not return was sufficient evidence to sustain the verdict for the plaintiff.

In *McAlister v. Atlantic Richfield Co.*, 233 Kan. 252, 662 P.2d 1203, 77 O. & G.R. 241 (1983), the following circumstantial evidence was found sufficient to avoid summary judgment for the defendant oil companies and to go to the jury on the issue of liability for groundwater pollution pursuant to a statute imposing liability for damages incurred by escape of salt water in oil and gas operations: evidence that a water well on plaintiff's land produced good water when he purchased the tract in 1967; that subsequent water well drilled in 1970 developed "extremely high chloride and salt content" and was unfit for use.
in 1974; various witnesses' testimony that numerous salt water disposal pits existed and that salt water surface spills, oil tank and pipeline leaks were prevalent in oil company operations in the geographic area; and, expert witnesses, including a hydrologist, who testified that plaintiff's well appeared to be polluted by oil field brine. None of the witnesses testified as to any act of the defendants which caused the pollution of the plaintiff's well; no evidence of direct causal connection was introduced.

4. The well plugging act protects landowners, adjacent landowners and mining operators.

The general well plugging act in Arkansas, Ark. Code Ann. § 15-72-216 (1987), does not expressly impose liability in favor of a party who suffers harm attributable to a violation of the act. Ark. Code Ann. § 15-72-218 (1987) permits "any person injured or threatened with injury" the remedy of self-help, i.e., the right to plug the well and recover the costs of plugging, as well as court costs and attorney fees, from the "person whose duty it was to plug the well." However, the limitation on liability in § 15-72-216, as well as the limitation on damages in § 15-72-218 appears to be inconsequential. In addition to holding that violation of the statute constitutes negligence per se, Nisbet v. Van Tuyl, supra, the courts have extended protection of the well plugging act to landowners and adjacent landowners and oil and gas or mining operators who have been damaged by the defendant's failure to properly plug an abandoned well. Likewise, damages are awarded for all pecuniary losses proximately caused by the defendant's failure to properly plug the well.

The following cases illustrate the scope of protection of the well plugging acts and the damages which may be awarded pursuant thereto:

a. Groundwater pollution or surface damage.

Hall v. Galey, 271 P. 319 (Kan. 1928), illustrates, in part, the traditional theory of damages for groundwater pollution. There, the defendant operator negligently plugged an abandoned gas well in violation of the Kansas
well plugging act. As a result, subsurface salt water polluted a water well on land situated adjacent to the well. Plaintiff, the landowner, recovered the diminution in the market value of the land due to the "permanent" harm occasioned to the groundwater, the only source of potable water on the tract. If the harm to the groundwater is remedial or abatable, the damage may be classified as "temporary" which limits the recovery to the rental value of the land for the period in which it was incapable of use or the cost of restoring the groundwater. See, Dobbs, Remedies § 5.1 (West 1973).

Maxedon v. Texaco Producing, Inc., 710 F. Supp. 1306 (W.D. Kan. 1989), illustrates that the traditional theory of damages for groundwater pollution may be changing due to the prevalent environmental ethic. There, plaintiff landowners filed suit against the defendant oil and gas lease operator for pollution of their land caused by saltwater leaking from improperly plugged and abandoned wells and saltwater spills. On the defendant's motion for summary judgment, the court initially held that the plaintiffs could not recover the cost of cleaning up the land when that amount exceeds the fair market value of the property before injury. Even though the court evidenced concern about pollution caused by oil and gas operations, as well as the public policy of requiring restoration of polluted land and water, the court refused to "legislate" and change the common law rule that damages cannot exceed the fair market value of the land before injury. Later, however, the court retracted that part of its opinion which held that temporary damages may not exceed the pre-injury value of the damaged property. The court noted that the 10th Circuit in Miller v. Cudahy Co., 858 F.2d 1449 (10th Cir. 1988), affirmed an award of temporary damages which exceeded the potential recovery for permanent damages, i.e., the difference in the fair market value of the land before and after the injury. The award in Cudahy had calculated temporary damages as the loss of the value of the use of the property. The court noted its disagreement with that result.
but indicated that it was compelled to follow Cudahy and stated that if "temporary damages," i.e., damages for an injury that is "intermittent and occasional (when) the cause of damages (is) remediable, removable, or abatable," should be awarded at trial, the evidence may justify an award which would exceed the value of the land prior to the injury.

The damages for injury to the land is essentially the same as for groundwater pollution.

b. Physical waste of oil, gas, or coal reserves.

Veazey v. Burton Indus., Inc., 407 So.2d 59, 72 O. &. G.R. 60 (La. App. 1981), involved a suit by a mineral owner against the operator to recover the value of petroleum hydrocarbons which were allegedly wasted from the leased premises due to the operator's negligent failure to properly plug an abandoned well. The facts indicate that plaintiff, the mineral owner, executed an oil and gas lease which was subsequently assigned to the defendant operator who drilled, in 1966, an 18,000 foot well on the premises. Allegedly, two high-pressure gas zones were encountered, as indicated by the well logs, at 14,675 feet and 14,800 feet respectively, which was below the point at which the defendant set casing, at 13,429 feet. As opposed to completing the well, the defendant abandoned and plugged the well. In plugging the well, defendant negligently failed to isolate and separately plug the gas zones as required for all "open reservoirs" of oil or gas by the applicable Louisiana well plugging regulations. Thereafter, the well logs were discovered by another operator who obtained an oil and gas lease from the plaintiff and drilled, in 1977, a dry hole on the premises. Plaintiff then sued the defendant for the value of the gas and condensate allegedly wasted from the gas reservoirs due to the negligent failure to properly plug the well. The trial court granted summary judgment to the defendant, which was affirmed by the Louisiana Appellate Court on the ground that
the plaintiff's alleged damages were "speculative." To recover, the court held, plaintiff must prove with certainty that the oil and gas could have been produced in 1966 from the alleged reservoirs, and that it was then economically feasible for the defendant operator to have done so. Likewise, the quantity of oil and gas which would have been produced and the value of the production to the plaintiff must be proved with certainty. Mr. Justice Laborde dissented. Cf. Elliff v. Texon Drilling Co., 146 Tex. 575, 210 S.W.2d 558 (1948).

c. Costs of properly plugging abandoned wells recovered by subsequent operator.

In Salmon Corp. v. Forest Oil Corp., 536 P.2d 909, 52 O. & G.R. 413 (1974), the defendant operated seventy-one (71) oil wells producing from the Wayside sand in Osage County, Ok. When primary production declined, the defendant plugged the wells. Approximately four (4) years later, plaintiff obtained oil and gas leases on the land, and other lands, and instituted a secondary recovery waterflood operation. When the plaintiff, pursuant to his secondary recovery operation, injected water under pressure in the formation, an old well previously plugged by the defendant immediately commenced to purge water. Plaintiff re-entered and replugged the well. Plaintiff alleged that twenty-five (25) of the old wells plugged by the defendant were negligently or improperly plugged and adversely interfered with the waterflood operation and polluted the land. However, since it was impossible to establish if the remaining forty-six (46) wells were plugged in such a manner as to withstand the pressure from the injected water, plaintiff plugged or replugged all of the wells previously operated by the defendant. Thereafter, plaintiff sued the defendant to recover the costs of plugging the wells. The defendant argued, inter alia, that the Oklahoma Well Plugging Act, Corporation Commission Act and Osage Indian Agency regulations did not require the wells to be plugged so as to avoid interference with future waterflood operations. By summary judgment, plaintiff was denied the right to
recover the costs of plugging the forty-six (46) wells which were not alleged to have been improperly plugged. Further, the trial court instructed the jury, inter alia, that "substantial compliance" with the well plugging statutes and Osage Indian regulations was the extent of the defendant's duty and such a finding would preclude a verdict for the plaintiff. The jury found for the defendant. On appeal, the Oklahoma Supreme Court reversed and remanded the case for retrial. First, the court held that plaintiff would be entitled to recover the costs of plugging the allegedly improperly plugged wells if the defendant had failed to "strictly comply" with the applicable well plugging regulations and, additionally, if plugging the wells in compliance with the regulations would have "sealed off" the formation so that the plugged wells would have withstood the enhanced pressure occasioned by the waterflooding. Further, plaintiff would also be entitled to recover the plugging costs of the wells which had not been alleged to have been improperly plugged if a "reasonable prudent operator," under the circumstances, would have reentered and replugged the wells before continuing with the waterflood operation.

d. Cost of restoring the damaged formation.

See, Palmer Corp. v. Collins, supra, at VI(A)(3).

e. Punitive damages.

In Nichols v. Burk Royalty Co., 576 P.2d 317, 60 O. & G.R. 546 (Okla. App. 1977), plaintiff's land was polluted during a ten (10) year period by saltwater leaking and overflowing from pipelines and holding tanks. In addition to compensatory damages, plaintiff was awarded punitive damages in his suit. In affirming the punitive damages award on appeal, the Oklahoma intermediate appellate court emphasized that the defendants were aware of the poor condition of the tanks and pipes, since they continued to repair the leaks, and preferred to make post-spill repair rather than pre-pollution replacement of the dilapidated equipment.
Such conduct evidenced a reckless and aggravating disregard for the rights of plaintiff and indifference regarding the fertility of the soil, justifying an award of punitive damages.

The impetus to avoid punitive damages in groundwater pollution litigation is illustrated by Marshall v. El Paso Natural Gas Co., 874 F.2d 1373 (10th Cir. 1989), an action involving the failure to properly plug an abandoned oil and gas well, wherein a jury verdict for $400,050 in compensatory damages and $5 million in punitive damages was affirmed on appeal.

5. Liability of operator who "abandons" the well, or subsequent assignee or mineral owner.

a. Liability is imposed on an operator who abandons the well.

Although the language of the statute expressly refers to the "owner of the well," who is required to give notice of the intent to abandon the well and, thus, by implication would seem to have the duty to plug the well, Ark. Code Ann. § 15-72-216 (1987) may be construed as placing the obligation to plug the well on the "operator" who abandons the well. Because the operator is traditionally the party who obtains the drilling permit and posts the proof of financial responsibility pursuant to Rule B-7 to ensure the plugging of the well, the Commission's rules would also seem to indicate that the operator is the party responsible for the plugging of the well. Should this construction prevail, neither successors-in-interest of the operator who abandons the well, nor owners of non-operating working interests, would incur liability to the state or third parties for failure to plug a previously abandoned well.

Some support for that proposition exists. In Railroad Comm'n v. American Petrofina Co., 576 S.W.2d 658, 62 O. & G.R. 421 (Tex. Civ. Ap. 1978), the defendant acquired by assignment an oil and gas lease upon which was situated a producing gas well. Also situated upon the leased premises was an
unplugged well which had been drilled under a previously terminated oil and gas lease. The well had been abandoned prior to the defendant's acquisition of its assignment.

The then applicable Texas Well Plugging Act, Tex. Nat. Resources Code Ann. § 89.002(A)(2) (1978), imposed the obligation to plug the well on the "operator," defined as "a person who is responsible for physical operation and control of a well at the time the well is about to be abandoned or ceases operation."

The Texas Railroad Commission ordered the defendant to plug the abandoned well. The trial court reversed the Order of the Railroad Commission. In affirming the trial court's judgment, the Court of Civil Appeals emphasized that the defendant, not having abandoned the well, was not the "operator" pursuant to the statute.

b. Liability is imposed on subsequent assignee.

Houser v. Brown, 29 Ohio. App. 3d 358, 505 N.E.2d 1021, 94 O. &. G.R. 344 (1986), involved a construction of the Ohio Well Plugging Act, R.C. 1509.01(K), which provides that "the owner," i.e., "the person who has the right to drill *** and to appropriate the oil or gas that he produces *** is the person responsible for plugging a well that is or becomes incapable of producing oil or gas in commercial quantities." There, the inspector of the Ohio Department of Natural Resources discovered five (5) nonproducing unplugged wells on land owned by Sharon Herold during an "on site" inspection. The evidence indicated that the wells had not produced since 1973 and from that time the Department had been aware of their "dormant" condition. At the time of the "on site" inspection, the leases were then owned by the defendant Brown who had acquired the leases by assignment in 1979. The Chief of the Division of Oil and Gas (Chief) ordered Brown to plug the wells. However, Brown had already released his interest in the leases to the landowner Herold. When the Chief found out that Brown had already cancelled his leases, he ordered Herold, the landowner, to plug the wells.

Both Brown and Herold appealed the orders to the Board of Review who reversed the order as to Brown, finding that he was not the "owner"
when the Chief found the wells were incapable of producing, and affirmed the order as to Herold, finding that she was the "owner" when the wells were found to be incapable of producing. The decision reversing the order as to Brown was appealed to the Court of Common Pleas which affirmed the Board's reversal of the Brown order on the grounds that the "owner" of the wells for purposes of the Well Plugging Act was the "owner" at the time of the issuance of the Order to plug. The Court of Appeals of Ohio reversed the judgment of the Court of Common Pleas. Brown, the assignee to the nonproducing wells in 1979 had a duty, pursuant to the statute, to plug the wells. Thus, a new lessee or new owner may "inherit" the duty to plug a well if a well incapable of producing in commercial quantities is leased. The court noted that language of the statute, the policy requiring the plugging of unproductive wells, and the realities of the oil business justify this result. Many wells, the court noted, were drilled at the turn of the century, and many of the companies who drilled these wells are now out of business; thus, holding only the original owner responsible for the plugging of the wells would defeat the purpose of the statute. Further, the obligation to plug the well was a continuing duty, and once Brown acquired the duty, he could not escape it by releasing the leases prior to the issuance of the order to plug the wells.

c. Liability of nonoperating working interest owner.

In 1983, the Texas Well Plugging Act was amended to provide that in the event the operator could not be found or no longer was in existence or lacked the assets to properly plug the well, the nonoperator, defined as working interest owners, exclusive of royalty and overriding royalty interests, had the duty to plug the well. In Railroad Comm'n v. Olin Corp., 690 S.W.2d 628, 88 O. & G.R. 579 (Tex. App. 1985) a working interest owner, pursuant to a joint operating agreement, elected to go "non-consent," i.e., to be "carried" with a right to receive their
proportionate share of production after costs plus a risk factor penalty had been recovered from their share of production, to a proposal by the operator to rework the well. Subsequently, the operator, unsuccessful in his reworking efforts, failed to plug the well. When the operator could not be located, or lacked the assets to plug the well, the nonoperating working interest owner was held to be obligated to plug the well.

d. Liability of the mineral owner.

In *Houser v. Brown*, supra, Chief of the Division of Oil and Gas (Chief) ordered the landowner, apparently the mineral owner, pursuant to the Ohio Well Plugging Act, to plug the abandoned and unplugged wells. For a recitation of the facts, including the statute, see VI(A)(5)(b). On Appeal, the Board of Review affirmed the Chief's Order, finding that the mineral owner was the "owner" when the wells were found to be incapable of producing. The mineral owner failed to appeal the decision of the Board of Review. On the ultimate appeal of the Chief's Order to Brown, the assignee of the lessee who abandoned the wells without plugging, who had also been ordered to plug the wells, the Ohio Court of Appeals noted that the Chief had correctly issued the order to plug the wells to the mineral owner who, according to the court, also had a statutory duty to the public to plug the wells.

B. Common law remedies.

For a discussion of the common law remedies of trespass, negligence, nuisance and the doctrine of correlative rights, see, Douglass, *The Obligation of Lessees and Others to Plug and Abandon Oil and Gas Wells*, 25th Oil & Gas Inst. 123 (Matthew Bender 1974).

VI. The "Orphan Well" Problem and the "Well Plugging Fund"

A. Orphan wells are wells which have or will be abandoned without being plugged.

1. The United States currently has 452,589 "stripper wells," i.e., "wells producing ten (10) barrels or less of oil a day." *Interstate Oil Compact*
Commission, National Stripper Well Survey 4 (1990). Many of these wells are unbonded, and may be abandoned in the future by operators lacking assets to plug. Arkansas has 7,428 stripper wells which average 2.42 BPD. National Stripper Well Survey, supra, at 4.

2. Thousands of previously abandoned and unplugged wells exist in the oil and gas producing regions of the United States. Most of the unplugged wells appear to be a legacy of the era of unregulated production of oil and gas. Today's comprehensive regulation typically involves "cradle to the grave" regulation of oil and gas wells, i.e., from permitting the drilling to requiring the plugging of the well, with a bond required as a condition to the issuance of the drilling permit to secure the eventual plugging of the well. Drilling permits, plugging permits and the bonding requirements typically were adopted as a part of the general conservation acts which regulated well spacing and pooling. Prior to the adoption of the general conservation acts, well plugging acts, such as Ark. Code Ann. § 15-72-216 (1987), merely provided a cause of action for third parties harmed by the failure to properly plug the well. The statute failed to authorize the state to enforce the Act. As a result, many wells were not plugged when abandoned.

3. The statutory solution: the well plugging fund.

One common solution has been a "well plugging fund" which receives monies, either from forfeiture of bonds or fines, or from legislative appropriations which are available to the conservation agency for the plugging of any abandoned wells. Arkansas receives an appropriation, currently amounting to $100,000, from the legislature for funding of its well plugging fund. The plugging of any such well by the Commission should not relieve the operator of any civil liability pursuant to § 15-72-216.

B. Managing the orphan well problem.

1. Problems associated with orphan wells.

Location of old abandoned and unplugged oil and gas wells is a primary problem. No state records of well locations existed during the pre-conservation act era. As to wells drilled before
the 1950's, individuals with knowledge of the unplugged well may no longer be living. The vast number of orphan wells and the costs required to plug old unplugged wells indicate that the state cannot afford to plug all the existing unplugged wells. The costs of plugging older unplugged wells may exceed the costs of plugging presently abandoned wells because some wells will have to be re-drilled in order to be properly plugged. Appropriations of funds from the legislature sufficient to plug all of the orphan wells which may pose a problem is unlikely to happen.

2. A strategy for orphan wells.

Locating orphan wells which have the highest potential for groundwater pollution would seem to maximize the benefit of the limited funds available to be expended on plugging orphan wells. First, searches for unplugged wells should be limited to geographic areas where groundwater is the principal source, or potentially the principal source, of water for domestic use. Additionally, the extent of oil field operations conducted in the area should also be a factor, as well as the existence of salt water disposal or secondary recovery operations, and any evidence of pollution, such as surface damages or enhanced mineralization of fresh water.

VIII. State Regulation of Salt Water Disposal Wells and Enhanced Oil Recovery Wells: The Safe Water Drinking Act, 42 U.S.C.A. § 300(F) et seq. (West 1982)

A. The statutory basis for the state regulation of Class II wells (salt water disposal and enhanced oil recovery wells).

1. Pursuant to § 300 h-1, a state may obtain primary enforcement responsibility of the "underground injection control program" by obtaining approval of a state administered program which meets the EPA mandated "minimum requirements for effective programs" to prevent underground injection of fluids which "may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system" of any contaminant which may result in a violation of the "national primary drinking water regulations" or may "otherwise adversely affect the health of persons." § 300h(d)(1,2). Arkansas has obtained "primacy" and, thus, administers the state's
"underground injection control program" applicable to Class II wells.

2. Section § 300h-1(c)(1,2) exempts from the mandated Underground Injection Control Program oil and gas salt water disposal wells and enhanced recovery wells "unless *** essential to assure that underground sources of drinking water will not be endangered by such injection."

B. Arkansas Oil and Gas Commission regulations applicable to Class II wells, Rule C-7, Rule C-8 and Rule C-9.

1. Plugging and abandoning regulations.

The method of plugging prescribed by Rule B-8 is applicable to salt water disposal wells, pursuant to Rule C-7(E)(4); fluid repressure and waterflood wells, pursuant to Rule C-8(D)(3); and, gas repressure wells, pursuant to Rule C-9(D)(3).

2. Permitting requirements for Class II wells relating to "orphan wells."

Applicants for class II wells must identify the location of all "oil and gas wells including abandoned and drilling wells and dry holes" within one-half (1/2) mile of the location of the injection well. All such wells which were improperly plugged or abandoned may require a plan of corrective action to prevent drinking water contamination. If the corrective action plan is deemed inadequate, the Commission may require either revision or substitution of another plan, or deny the permit. See, Rule C-7(D)(2)(a)(b), as to salt water disposal wells; Rule C-8(C)(2)(b), as to fluid repressure and waterflood wells; and, Rule C-9(C)(2), as to gas repressure wells.


Applicants for class II wells must satisfy the Commission of their financial responsibility to plug the well as a condition to issuance of the permit. In lieu of evidence of financial responsibility, the applicant may post a $100,000 surety bond. See, Rule C-7(A)(3), as to salt water disposal wells; Rule C-8(C)(2)(k), as to fluid repressure and waterflood wells; and, Rule C-9(C)(2)(k), as to gas repressure wells.
C. Civil and criminal penalties for violation of the regulations.

1. Civil penalties.

A fine of not more than $2500 a day for each violation may be incurred for violation of any Commission rule, including rule B-8, infra, which prescribes the method of plugging abandoned wells for class II wells. Ark. Code Ann. § 15-72-103(a) (1987).

2. Criminal penalties.

Imprisonment for not more than six (6) months, or a fine of not more than $5000, or both, in lieu of the civil penalty, shall be imposed for a "willful" evasion or violation of any requirement of the Safe Water Drinking Act. Ark. Code Ann. § 15-72-104 (1987).

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