OIL AND WATER;
THE OIL AND GAS INDUSTRY AND WATER POLLUTION

Donald Ross Patterson

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Approved by:

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OIL AND WATER -- The Oil and Gas Industry and Water Pollution

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Water pollution is not a new problem. It began with the birth of civilization and continues today, for man and pollution go hand in hand. Today, however, there are more men than ever and therefore more pollution. No longer can pollution be allowed to go unchecked. The oil and gas industry is unique in the areal extent and the sheer volume of potential pollutants it produces. The industry finds itself haunted by ghosts from its past in the form of practices of other years that are no longer acceptable. However, many of the ghosts stem from substandard rules and laws of the past -- especially those dealing with plugging of abandoned wells.

While there are a number of theories of private liability for the pollution of water, most states have adopted either negligence or some form of strict liability as their basic theory with one or more

of the others as possible secondary theories. In recent years, however, the actual results have been more nearly the same as the courts in "negligence" states have become more and more willing to find negligence in any pollution case.

Defenses the oil industry has attempted to use in pollution cases include limitations, incurred risk, the right to consume water gives the right to pollute, balancing of equities, and unclean hands. Most courts, feeling the burden should be placed on the wrongdoers to apportion the damage among themselves and not on the innocent plaintiff, will allow joint and several liability even when the tortfeasors did not act in concert.

Almost every session of Congress or state legislature produces new restrictions on water pollution. In recent years most of the industry has realized that it is in its best interest to get its own house in order before some government agency forces it to do so.

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INTRODUCTION

> Water is life. Those who have inhabited the arid regions of this earth have always known it is so. Water nourishes civilizations. The great system of aqueducts was a mark of Roman civilization and the Babylonian empire could not survive the destruction of its water courses. In America today we experience water shortages of which our fathers never dreamed. Our rapidly increasing per capita consumption of water and our burgeoning population admonish us that we must become as proficient in the management and conservation of our water as we have already become in its use.[1]

Every second, four new babies are brought into this world. Every nine seconds, one is born in the United States. That baby's prospective use of earth's resources is extraordinarily high -- at least thirty times that of a baby in India by conservative estimate. More than 56,000,000 gallons of water, for personal use as well as for agriculture and industry, will be required to supply that new American's lifetime wants.[2] In 1963 the United States used 355 billion

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[1] Knodell, Liability for Pollution of Surface and Underground Waters, 12 ROCKY MT. MIN. LAW INST. 33 (1967). [Hereinafter cited as Knodell].

[2] The World -- and How We Abuse It, 138 NATIONAL GEOGRAPHIC 782 and Special Map-and-painting supplement (Dec. 1970).

gallons of water a day. By 1980 the total dependable fresh water supply will be approximately 515 billion gallons per day. The most we can ever hope to have available as a result of engineering works is 600 billion gallons a day. However by 1980 our daily requirements will be 600 to 700 or more billion gallons per day and by the year 2,000, at least 1,000 billion gallons per day. We thus must learn to use and reuse large quantities of our available water supply if it is to meet our needs.[3] We must get used to the idea that the water we use to make our coffee has perked in someone else's pot and it behooves us as individuals and industries to do what we can to prevent pollution of fresh water.

The oil and gas industry has a tremendous problem in preventing pollution from its activities, for in addition to the polluting potential of oil itself, the industry produces an estimated 23,560,121 barrels of salt water per day or 8,599,441,165 barrels per year. Texas alone produces some seven million barrels of salt water daily and Kansas produces sixteen barrels of oil field brine for each barrel of oil.[4] We will examine some of the legal aspects of this problem,

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[3]Butler, The Oil and Gas Industry and Water Conservation, 16th OIL & GAS INST. 301, 303 (1965) [hereinafter cited as Butler]; Knodell, 33.

[4]INTERSTATE OIL COMPACT COMMISSION, WATER PROBLEMS ASSOCIATED WITH OIL PRODUCTION IN THE UNITED STATES 12 (1965); Enright, Oil-Field Pollution and What's Being Done About It, The Oil and Gas Journal, June 24, 1963 at 76.

but such a study would be worthless unless we can place it in the proper setting of the current pollution problems and concern for the environment.

II. POLLUTION TODAY

For years there have been groups such as the Sierra Club, the Izaak Walton League, and Ducks Unlimited, dedicated to the preservation of wilderness areas or game animals, but general public concern about the environment is a new phenomenon. Some trace this concern back to the book Silent Spring,[5] feeling that:

> Prior to 1962 there was comparatively little public concern over the problem of pollution. This was the year that Miss Rachel Carson penned her controversial book Silent Spring.
>
> The poets have said the face of Helen of Troy "launch'd a thousand ships".
>
> In eighteen months, the pen of Miss Carson helped launch more than 3,000 articles, more than 100 legislative bills, and more than a score of investigations of all kinds of pollution. Since 1963 it has no longer been possible to keep a scorecard because of the avalanche of articles, bills and investigations.
>
> Comments on this controversial book have ranged from a quotation attributed to Mr. Justice William O. Douglas praising the book as "the most important chronicle of this century for the human race"; while, on the other hand, "Time Magazine," for example, called Silent Spring an "emotional and inaccurate outburst" that was likely to "do harm by alarming the nontechnical public".[6]

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[5] RACHEL CARSON, SILENT SPRING (1962).

[6] Wallace, The Legal Consequences of Salt Water Pollution From Oil and Gas Operations, INTERSTATE OIL COMPACT COMMISSION COMMITTEE BULLETIN, June 1966 at 20 [hereinafter cited as Wallace].

But it seems more likely that the public has reached a point where it does not like what it sees and smells and so it wants its air and water cleaned up.

Pollution and man go hand in hand. The founding of cities, the invention of the steam engine, the first automobile, the first factory, the first war, all these and many more originated and continued pollution of the environment one way or another. But today there are more men than ever before and therefore more pollution. We can no longer afford to allow pollution to go unchecked if we want to have air to breathe and water to drink.

> 'We are astronauts -- all of us. We ride a spaceship called Earth on its endless journey around the sun. This ship of ours is blessed with life-support systems so ingenious that they are self renewing, so massive that they can supply the needs of billions.
>
> But for centuries we have taken them for granted, considering their capacity limitless. At last we have begun to monitor the systems, and the findings are deeply disturbing.
>
> Scientists and government officials of the United States and other countries agree that we are in trouble. Unless we stop abusing our vital life-support systems, they will fail. We must maintain them, or pay the penalty. The penalty is death.[7]

It is difficult to find a publication, regardless of its general purpose, that has not in recent years, had at least one article on some

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[7] Young, Pollution, Threat to Man's Only Home, 138 NATIONAL GEOGRAPHIC 738 (Dec. 1970) [hereinafter cited as Young].

aspect of pollution. "Pollution, Threat to Man's Only Home"[8], "Pollution : Growing Menace -- What U.S. Is Doing About It"[9], "Pollution '70: Challenge, Crisis, Change"[10], "Our Dying Waters"[11], "Ecology : A Sampling of Navy's Efforts and Accomplishments"[12], and "Oil-Field Pollution and What's Being Done About It"[13], are but a few of the thousands of titles.

Ohio's Cuyahoga River oozing into Lake Erie at Cleveland is so covered with oil and débris that in July 1969 the river actually caught fire and damaged bridges.[14] But other rivers in their own way are almost as bad. In Texas the Trinity is used as a commode to flush away

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[8] Id.

[9] Pollution : Growing Menace -- What U. S. Is Doing About It, U. S. NEWS & WORLD REPORT, June 9, 1969 at 40.

[10] Scott, Pollution '70 : Challenge, Crisis, Change, PETROLEUM ENGINEER, October 1970 at 39.

[11] Bird, Our Dying Waters, THE SATURDAY EVENING POST, April 23, 1966, at 30.

[12] Neil, Ecology : A Sampling of Navy's Efforts and Accomplishments, ALL HANDS, February 1971 at 25.

[13] Enright, Oil-Field Pollution and What's Being Done About It, THE OIL & GAS JOURNAL, June 24, 1963 at 76 [hereinafter cited as Enright].

[14] Young, 743.

waste.[15] In the District of Columbia, the Potomac reeks of sewage from Virginia, Maryland and the District.[16] In New York the Hudson River is so polluted that "if you fall in here you don't drown -- you decay".[17] and the Mississippi is "the colon of Mid-America".[18]

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[15] McConal, Pollution, The Trinity . . . It's Like a Commode, Fort Worth Star-Telegram, July 13, 1969, § A, at 1, Col. 5.

[16] Personal Observation and Young, 753.

[17] Senator Robert Kennedy as quoted by Wallace, 20.

[18] Wallace, 20.

III. A BRIEF HISTORY OF WATER POLLUTION

A. Pollution Is Not New

As has been pointed out,[19] the history of the human race could be written in mud. Some 8,000 years ago Sumeria, the world's first civilization, fought the first battle against silt -- still a major pollutant -- and lost. To irrigate the fertile plains of Mesopotamia the Sumerians built a canal system that is still a marvel to engineers. Then came the problems of pollution. To meet a growing demand for lumber the forests on the slopes of the Tigris and Euphrates rivers were cut down. This allowed the rains to sweep large quantities of silt from the denuded mountains into the irrigation ditches. There followed a search for slaves to keep the water courses open but even armies of slaves could not cope with the problem. The irrigation system broke down, crops failed, people starved, and the civilization went downhill.

The Romans had similar experiences when they built a storm sewer, the Cloaca Maxima, to drain the low-lying Forum. This big ditch disposed of the city sewage and changed the surrounding Campagna swamp into fertile farm land. Rome's many wars were, in part, prompted by a need for

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[19] W. WEST, CONSERVING OUR WATERS (19__) (Published by Committee on Public Affairs of the American Petroleum Inst.); Butler, 304-305.

slaves to keep the Cloaca open and to prevent clogging with silt and garbage. Slaves became increasingly difficult to find and the sewage system gradually fell into ruin, allowing the farm lands to revert to disease-breeding swamp which resulted in the ravages of malaria and plagues. Some historians attribute the debilitation of the Roman citizenry to this situation.

Pollution has continued to plague man ever since. As early as 1661, a tract on air pollution was published in England: Fumigium : or the Inconvenience of the Aer and Smoake of London Dissipated.[20] In the early nineteenth century Henry Clay, concerned with the silt problem, observed: "He is the greatest patriot who stops the most gullies."[21] And in December 1897 an article titled "Pollution of the Potomac River" appeared in The National Geographic Magazine.

B. Standards Change

The petroleum industry has contributed its fair share to the pollution problem in its relatively short life, but standards have changed and technology has improved and it would be unfair to condemn the present industry for sins of another era.

In America's first oil rush in Pennsylvania (1859-1880), the

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[20] Young, 739.

[21] Butler, 305.

waste and pollution was incredible. In 1861 for example the Empire well came in with a stupendous 3,000 barrels a day, ten times bigger than the biggest yet. The bewildered owners were swamped by this embarrassment of riches. No coopers could keep up with the demand for barrels; they couldn't shut off the oil; tanks and hastily built dams overflowed; and children ran barefoot through the onrushing streams of oil.[22]

In October of the same year the Phillips Well No. 2 roared forth a staggering 4,000 barrels a day. It set up a record that wasn't to be broken for twenty-three years. The well's owners devised the unusual method of selling "by the hour". Boats backed up to the troughs that ran from the well to the bank of Oil Creek, to take on "an hour's flow", or two or three or more. If the boat's vats filled before the time was up, the rest of the oil -- say, nineteen minutes worth -- cascaded into the creek.[23]

During the Burkburnet (Texas) Oil Boom of 1918 oil was flowed over the surface into earthen pits, then pumped into a battery of storage tanks.

> In many instances the fertility of the land was badly impaired because oil gushed out of control and tanks were drained of basic sediment. In extreme cases, as much as 20 percent of the area of a farm has been damaged from these causes. The ground may look solid, yet when one steps on it he is swallowed

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[22]H. DOLSON, THE GREAT OILDORADO 77 (1959) [hereinafter cited as Dolson].

[23]Dolson, 78-79.

> to his knees. Even in town, where the wells were better controlled than in the countryside, much of the soil was injured. Grass would not grow on the petroleum-soaked high-school campus until the dirt was dug up to a depth of four feet, hauled away, and fresh earth brought in. The oil boom left scars on the soil as well as on men's souls.[24]

Much of the pollution which plagues older producing states stems from substandard rules and laws of the past -- especially those having to do with plugging of abandoned wells. In many cases, these wells were "plugged" in accordance with the then existent state law. But those old plugging rules look pretty silly today. In 1909, for instance, Oklahoma required operators to plug wells by inserting a six-foot pine pole in the well bore. An Oklahoma Corporation Commission official says " we know now that such a plug would last perhaps 2 years." These old wells allow unrestricted flow of salt water from old producing zones into shallower fresh-water sounds, and, since few, if any, records were kept, these old holes are extremely hard to find. Then there is the problem of who's responsible if they are found? In most cases those who drilled them have died, moved away or simply vanished. There is still a question of liability even if the driller could be found. If the well had been plugged according to the old rules, can its driller be held responsible for pollution it caused later?[25] And over and above these

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[24]B. HOUSE, OIL BOOM 88 (1941).

[25]Enright, 83.

problem wells caused by the inadequate rules of the past are those wells that were never plugged. Wells such as one drilled in 1939 in Scurry County, Texas and abandoned by covering the hole with a rock,[26] or the 1 Rowena well north of Rowena, Texas that spewed salt water under high pressure for over 40 years and created a 150 acre salt water bog.[27] Some producing states, as we will discuss later, have tried to deal with the problem of the abandoned wells by new legislation clarifying liability and establishing procedures to insure that such wells are plugged or replugged. In the meantime they continue as a ghost from the petroleum industry's past come back to haunt it.

In the past the petroleum industry has been rather careless in its handling of salt water, destroying the usefulness of land and polluting streams and subsurface water. But the oil and gas industry has made great strides in living up to the new standards that social duty with respect to pollution now require. However society tends to exercise a type of ex post facto judgment in that it tends to judge past conduct by current taboos. The industry has learned, or is learning, to live without the use of salt water pits, at one time as much a part of a producing lease as a tank battery.

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[26]Enright, 78.

[27]Enright, 82-84.

IV. WATER POLLUTION PROBLEMS PECULIAR TO THE OIL AND GAS INDUSTRY

The oil and gas industry is unique in the areal extent and sheer volume of the potential pollutants it produces. The industry can be divided into four groups -- the producers who bring the oil and gas to the surface of the earth, the transporters who move it from where it is produced to where it is processed and then deliver the many finished products, the refiners who process the oil and gas into useful products, and the marketers who sell the products.

A. The Producers

The greatest single pollution problem facing the petroleum industry is the disposal of salt water produced along with oil. Since the solid content of brine is predominantly chloride or common salt, the chloride content is commonly used as the concentration indices. Brines vary widely from field to field and formation to formation. A representative range is from a minimum of about 5,000 parts per million to more than 180,000 ppm chloride. The average probably runs 40,000 to 45,000 ppm. Ocean salt water is only about 20,000 ppm. Fresh water for drinking normally is only about 100 ppm or less. Water is considered unfit for human consumption when chloride content exceeds

250-300 ppm. One barrel of oil field brine containing 100,000 ppm chloride will raise the chloride content of 400 barrels -- 17,000 gallons -- of fresh water above the maximum recommended for good drinking water.[28] The salt contained in the salt water produced daily in Kansas would be capable of raising the salt contained in 26 billion gallons of fresh water to a point where it would be unsatisfactory as drinking water.[29]

Until recent years most salt water was collected and held in open pits until it evaporated or seeped into the ground. But often the seepage of salt water resulted in the pollution of underground fresh water and the overflow, for some reason or another, of the pits, polluted surface water and damaged land and crops. For this reason the industry, either voluntarily or as a result of "no pit" orders has moved increasingly to the use of disposal wells to re-inject the salt water into the ground either as part of a secondary recovery pressure maintenance project or solely to protect fresh water.

These salt water injection wells themselves constitute a potential danger to underground fresh water supplies. The water is injected under pressure and will seek to escape through any weak link

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[28] Enright, 77.

[29] INTERSTATE OIL COMPACT COMMISSION , WATER PROBLEMS ASSOCIATED WITH OIL PRODUCTION IN THE UNITED STATES 12 (1965).

in the system. Pollution may occur as a result of failure of the equipment or cementing of the well itself or as a result of migration from the zone of injection due to hydraulic pressure.

As pointed out earlier, there are many old abandoned wells that were not plugged or were plugged in a way now considered inadequate. It has been estimated that in 1965 there were approximately one hundred thousand abandoned wells leaking salt water in Texas alone. An effective pollution control program will require that all abandoned wells known to be leaking salt water be re-entered, reworked, and adequately plugged. It will however be difficult to locate leaking wells that do not show signs of leaking at the surface.

Operators using salt water disposal wells or engaged in secondary recovery operations in areas where there are abandoned wells or unplugged old holes or core holes must exercise extreme caution since the risk of pollution by migration of injected salt water is much higher in such areas. In view of the quantities of salt water now being injected and the greater amount due in the future, it is possible that the greatest pollution threat faced by the oil and gas industry is now developing. Great care must be given to the design, construction, and supervision of injection systems.

Offshore, where the danger of pollution was spotlighted by the Santa Barbara blowout and the Chevron fire, producing operations

are coming under increasingly strict regulations.[30] Considering the number of wells and the amount of oil and gas produced, the industry's record in offshore production is outstanding. And in the main it has been beneficial to marine life, its platforms serving as man made reefs. However the industry must learn to live with the new regulations and those to follow.

B. The Transporters

Although there is some movement in oil, gas, and their products by other means such as barges and rail, tank cars, the principal transporters are pipelines and ocean going tankers. The first oil pipeline was a two-inch line that ran from Pithole, Pennsylvania to Miller Farm, the nearest rail stop. Completed in October of 1865, its steam pumps forced eighty-one barrels of oil an hour through its six miles of pipe.[31] Thousands of miles of line now girdle the earth.

Much of the pipeline mileage in the United States is owned by common carrier lines with the right to condemn, maintain and operate their pipeline over their right-of-way or easement. The operation of a pipeline properly constructed is not a nuisance per se and the recovery of damages resulting from the construction or operation of a

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[30] USGS Conservation Division OCS Order No. 8 of July 22, 1970.

[31] Dolson, 194-197.

pipeline is a question of negligence. The pipeline operator is under a duty to use ordinary care to prevent its escape and damage to others. The care required is commensurate with the oil's potential for harm.[32]

> In pipeline construction, increased emphasis is being given to the design and installation of the pipelines. Pipe is hydrostatically tested at the factory prior to shipment and is field-tested after installation but prior to operation. Maximum operating pressure of the pipe is set at a much lower figure than the yield strength of the steel. All pipe placed in the ground is coated and wrapped to prevent corrosion of the bare steel. Cathodic protection is another vital part of the pipeliner's operation to limit leaks caused by corrosion. By the use of rectifiers, corrosion is prevented in potentially corrosive locations by maintaining at a suitable level an electrical potential between the pipe and the surrounding soil. The rectifiers must be carefully maintained and checked at specific intervals. A pipeline properly wrapped and coated and with sufficient cathodic protection will remain in excellent condition almost indefinitely.
>
> Special design considerations are followed by the pipeliner at river crossings. Extra-thick pipe is used. Overbends for approaches to crossings are installed far enough back from the banks to limit exposure of the pipe caused by future meanderings of the river. Block valves operated manually have been installed on both sides of a river crossing. More recently, check valves are being installed on the down-stream side of many river crossings, which will shut off the oil flow automatically when a break occurs and the pressure drops in the line.
>
> Pipeline maintenance is essential. Pipeline companies . . . . are now improving the marking of the location of pipelines. New signs and aerial markers are being installed at

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[32]Scurlock Oil Co. v. Roberts, 370 S.W. 2d 755, 19 O & GR 385 (Tex. Civ. App. 1963, no writ history); Humble Pipe Line Company v. Anderson, 339 S.W. 2d 259, 13 O & GR 635 (Tex. Civ. App. 1960 error ref'd n. r. e.); East Texas Oil R. Co. v. Mabee Consolidated Corp., 103 S.W. 2d 795 (Tex. Civ. 1937 writ dismissed 127 S. W. 2d 445).

> road and railroad crossings, fence lines, and other locations. Old signs are being repainted. Most breaks in pipelines are caused by bulldozers, graders, plows, ditch-diggers, and other heavy equipment striking the buried pipeline. Proper marking of pipelines identifies to everyone the locations of the lines. and the signs provide information about whom to call in the event of an emergency.
>
> Air and ground patrol of pipelines is scheduled in accordance with the existence of potential problems. Most persons are under the misconception that the only purpose of air patrol is to find leaks; air patrol is primarily for leak prevention. These preventive measures are designed to check condition of line markers, check exposed pipe due to washouts, observe conditions of water crossings, particularly during high water, and observe highway or other construction and farm plowing and leveling in the vicinity of pipelines.[33]

The first real overseas shipment of oil seems to have taken place in 1861 when a Philadelphia firm sent the chartered brig Elizabeth Watts to England with a cargo of oil.[34] Tankers began to be a major item of ocean commerce about the turn of the century. After the discovery of oil at Splindletop (Texas) in 1901 their use boomed as the industry struggled to move the oil to the Northeastern United States and abroad.[35] But those early tankers were a far cry from the giant super-tankers of today. The potential danger of a tanker as a pollutor was driven home by the Torrey Canyon disaster, but some of the newer

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[33]Hampton, Environmental Control Problems and the Oil Industry in the Rocky Mountain Region, 15 ROCKY MT. MIN. LAW INST. 621 (1969) [hereinafter cited as Hampton].

[34]Dolson, 81.

[35]Butler, 309.

supertankers carry over three times as much oil as the Torrey Canyon and even larger tankers may be built. However the major cause of oil pollution of the ocean is not the disasters but routine flushing of tanks and allowing waste oil to escape. Liability for tanker operations are governed by admiralty law and statutes.[36]

C. The Refiners

The oil industry has a special interest over and above the interest we all have in a reliable source of water, for the oil industry is one of the largest consumers of water in the United States. The volume of water used by the oil industry, about 3.5 billion gallons per day, is second in industrial use only to the manufacture of steel, and represents about 20% of the total industrial consumption in the United States. It is slightly less than 50% of that used for municipal needs. The refining of one barrel of crude oil in the United States requires an average of 468 gallons of water and a typical (median) refinery has a daily capacity of about 16,000 barrels of crude oil, and circulates approximately 22.5 million gallons of water daily. There is, however, a wide variation between maximum and minimum water requirements. For example, one refinery with a once-through water system used 1,870 gallons of water to refine a barrel of crude oil, whereas another that recirculated all

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[36] For a discussion of this general subject see: Sweeney, Oil Pollution of the Oceans, 37 FORDHAM L. REVIEW 155 (1968).

cooling water required only seventy-three gallons per barrel.[37]

This tremendous volume of water becomes polluted as it is circulated through the refinery and the more times it is recirculated the more polluted it becomes. Process leaks are the major source of contamination. Oil of all sorts plus phenolic compounds, cyanides, organic sulfides, mercaptans, other organic compounds and heavy metals pollute the process waters. They may also contain chromate, fluorides, nitrates, phosphates and sulfates. At one time these harmful wastes were allowed to enter rivers and streams without any thought, but not any more. In 1929 the American Petroleum Institute Committee on Disposal of Refinery Wastes was formed. This committee began to study and develop methods for preventing water pollution. The committee has published, and keeps up to date, a six-volume manual on the disposal of refinery wastes. It sponsors research and publishes reports on the results. The refineries follow the committee's recommendations and seek to improve on them. As a result, the effluent water from refineries, almost without exception meets or exceeds the quality standards now in effect and we have showplace operations where fish or oysters are raised in the effluent water.

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[37]INTERSTATE OIL COMPACT COMMISSION, WATER PROBLEMS ASSOCIATED WITH OIL PRODUCTION IN THE UNITED STATES (1965).

All of this costs money and as a result waste treatment is a major expense in the operation of a refinery. Where possible, chemical processes are used to convert plant wastes to salable materials but where such methods are not feasible, refiners are turning to biological processes, incineration, and deep-well disposal.[38]

D. The Marketers

The marketer is faced with two water pollution problems -- underground petroleum product leaks and the disposal of waste oil from service stations. Leak detectors for product leaks are now on the market and the American Petroleum Institute has a special task force to consider this problem. But the principal problem is disposal of waste oil from service stations. Dumped into municipal sewers, it plays havoc with the processing system. It usually cannot economically be re-refined or reclaimed. Thus there exists a still unsolved problem of what to do with waste oil.[39]

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[38] Ewing, Refining Waste Products Pose Pollution Problem. THE OIL & GAS JOURNAL, December 9, 1968 at 77: Butler, 311-314.

[39] Hampton, 660-661.

V. LIABILITY FOR POLLUTION

In this paper pollution of surface and subterranean water shall be referred to as water pollution. Distinctions will be made between the two only where legally significant. Concern about the pollution of the sea has increased[40] as the search for oil moved offshore and as it became necessary to transport oil from the far corners of the world to the industrialized nations of Europe and North America and Japan. But the event that brought the problem forcefully to the public mind occurred in March, 1967 when the tanker Torrey Canyon broke up after grounding on Seven Stones Reef off the coast of Great Britain. Thirty-five million gallons of crude oil spread along the coasts of Cornwall and crossed to Normandy and Brittany 225 miles away. The dangers of oil pollution — the destruction of fish, shellfish, sea birds, fishing gear and beach installations; the creation of fire hazards in ports; the fouling of small boats; and, the loss of natural beauty with resulting financial losses to resort owners and the dependent tourist industry — were all well illustrated by this disaster, as was the damage that can be caused by the use of chemical dispersants and

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[40] Sweeney, Oil Pollution of the Oceans, 37 FORDHAM L. REV. 155 (1958).

detergents in an attempt to correct the situation.[41]

Then the blowout in the Santa Barbara Channel on 28 January, 1969 gave the oil industry a black eye from which it will long be recovering. The adverse publicity of this event completely blotted out in most of the general public's mind the years of offshore drilling with little or no pollution.

Interesting though the subject may be, pollution of the sea is beyond the scope of this paper. Tanker operations in particular are governed by the law of admiralty and is worthy of a separate treatment.[42] This paper will restrict itself to water pollution as above defined and will attempt to concentrate on the cases and statutes of Texas, Oklahoma, Louisiana and California.

A. Theories of Liability for Water Pollution

There are a number of theories as a basis for private litigation in cases of pollution of water that have been applied by the courts or suggested by writers.[43] Some of these are :

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[41] DEGLER, OIL POLLUTION : PROBLEMS AND POLICIES (1969).

[42] See Sweeney, Oil Pollution of the Oceans, 37 FORDHAM L. REV. 155 (1968) for one treatment of the problems.

[43] Knodell, 35 ff.; Wallace, 27 ff.; Jones, Escape of Deleterious Substances : Strict Liability vs. Liability Based Upon Fault, 1 ROCKY MT. MIN. LAW INST. 163 (1955) [hereinafter cited as Jones]; Allison

A. Strict liability based on Rylands v. Fletcher, the Restatement Ultrahazardous Activity Doctrine or an absolute liability or negligence per se created by statute.

B. Negligence

C. Nuisance

D. Trespass

E. "Taking" of property, and

F. Right of riparian owner or prior appropriator to water of a stream in its natural state of quality.

Most states have adopted either negligence or some form of strict liability as their basic theory with one or more of the others as possible secondary theories.[44]

1. Strict Liability

The leading case exemplifying the strict liability theory is the English case of Rylands v. Fletcher.[45] In that case the defendants

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(cont.) and Mann, The Trial of a Water Pollution Case, 13 BAYLOR L. REV. 199 (1961)[hereinafter cited as Allison and Mann]; Keeton and Jones, Tort Liability and the Oil and Gas Industry, 35 TEXAS L. REV. 1 (1956) and 39 TEXAS L. REV. 253 (1961)[hereinafter cited as Keeton and Jones part I or part II]; McCleskey and Phillips, Private Law Remedies for Water Pollution, PROCEEDINGS, UNIVERSITY OF TEXAS WATER LAW CONFERENCE 88(1966)[hereinafter cited as McCleskey and Phillips] ; R. MCGINNIS, Liability of Mineral Producers for Surface and Subsurface Pollution, July 7, 1967 (Paper presented to Mineral Law Section, State Bar of Texas.) [hereinafter cited as McGinnis].

[44] In discussing public and private liability this paper will attempt to concentrate on the cases and laws of Texas, Oklahoma, Louisiana, and California.

built a reservoir to provide water for their mill. Unknown to them there were earth filled mine shafts into old coal workings that communicated with plaintiff's coal mine. It was found that the defendants personally were free from all blame, but that proper care and skill was not used by the engineers and contractors who had built the reservoir. As a result, when the reservoir was filled with water, it burst into the shafts, flowed through the old workings and flooded the plaintiff's mine. The majority of the Court of Exchequer held that non-exercise of sufficient care on the part of the people who constructed the reservoir did not, in the absence of any notice to the defendants of the underground communication, affect the defendants with any liability, there being in the absence of such notice no duty cast upon the defendants to use any particular amount of care in the construction of a reservoir upon their own land. The plaintiff appealed to the Court of Exchequer Chamber which held it was unnecessary to ascertain "whether the defendants are not so far identified with the contractors whom they employed as to be responsible for the consequences of their want of

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[45] Rylands v. Fletcher, L. R. 1 Exch 265 (1866), affd. L. R. 3 H. L 330 (1868) both found in [1861-73] All E.R. Rep. 1

skill in making the reservoir in fact insufficient with reference to the old shafts, of the existence of which they were aware, though they had not ascertained where the shafts went to", for :

> We think the true rule of law is that the person who, for his own purposes, brings on his land, and collects and keeps there anything likely to do mischief if it escapes, must keep it in at his peril, and, if he does not do so, he is prima facie answerable for all the damage which is the natural consequence of its escape. He can excuse himself by showing that the escape was owing to the plaintiff's default, or, perhaps, that the escape was the consequence of vis major, or the act of God; but, as nothing of this sort exists here, it is unnecessary to inquire what excuse would be sufficient. The general rule, as above stated, seems on principle just. The person whose grass or corn is eaten down by the escaped cattle of his neighbour, or whose mine is flooded by the water from his neighbour's reservoir, or whose cellar is invaded by the filth of his neighbour's privy, or whose habitation is made unhealthy by the fumes and noisome vapours of his neighbour's alkali works, is damnified without any fault of his own; and it seems but reasonable and just that the neighbour who has brought something on his own property which was not naturally there, harmless to others so long as it is confined to his own property, but which he knows will be mischievous if it gets on his neighbour's, should be obliged to make good the damage which ensues if he does not succeed in confining it to his own property. But for his act in bringing it there no mischief could have accrued, and it seems but just that he should at his peril keep it there, so that no mischief may accrue, or answer for the natural and anticipated consequences. On authority this, we think, is established to be the law, whether the thing so brought be beasts or water, or filth or stenches.

Thus the rule of Rylands v. Fletcher and the English Common Law is summed up by the maxim sic utere tuo ut alienum non laedus (so use your own property that you do not do injury to another).

Kansas follows Rylands v. Fletcher. It has a statute making it

unlawful "to permit salt water, oil or refuse from any . . . well, to escape by overflow, seepage or otherwise from the vicinity" of the well.[46] But the courts have held that a statute is not needed to make oil companies liable for damages and that this has been the law ever since Rylands. The statute only made it possible to compel the companies to keep the salt water confined without waiting for any person to be damaged.[47]

California has applied sic utere tuo ut alienum non laedas (or as incorporated into the Civil Code §3514 : "One must so use his own rights so as not to infringe upon the rights of another") to cases where an operator allowed his well to blow out, covering adjoining land with oil, sand, mud, and rocks,[48] and where the defendant permitted his irrigation water to saturate his neighbor's land.[49] In the first case the court said:

> Where one, in the conduct and maintenance of an enterprise lawful and proper in itself, deliberately does an act under known conditions and with knowledge that injury may result to another, proceeds, and injury is done to the other as the direct and proximate consequence of

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[46] 55-121 Kansas Statutes Annotated.

[47] Wendthaudt v. National Co-Operative Refinery Ass'n, 168 Kan. 619, 215 P. 2d 209 (1950).

[48] Green v. General Petroleum Corp. 205 Cal. 328, 270 P. 952, 60 ALR 475 (1928).

[49] Parker v. Larsen, 86 Cal. 236, 24 P. 989, 21 Am. St. Rep. 30 (1890).

> the act, however carefully done, the one, who does the act and causes the injury should in all fairness, be required to compensate the other for the damage done.[50]

In the other the court said that "the rule is general that, where one brings a foreign substance on his land, he must take care of it and not permit it to injure his neighbor."[51] Thus without expressly following the case, California has adopted the rule of Rylands.

Louisiana courts have applied strict liability, often saying "The right of plaintiff to recover for any injury to his property resulting from . . . waste oil and salt water escaping from defendant's wells or tanks is not seriously questioned."[52] However there was one case where the plaintiff claimed the defendant was strictly and absolutely liable under the doctrine of sic utere tuo ut alienum non laedas and the defendant contending that liability can be predicated only on negligence. The court refused to decide the issue and applying res ipsa loquitur decided for the plaintiff.[53] But a more recent decision returns to sic utere.[54] Where despite the use of proper care and modern scientific

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[50] 205 Cal. 328, 333-334, 270 P. 952, 955, 60 ALR 475, 480.

[51] 86 Cal. 236, 24 P. 989.

[52] Greer v. Pelican Natural Gas Co., 163 So. 431, 432 (La. App. 1935); Eagen v. Tri-State Oil Co., 183 So. 124 (La. App. 1938).

[53] Watkins v. Gulf Refining Co., 206 La. 942, 20 So. 2d 273 (1944).

[54] Fontenot v. Magnolia Petroleum Co., 227 La. 866, 80 So. 2d 845, 4 O & GR 1499 (1955)

methods, explosives used in a geophysical survey caused damage to residences, the court said:

> In disposing of question of this character, we are mindful of two important considerations : First, to give the owner of property the largest liberty possible, in the use, occupation and improvement of his own property, consistent with the right to employ modern methods and machinery in accomplishing the improvements desired; and second that one may not use his own property to the injury of any legal right of another. This maxim of the common law, "Sic utere tuo ut alienum non laedas", is so well established and so universally recognized that it needs neither argument nor citation of authority in its support. . . . We are unwilling to follow any rule which rejects the doctrine of absolute liability in cases of this nature and prefer to base our holding on the doctrine that negligence or fault, in these instances is not a requisite to liability, irrespective of the fact that the activities resulting in damages are conducted with reasonable care and in accordance with modern and accepted methods.
>
> It follows that clearly the plaintiffs in this instance do not bring an action in tort but one that springs from an obligation imposed upon property owners by the operation of law thereby granting to other property owners the maximum enjoyment in the liberty and use of their property. To hold otherwise would grant the right to conduct operations of a nature as is here involved, and upon its being shown that such activities are conducted in full accord with accepted modern methods, no liability may attach therefor in favor of persons injured.[55]

One Mississippi case said that the "gravamen of plaintiffs' action rests upon the maxim 'Sic utere tuo ut alienum non laedas' "[56]

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[55] 227 La. 866, ___, 80 So. 2d 845, 848-849, 4 O & GR 1499, 1502-1504 (1955).

[56] The Southland Company v. Aaron, 221 Miss. 59, 72 So. 2d 161, 49 ALR 2d 243, 3 O & GR 822 (1954).

but the court actually decided the case on the right of a riparian proprietor to have the water of the stream come to him in its natural purity and on nuisance.

In a decision which is probably unique, the Oklahoma court equated the doctrine of Fletcher v. Rylands with res ipsa loquitur.[57] Plaintiff's stock water was polluted by a leak in the defendant's pipeline. The Oklahoma statute[58] prohibiting escape of oil wastes does not apply to pipelines.[59] The court seemed to agree with the defendant that there would be no liability without negligence. Nevertheless, the court said that since the defendant had exclusive control over the oil, the circumstances of the accident were of such a character as to justify a jury inferring that negligence of the defendant caused the accident. The burden was on the defendant to prove an act of God, interposition of a third party or unavoidable accident. (Unavoidable in the sense that construction of the safeguard was proper and adequate in the first instance and proper inspection failed to reveal defects arising from the eroding elements of time and use.) The court thus used res ipsa loquitur

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[57] Gulf Pipe Line Co. of Oklahoma v. Alred, 182 Okla. 400, 77 P. 2d 1155, 1157 (1938); Knodell, p. 41.

[58] 52 O. S. § 296.

[59] Mid-Continent Pipeline Co. v. Crauthers, 267 P. 2d 568 (Okla. 1954).

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[58] 52 O. S. § 296.

[59] Mid-Continent Pipeline Co. v. Crauthers, 267 P. 2d 568 (Okla. 1954).

to supply the negligence, while professing to reject Fletcher v. Rylands.

A variation of Rylands v. Fletcher doctrine which is perhaps more general is found in the Restatement of the Law of Torts. In setting out the ultrahazardous activity doctrine the Restatement says :

> Section 519 * * * one who carries on an ultrahazardous activity is liable to another whose person, land or chattels the actor should recognize is likely to be harmed by the unpreventable miscarriage of the activity for harm resulting thereto from that which makes the activity ultrahazardous, although the utmost care is exercised to prevent the harm.
>
> Section 520. An activity is ultrahazardous if it (a) necessarily involves a risk of serious harm to the person, land or chattels of others which cannot be eliminated by the exercise of the utmost care, and (b) is not a matter of common usage.

Under comment on Clause (b) of Section 520, supra, the following appears:

> g. Concurrence of risk of harm and unusual nature. In order that an activity may be ultrahazardous it is necessary that it satisfy the conditions stated in both Clauses (a) and (b). An activity which normally can be safely carried on, or an instrumentality which can ordinarily be safely used if reasonable care is exercised, is not ultrahazardous even though it is carried on to gratify some purely personal idiosyncrasy of the actor. On the other hand, even those activities or instrumentalities which cannot be made safe by the utmost precaution and care may be carried on or used without incurring absolute liability if the activity or instrumentality is one which is commonly carried on or used * * *.
>
> h. Function of court and jury. What facts are necessary to make an activity ultrahazardous under the rule stated in this Section is a matter for the judgment of the court.

At least two California cases[60] cite the Restatement on the law and hold it is compatible with the California application of sic utere tuo ut alienum non laedas discussed previously.

The rule that the violation of a penal statute designed to prevent accidents of the kind that occurred is negligence per se as a matter of law is one that is followed in a majority of jurisdictions.[61] In those cases in which pollution clearly violates state statute, the courts have imposed absolute liability without hesitation.[62] An Oklahoma Statute requires :

> 52 O.S. § 296. Refuse from wells-Deposition
> No inflammable product from any oil or gas well shall be permitted to run into any tank, pool or stream used for watering stock; and all waste of oil and refuse from tanks or wells shall be drained into proper receptacles at a safe distance from the tanks, wells or buildings, and be immediately burned or transported from the premises, and in no case shall it be permitted to flow over the land. Salt water shall not be allowed to flow over the surface of the land.

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[60] Luthringer v. Moore, 31 Cal. 2d 489, 190 P.2d 1 (1948); Beck v. Bel Air Properties, 134 Cal. App. 2d 834, 286 P. 2d 503 (1955).

[61] Keeton and Jones Part I, 9.

[62] Knodell, p. 42. Note: It has been contended that this is a misapplication of the negligence per se idea. That the rule is applicable, generally speaking, only to unexcused violations. And that if strict liability is to be applied it should not be imposed under the guise of a negligence fiction. See Keeton and Jones Part I, 9.

It is well established that violation of this statute imposes absolute liability since such violation constitutes negligence per se.[63] The courts have held that this statute was aimed at drillers and producers of oil, not at transporters, pipeline companies, and refiners,[64] It is highly penal in nature and therefore should be strictly construed. For this reason the courts have ruled that it does not apply to refineries not operated in immediate conjunction with wells,[65] tank farms,[66] or pipelines.[67] The liability under the statute exists even for damage on leased land:

> We find nothing in the statute which either expressly or by necessary implication fixes a different responsibility upon the operator of an oil well, where the operator is the owner of an oil and gas mining lease on the land where the damage occurs. The statute prohibits, and negligence as a matter of law is implied, in the absence of a showing of willful acts on the part of plaintiff causing this damage.[68]

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[63] Franklin Drilling Co. v. Jackson, 202 Okla. 687, 217 P.2d 816, 19 ALR 2d 1015 (1950); Devonian Oil Co. v. Smith, 124 Okla. 71 254 P.14 (1926); Gulf Pipe Line Co. v. Alred, 182 Okla. 400, 77 P.2d 1155 (1938); Texas Co. v. Belvin, 207 Okla. 549, 251 P.2d 804, 2 O & GR 94 (1952); Phillips Petroleum Co. v. Sheel, 256 P.2d 815, 2 O & GR 986 (Okla. 1953).

[64] Mid-Continent Pipeline Co. v. Crauthers, 267 P.2d 568 (Okla. 1954).

[65] Johnson Oil & Refining Co. v. Carnes, 174 Okla. 599, 51 P. 2d 811 (1935); Gulf Pipeline Co. v. Alred, 182 Okla. 400,77 P.2d 1155 (1938).

[66] Shell Petroleum Corp. v. Wilson, 178 Okla. 335, 65 P.2d 173 (1935).

[67] Mid-Continent Pipeline Co. v. Crauthers, 267 P.2d 568 (Okla. 1954).

However, the statute does not apply to flowing over and across that portion of the surface of the leased land reasonably necessary to the development of the land for oil and gas purposes.[69] But, where it was shown that salt water came from both wells on the plaintiff's land and wells on adjoining land also leased by the defendant, the burden shifted to the defendant to show "either that the entire damage complained of was a result of and necessarily incident to the operation of the lease upon the plaintiff's lands, or else to distinguish the damage resulting from the operation of the lease on plaintiff's land from that occasioned by the waters coming for the adjoining lands, if it desired to do so for the purpose of mitigating the resulting damages".[70] The statute does not prohibit the storage upon land, the fee of which is owned by the operator, of waste oil and salt water.[71]

The courts have held that in an action to recover damages to land due to pollution from underground sources, 52 O.S. 296, has no application even though the pollutant comes to the surface after a distance

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[68] Texas Co. v. Mosshamer, 175 Okla. 202, 51 P. 2d 757, 759 (1935).

[69] Pure Oil Co. v. Chisholm, 181 Okla. 618, 75 P. 2d 464 (1936).

[70] Pure Oil Co. v. Chisholm, 181 Okla. 618, 75 P.2d 464, 467 , (1936).

[71] Shell Petroleum Corp. v. Wilson, 178 Okla. 335, 65 P. 2d 173 (1935).

and then spreads over the surface.[72] Recovery for pollution of subterranean waters or pollution from underground sources, must be upon the basis of negligence or nuisance.[73] The statute does apply to discharge of salt water directly into a stream,[74] and where there is injury to a non-landowner.[75] The defendant can not avail himself of the fact an act of God served to disseminate the waste substances if the defendant's conduct contributed in any degree thereto.[76]

As mentioned above, Kansas has a statute making it unlawful "to permit salt water, oil or refuse from any . . . well, to escape by overflow, seepage or otherwise from the vicinity" of the well.[77] However, reference to the cases discussed at that time will disclose that the court relied more heavily on Rylands v. Fletcher than it did upon

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[72] Norman v. Greenland Drilling Co., 403 P.2d 507, 510, 22 O & GR 794, 797-98 (Okla. 1965).

[73] Norman v. Greenland Drilling Co., 403 P.2d 507, 510, 22 O & GR 794, 798 (Okla. 1965); Ross v. Fink, 378 P.2d 1011, 18 O & GR 489 (Okla. 1963); Cities Service Oil Company v. Merritt, 332 P.2d 677, 684 (Okla. 1958).

[74] Owen-Osage Oil & Gas Co. v. Long, 104 Okla. 242, 231 P. 296 (1924).

[75] Devonian Oil Co. v. Smith, 124 Okla. 71, 254 P. 14 (1926).

[76] Champlin Refining Company v. Rayburn, 323 P.2d 967, 8 O & GR 1082 (Okla. 1958).

[77] Kan. Stat. Ann. §§ 55-21 (1964).

the statutes in making its decisions.

The Louisiana Civil Code provides that the lower riparian estate is burdened with a servitude to receive the waters which flow naturally from estates situated upstream. However, "the proprietor above can do nothing whereby the natural servitude due by the estate below may be rendered more burdensome."[78] In a decision based on this statute the court held an oil producer liable for discharging oil field wastes into a coulee and placed on him the burden of disposing of the wastes in a manner to avoid injury to lower riparian estate.[79]

2. Negligence

Prior to 1936 the Texas law was uncertain with some Courts of Civil Appeals cases indicating that negligence was the only basis of liability[80] and others pointing towards an absolute liability on the assumption that the defendant had created or was maintaining a nuisance.[81]

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[78] La. Civ. Code Ann., Art. 660.

[79] McFarlain v. Jennings-Heywood Oil Syndicate, 118 La. 537, 43 So. 155 (1907).

[80] Cosden Oil Co. v. Sides, 35 S.W. 2d 815 (Tex.Civ. App.1931, Writ ref'd).

[81] Texas Co. v. Earles, 164 S.W.28 (Tex. Civ. App. 1914 no writ history);Teel v. Rio Bravo Oil Co., 47 Tex. Civ. App. 153, 104 S.W. 420 (1907 no writ history); Texas & P. Ry. Co. v. O'Mahoney, 60 S.W. 902 (Tex. Civ. App. 1900 writ ref'd).

But with Turner v. Big Lake Oil Company[82] the Supreme Court of Texas put an end to this uncertainty. The jury found that although salt water escaped onto the plaintiff's land from ponds constructed and used by the defendants in the operation of oil wells, killing vegetation and polluting livestock watering holes, there was no negligence. The plaintiff could recover for damages only by alleging and proving some specific act of negligence by the defendants, or by alleging and proving that the water polluted was a water course, pollution of which at that time was prohibited by statute. The court went on to examine Rylands v. Fletcher in some detail and finally declared :

> . . . we decline to follow and apply in this case the rule of absolute liability laid down in Rylands v. Fletcher, because :
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> (a) the rule has been generally repudiated by this court [Citations];
>
> (b) the basis of the rule drawn from its application in England in cases of fire, damage by livestock, and injuries to an innocent bystander have been repudiated by us;
>
> (c) the conditions which obtain here are so different from those of England that the rule should not be applied here;
>
> (d) and because the rule of negligence, instead of absolute liability, while not obtaining universally . . . is . . . in effect the common law . . . in America, which is the common law which we follow rather than that declared by the English courts.

The Turner case has been much cussed, discussed, commended

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[82] Turner v. Big Lake Oil Company, 128 Tex. 155, 96 S. W. 2d 221(1936).

and condemned.[83] Still until 1961 there was no doubt that it was the law in Texas.[84] Then came Brown v. Lundell.[85] The jury in that case found that the defendant had negligently permitted salt water to escape from his pit and failed to protect the fresh water strata underlying the property and assessed damages. The Court of Civil Appeals ruled that there was evidence to justify a finding of wanton conduct on the part of the defendant. The Supreme Court ignored the Court of Civil Appeals opinion and held that the case was one of negligence. However, the acts of negligence are nowhere pointed out and the evidence does little more than prove the mere occurrence of the injury. The court says only that seepage of salt into fresh water stratum could have been

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[83] 15 Tex. L. R. 361; 16 Tex. L. R. 127; 19 Tex. L. R. 90; 20 Tex. L. R. 399, 401, 413, 422; 21 Tex. L. R. 81, 459; 24 Tex. L. R. 400; 25 Tex. L. R. 425, 521; 26 Tex. L. R. 681; 27 Tex. L. R. 4, 354, 355; 28 Tex. L. R. 757; 29 Tex. L. R. 681; 32 Tex. L. R. 114; 7 Baylor L. R. 35; and Green, Hazardous Oil and Gas Operations: Tort Liability, 33 Tex. L. R. 574 (1955).

[84] Haynes B. Ownby Drilling Co. v. McClure, 264 S.W.2d 204, 3 O & GR 1493 (Tex. Civ. App. 1954, error ref'd, n.r.e.); Lynn v. Moog, 222 F.2d 703, 4 O & GR 1037 (5th Cir. Tex. 1955); Wohlford v. American Gas Production Company, 218 F.2d 213, 4) & GR 448 (5th Cir. Tex. 1955). Phillips Petroleum Company v. West, 284 S.W.2d 196, 5 O & GR 621 (Tex. Civ. App. 1955, writ ref'd, n.r.e.) ; Humble Pipe Line Company v. Anderson, 339 S.W.2d 259, 13 O & GR 635 (Tex. Civ. App. 1960 error ref'd, n.r.e.).

[85] Brown v. Lundell, 344 S.W.2d 863, 14 O & GR 611 (Tex. 1961).

prevented and thus constituted a negligent use of the premises. The majority attempted to distinguish Turner v. Big Lake by saying: "The question presented in that case was whether or not the operator was to be held as an insurer or whether the cause of action was to be predicated on negligence."[86] In Turner the jury finding was against the plaintiff landowner. In Brown the finding was against the defendant operator. The Court felt that this made a difference and that from the Turner opinion it was not unreasonable to conclude that but for the unfavorable findings of the jury, recovery would have been allowed. The dissent felt that the majority was actually holding the defendant absolutely liable and in effect overturning Turner without saying so.

To further confuse the matter, the Court, on the same day it decided Brown v. Lundell, decided General Crude Oil Co. v. Aiken.[87] The facts were much like Brown but there were specific findings that the defendant was negligent in that it (1) had used too small a pit for the disposal of the salt water, (2) had located it uphill from plaintiff's fresh water spring, and (3) had failed to seal the pit to prevent leakage.

The defense relied primarily on the holding of Warren

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[86] 344 S.W.2d 863, 870, 14 O & GR 611, 620 (Tex. 1961).

[87] General Crude Oil Co. v. Aiken, 344 S.W. 2d 668, 14 O & GR 631 (Tex. 1961).

Petroleum Corp. v. Martin[88] that the only duty owed by the lessee to his lessor was to refrain from intentional, willful, or wanton injury. In rejecting this defense the court restricted Warren language to cases involving domestic animals -- "fence" or "cow" cases -- and held squarely that mere negligence would support liability for damages to land. The court felt the lessee has no duty to fence out the lessor's cattle and if a cow is a trespasser, the owner is not entitled to recover unless conduct is willful. General Crude Oil Co. v. Aiken dealt with dominant and servient estates and the extent of reasonable user by the dominant estate owners. The surface estate is servient to the mineral estate but even that right is to be reasonably exercised with due regard to the rights of surface owners.[89]

But even before Brown and Aiken there was indication that the courts would be more willing to find negligence in pollution cases than in the past. In Pickens v. Harrison[90] a landowner and his tenant brought suit alleging that the defendant, in disposing of salt water by

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[88] Warren Petroleum Corp. v. Martin, 153 Tex. 475, 271 S.W. 2d 410, 3 O & GR 1565 (1954).

[89] General Crude Oil Co. v. Aiken, 344 S.W. 2d 668, 669, 14 O & GR 631, ____ (Tex. 1961).

[90] Pickens v. Harrison, 151 Tex. 562, 252 S.W. 2d 575, 1 O & GR 1813 (1952).

storing it in pits, with pipes going deeper, negligently polluted the plaintiffs' water supply. The court held that the record contained evidence to support the jury's findings that the defendant polluted the fresh water sands with his salt water, that such pollution reached Harrison's well, and that it was a proximate cause of damages suffered by the plaintiffs. There is no discussion of negligence in the opinion. In the Court of Civil Appeals, in alleging the defendant's appellant negligence, plaintiff declared :

> 1. Appellant was guilty of negligence in failing, in disposing of salt water, to protect fresh water sands from pollution, in violation of Rule 20 of the Railroad Commission.
> 2. Appellant was guilty of negligence in emptying salt water into pits dug down to and into a fresh water sand.
> 3. Appellant was guilty of negligence in leaving a large quantity of salt water standing in an absorption pit dug down to and into a fresh water sand.
> 4. Appellant was guilty of negligence in emptying salt water into open drainage ditches flowing into Luvis Creek.[91]

In Ellis Drilling Corporation v. McGuire[92] the court found negligence in the failure to have adequate means and appliances to prevent salt water from escaping into plaintiff's land. And in Geochemical Surveys v. Dietz[93] the court allowed to stand a jury finding that the defendant

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[91] 1 O & GR 1818.

[92] Ellis Drilling Corporation v. McGuire, 321 S.W.2d 911, 10 O & GR 817 (Tex. Civ. App. 1959, error ref'd n. r. e.).

[93] Geochemical Surveys v. Dietz, 340 S.W.2d 114, 14 O & GR 409 (Tex. Civ. App. 1960, error ref'd n. r. e.).

was negligent in emptying salt water into open earthen pits, in failing to seal these pits and in failing to return the salt water to the formations from which produced.

Although much criticized,[94] the case that likely points the way of the future in Texas water pollution cases, is Gulf Oil Corporation v. Alexander.[95] The case involved the pollution of underground water by seepage from a salt water disposal pit on a neighboring oil and gas lease. The pit was no longer in use at the time of the suit but there seems to be little question that it was the source of the pollution. The jury found negligence. The Court of Civil Appeals reversed this finding for lack of evidence, but nevertheless affirmed the trial court's decision. The court predicates this strict liability upon Railroad Commission Rule 20, now rule 8 (a), which provides:

> Fresh water, whether above or below the surface shall be protected from pollution, whether in drilling, plugging or disposing of salt water already produced.

The court held that:

> It is apparent this rule specifically prohibits the pollution of fresh water by the disposal of salt water without any reference to negligence. Since appellant admits, as established by the undisputed record, that it polluted appellee's fresh water strata. appellant is liable for such pollution by reason

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[94] 6 O & GR 460; McGinnis, 7 - 9.

[95] Gulf Oil Corporation v. Alexander, 291 S.W.2d 792, 6 O & GR 457 (Tex. Civ. App. 1956. Error ref'd, n.r.e.).

> of its violation of Rule 20 above set forth . . . There is no proof of negligence in the cause other than might arise from the undisputed proof that appellant in polluting appellee's fresh water strata violated a duty placed on it by Rule 20. Irrespective of any technical discussion of the principles of negligence, it is ruled that the violation of Rule 20 by appellant in polluting the fresh water supply of appellee's irrigation well gave right to the cause of action on the part of appellee for his damage suffered by reason of such violation.[96]

The court relied on Peterson v. Grayce Oil Co.[97] as support for this proposition. In that case the violation of Rule 40, prohibiting the use of vacuum pumps, was held by the Court of Civil Appeals to constitute negligence per se.

> It is our conclusion that there is no merit in the contention that the alleged violation of Rule 40 of the Railroad Commission could not be made the basis of plaintiff's asserted right of recovery of actual damages . . .

The Supreme Court did not find it necessary to pass on this question on appeal of Grayce.

It has been pointed out[98] that Grayce and all of the other cases predicating liability on the violation of a regulation have involved intentional, not negligent, violations of Railroad Commission rules.[99]

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[96] 291 S.W.2d 792, 794.

[97] Peterson v. Grayce Oil Co., 37 S.W.2d 367 (Tex. Civ. App. 1931) aff'd 128 Tex. 550, 98 S.W.2d 781 (1936).

[98] McGinnis, 8.

[99] McCleskey and Phillips, p. 96 feel this is a moot point in view of Tex. Rev. Civ. Stat. Art. 6049c, § 13 which expressly creates a

Alexander has also been attacked on the grounds that:

> . . .Rule 20 does not define a standard of conduct. It does not even unconditionally prohibit polluting fresh water with salt water. If it did, without defining any standard of conduct, it is believed that it would be void because unreasonable. It requires that fresh water "shall be protected". It is submitted, first, that this requirement is met when due care is used and, next, that if a correct construction of the Rule is that it attempts to impose strict liability, it is unreasonable and hence, void.[100]

However, in view of Article 6049c, Section 13,[101] expressly creating a private cause of action for damages caused by violation of rules of the Railroad Commission; the General Water Pollution Control Statute making it unlawful to pollute the waters of the state; TEXAS PENAL CODE ANN. Art. 698c §§3, 4, the new, pervasive criminal prohibition against water pollution; the public concern with pollution; and the trend of the Texas cases, the chances of a defendant prevailing in a water pollution case will be rather slim even if the courts continue to give lip service to the requirement that a plaintiff must prove specific acts of negligence on the defendant's part.

The Supreme Court of Texas declined to pass on the question

(cont.) private cause of action for damages caused by defendant's violation of rules of the Railroad Commission.

[100] 6 O & GR 460-461.

[101] Tex. Rev. Civ. Stat., Art. 6049c, § 13.

of negligence per se, saying only in a per curiam opinion:

> We have concluded that there is evidence to support the jury findings of common law negligence and proximate cause, and both applications are denied with the notation "Refused. No reversible error." This order must not be taken as indicating either approval or disapproval of the views expressed by the Court of Civil Appeals as to the legal effect of Rule 20 promulgated by the Railroad Commission of Texas.[102]

But the signs still point to the acceptance of Alexander as the law in Texas.

There is one Texas case[103] which should be kept in mind by anyone planning a secondary recovery program utilizing a water flood. The defendant was found guilty of negligence in failing to seal off seismograph holes. The Court of Civil Appeals affirmed the verdict for the plaintiff, holding that the evidence supported the findings. Although the defendant did not make the shot holes, knowledge of their existence raised a question of foreseeability of damage.

Illinois has followed the negligence theory. In Phoenix v. Graham[104]

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[102] Gulf Oil Corporation v. Alexander, 295 S.W.2d 901, 6 O & GR 1233 (Tex. 1956).

[103] Curry v. Ingram, 397 S.W.2d 484, 23 O & GR 976 (Tex.Civ. App. 1965 error ref'd, n.r.e.).

[104] Phoenix v. Graham, 349 Ill. App. 326, 110 N.E.2d 669, 2 O & GR 325 (1953).

the oil and gas lessor attempted to collect damages contending that his lessee had created a nuisance. The court rejected this approach in a very well written opinion saying :

> . . . cases . . . are practically uniform that the operator is not liable to his lessor for salt water damage unless it was caused by negligence in the operations . . . It seems to be generally recognized, especially in the large oil producing states, that salt water in oil wells is a natural evil difficult to handle, and some damage to property may be unavoidable, in spite of the exercise of reasonable care. The proprietor of oil land free from salt water has a natural advantage, and owns a better property than one whose land is subject to the evil. The latter has a burden attached to his ownership, and no logical reason can be given for the law to remove that burden and give him a better property than he owns, by casting the entire burden on the operator to dispose of the salt at his peril. The burden on the operator is sufficient if he is required to use the reasonable care of an ordinary prudent operator . . . we hold in the instant case that plaintiffs have the burden of proving defendants were negligent and thereby caused the damage.[105]

As was discussed earlier, the Oklahoma courts have held that in an action to recover damages to land due to pollution from underground sources, 52 O.S. 296, has no application even though the pollutant comes to the surface after a distance and then spreads over the surface.[106] Recovery for pollution of subterranean waters or pollution from underground

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[105] 349 Ill. App. 326, ___ , 110 N.E. 2d 669, 671-672, 2 O & GR 325, 327-328.

[106] Norman v. Greenland Drilling Co., 403 P.2d 507, 22 O & GR 794, 797-98 (Okla. 1965).

sources, must be upon the basis of negligence or nuisance.[107]

In view of the difficulty of proving actual negligence, it is not surprising, that the question has frequently arisen whether or not a plaintiff can obtain the benefit of the res ipsa loquitur doctrine.[108] This Latin maxim conceals the very simple notion that negligence may sometimes be established, without proof of a specific act or failure to act by showing a kind of accident that does not ordinarily occur without negligence. The two basic requirements of the doctrine are (1) all instrumentalities that could likely have been a factor in producing the result must have been under the control of the defendant, and (2) the accident must be of a kind that does not ordinarily occur in the absence of negligence. The crucial point is whether or not the accident is one that does not ordinarily occur without negligence. Such is in reality a question of fact, a question which cannot properly be resolved with respect to a particular kind of accident except by the introduction of expert testimony by the party with the burden of proof, unless information of the causes of the particular kind of accident can be considered

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[107] Cities Service Oil Company v. Merritt, 332 P.2d 677, 684 (Okla. 1958); Ross v. Fink, 378 P.2d 1011, 18 O & GR 489 (Okla. 1963); Norman v. Greenland Drilling Co., 403 P.2d 507, ---, 22 O & GR 794, 798 (Okla. 1965). An Oklahoma Negligence case is Sunray Mid-Continent Oil Company v. Tisdale, 366 P.2d 214, 15 O & GR 504, 506 (Okla. 1961).

[108] Jones & Keeton, part I, 15-19; McGinnis 5-6.

common knowledge of which the court may take judicial notice. The courts of the oil-producing states have divided on whether or not to apply the doctrine where deleterious substances have been permitted to escape. This division can be directly traced to a difference of opinion on whether or not the accident is the kind that does not ordinarily occur without negligence. Keeton and Jones feel the trial judge should deny the plaintiff the benefit of the doctrine in the absence of expert testimony unless the accident can be said to be the kind which an ordinary person knows as much about as one in the business. If it is this sort of common knowledge, and reasonable men could differ, the issue of negligence should be submitted to the jury.[109] Oklahoma and Louisiana courts have applied the doctrine in a number of pollution and similar cases[110] but Texas courts have yet to apply the doctrine in a case involving the escape of deleterious substances. However, it seems that the decided cases were all instances where the plaintiff failed to make sufficient proof to bring the rule into play.[111]

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[109] Jones & Keeton, part I, 16-17.

[110] Norman v. Greenland Drilling Co., 403 P.2d 507, 22 O & GR 794 (Okla. 1965); Gulf Pipe Line Co. of Oklahoma v. Alred, 182 Okla. 400, 77 P. 2d 1155 (1938); Hoyt v. Amerada Petroleum Corp., 69 So.2d 546, 3 O & GR 296 (1953, La. App.); Watkins v. Gulf Refining Co., 206 La. 942, 20 So. 2d 273 (1944).

[111] Warren Petroleum Corp. v. Martin, 153 Tex. 475, 271 S.W. 2d 410, 3 O & GR 1565 (1954); Turner v. Big Lake Oil Co., 128 Tex. 155, 96 S.W.2d 211 (1936).

3. Nuisance

Nuisance, as applied to pollution cases, may be defined as the creation of a condition which has the effect of interfering with the use or enjoyment of the water.[112] The courts have approved the use of nuisance theory in cases involving violation of statute,[113] activities which inevitably cause harm,[114] or negligent conduct of an activity not inherently causing injury.[115]

> The true rule governing the distinction in cases where a recovery is allowed regardless of any question of negligence, and those where the right of recovery is dependent upon the existence of negligence, is well stated in Corpus Juris, vol. 46, p. 664, as follows : "A distinction has been made between acts lawful in themselves done by one upon his own premises which may result in injury to another if not properly done or guarded, and those which in the nature of things must so result; in the former case, a person could only be made liable for actual negligence in the performance of the act or mode of maintaining it, while in the latter he would be liable for all consequences of his acts, whether guilty of negligence or not. The one can only become a nuisance by reason of the negligent manner in which it is performed or maintained, while the other is a nuisance per se".[116]

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[112] McCleskey and Phillips 91-92.

[113] Turner v. Big Lake Oil Co., 128 Tex. 155, 96 S.W.2d 211 (1936).

[114] Cosden Oil Co. v. Sides, 35 S.W.2d 815 (Tex. Civ. App. 1931, writ ref'd.).

[115] Gulf, C.& S.F. Ry. Co. v. Oakes, 94 Tex. 155, 58 S. W. 999, 52 L.R.A. 293 (1900).

[116] Cosden Oil Co. v. Sides, 35 S.W.2d 815, 817 (Tex. Civ. App. 1931, writ ref'd.).

> It is only unavoidable disturbances to which neighbors must submit for the public good . . . "When it is established that a person is creating a nuisance the mere fact that he is doing what is reasonable from his point of view constitutes no defense." . . . Where a party installs or operates machinery and equipment with resulting injury to his neighbors' property, and the detriment could have been avoided, compensation for the damage incurred will be ordered. . .[117]

The courts have held that, "The discovery and production of oil is a legitimate and lawful business, and, when properly carried on and maintained, is not a nuisance per se".[118] Neither is the operation of a pipeline[119] nor "the storage of quantities of inflammable products or salt water from oil wells in proper receptacles generally and customarily used by the industry upon land owned by the owner of the product stored."[120] On the other hand, the pollution of a public water course is a nuisance,[121] and therefore the pollution of a creek by the discharge of effluent by a refinery was a nuisance.[122] The continued escape of gas from storage[123] and the pollution of a water well resulting from

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117 Eagen v. Tri-State Oil Co., 183 So. 124 (La. App. 1938).

118 Green v. General Petroleum Corp., 205 Cal. 328, 270 P. 952, 954 , 60 ALR 475, 480 (1928).

119 Humble Pipe Line Company v. Anderson, 339 S.W. 2d 259, 13 O & GR 635 (Tex. Civ. App. 1960, error ref'd, n. r. e.).

120 Shell Petroleum Corp. v. Wilson, 178 Okla. 335, 65 P.2d 173 (1935).

121 Goldsmith & Powell v. State, 159 S.W.2d 534 (Tex. Civ. App. 1942, writ ref'd). (Approved in Ex parte Genocov, 143 Tex. 476, 186 S.W.2d 225, 160 ALR 1099 (1945)) .

waterflood operations[124] were found to be nuisances.

4. Trespass

Trespass is a theory often discussed by the writers[125] but little applied by the courts in pollution cases. While one court felt that allowing oil to be carried down a creek and deposited on the plaintiff's grassland was a trespass,[126] another court felt a landowner could recover for damage occasioned by salt water from a break in the wall of a salt water pit only on the basis of negligence and not on the basis of trespass.[127]

Thus far the Texas courts have been hesitant to apply trespass in pollution cases or to accept the idea of subsurface trespass. In

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[122] The Southland Company v. Aaron, 221 Miss. 59, 72 So.2d 161, 49 ALR 2d 243, 3 O & GR 822 (1954).

[123] Donahue v. Stockton Gas & E. Co., 6 Cal. App. 276, 96 P. 196 (1907).

[124] Gulf Oil Corp. v. Hughes, 371 P.2d 81, 16 O & GR 1016 (Okla. 1962).

[125] Keeton and Jones II, 256 ff.; McCleskey and Phillips, 96 ff.; McGinnis, 2.

[126] Sussex Land & Live Stock Company v. Midwest Refining Company, 294 F. 597, 34 ALR 249 (8th Cir. 1923).

[127] Moran Corp. v. Murray, 381 S.W. 2d 324 (Tex. Civ. App. 1964, no writ history).

Humble v. Anderson,[128] for example, the court summarily dismissed the theory by stating without discussion that "We are of the further view that the leaking of oil from appellant's pipeline and its percolation underground to the land of appellees was, as a matter of law, insufficient to constitute a trespass." An exception to the rule are the Delhi-Taylor cases.[129] In that series of cases the Supreme Court of Texas held that the fissures created or the substances employed to "frac" an oil or gas well were the type of "things" which could effect a trespass when the defendant was acting intentionally. But the following year in Railroad Commission v. Manziel[130] the court held that in a secondary recovery project, a trespass does not occur when the injected secondary recovery fluids move across lease lines, and the operations are not subject to being enjoined on that basis. There is no question but that the invasion alleged in Manziel is direct, intentional and that the resulting harm would be as substantial as in the earlier cases. One writer attempts to reconcile the cases on the basis that in a fracing operation sand is injected

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[128] Humble Pipe Line Company v. Anderson, 339 S.W.2d 259, 13 O & GR 635 (Tex. Civ. App. 1960, error ref'd n.r.e.).

[129] Gregg v. Delhi-Taylor Oil Corp., 344 S.W.2d 411, 14 O & GR 106 (Tex. 1961) and Delhi-Taylor Oil Corp. v. Holmes, 344 S.W.2d 420, 14 O & GR 103 (Tex. 1961).

[130] Railroad Commission v. Manziel, 361 S.W. 2d 560, 17 O & GR 444 (Tex. 1962).

in the cracks and remains there to hold open the fissure resulting in an occupation of the plaintiff's subsurface while water is fugacious and may not remain lodged in plaintiff's subsurface.[131] This reasoning seems a little tenuous and about all that can reasonably be said is that the availability of trespass as a remedy in Texas is still unclear. A Texas court has held that -- in a case of alleged directional drilling that if the bit crosses property lines there is a trespass.[132]

In Oklahoma, the Supreme Court has held[133] that a landowner had no right either to prevent an adjoining landowner from injection of salt water into a disposal well, resulting in a migration of the water underneath plaintiff's land, or to recover on a quantum meruit basis for the unauthorized use of his land. The court did state that oil companies operating the injection well would be liable to the adjoining landowner for any injury or damage occasioned to him, but no damage was shown. In a later case[134] the plaintiff was able to prove damage

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[131] McGinnis at 4.

[132] Hasting Oil Co. v. Texas Co., 149 Tex. 416 , 234 S. W. 2d 389 (1950).

[133] West Edmond Salt Water Disposal Ass'n v. Rosecrans, 204 Okla. 9, 226 P.2d 965 (1950).

[134] West Edmond Hutton Lime Unit v. Lillard, 265 P.2d 730, 3 O & GR 1426 (Okla. 1954).

and the court held the defendant liable. The plaintiff showed that he had attempted to pull the casing on his wells but was prevented from doing so by salt water which he was unable to cement off. He showed that when salt water flowed from his well pressure dropped on the defendant's injection well, that salt water coming out of his wells pulsated simultaneously with the pump of the defendant's injection well, and that after the injection well was no longer in use, pipe was pulled in nearby wells without encountering salt water or difficulty in pulling the pipe. The plaintiff's contention was that when the injected substance crossed a boundary line into the land of one who has not consented thereto, this is a trespass, and some of the language in the opinion indicates that this is correct.

Although Keeton and Jones have concluded that:

> . . . the orthodox rules and principles applied by the courts as regards surface invasions of land may not be appropriately applied to subsurface invasions arising out of the production of natural resources. They are possibly more nearly akin to invasion of the airspace. Perhaps there should be no liability for subsurface invasions of water, gas, or other substances produced or employed in the production of crude oil and natural gas in the absence of proof of actual damage . . . it may be that a nuisance approach to all such invasions, which necessarily involves a balancing of interests, is the more desirable one.[135]

A plaintiff should seriously consider the application of the trespass theory to his own case.

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[135] Keeton & Jones II, 269-270.

5. "Taking" of Property

It has been proposed that:

> The deposit of waste, whether in the form of harmful chemicals, salt water, or other refuse, in a landowner's ground water reservoir, provides the actor with a receptacle for his waste. Regardless of the social utility of the activity producing this waste and regardless of the care with which such activity is conducted, the injured plaintiff should be entitled to payment for such use of the estate in his land. As a specific example, the oil producer may be said to "store" his waste in underground reservoirs of the adjoining land to which salt water has seeped and percolated by reason of inadequate storage facilities on the subsurface. A strong allegation can be made to the effect that this amounts to a taking of plaintiff's land for which he should be compensated.[136]

Apparently this theory of "taking" has not been applied to pollution of ground water but there are related cases which tend to support it.

In Tidewater Oil Co. v. Jackson,[137] Tidewater was engaged in a secondary recovery operation authorized by the Kansas Corporation Commission. The plaintiff was engaged in primary production on an adjoining tract of land. Tidewater drilled its injection wells as close to the plaintiff's boundary as possible, knowing full well that the inevitable result would be to cause the invasion of the sand from which the plaintiff was producing. It was acknowledged that since plaintiff was

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[136] McCleskey and Phillips, 99.

[137] Tidewater Oil Company v. Jackson, 320 F.2d 157, 18 O & GR 982 (10 Cir. 1963), cert. denied 375 U. S. 942 (1963).

engaged in primary rather than secondary recovery the water injected would do the plaintiff more harm than good. Tidewater was trying to block off any possible drainage, obtain the maximum possible production from the area included in the secondary recovery operation and possibly trying to punish the plaintiff for refusing to join in the secondary recovery operation. The Tenth Circuit recognized that Tidewater operation was lawful and in strict accordance with the orders of the Corporation Commission but nevertheless imposed liability, holding:

> Whatever rule Kansas may ultimately fashion to govern the rights and liabilities of parties affected by underground water flood operation in the interest of conservation, it seems fair to assume that it will proceed upon the basis and unescapable proposition that "no man's" property can be taken directly or indirectly without compensation. Even the sovereign must pay for what it takes or damages for the public good. It cannot absolve a private party from the same duty.[138]

The "taking" theory has been applied to pollution of surface waters as long ago as 1906. In Bigham Bros. v. Port Arthur Canal & Dock Co.[139] the plaintiff sought damages when the bayou he used to irrigate his rice crop was temporarily polluted through a canal, owned by the defendant, which created a more direct connection between the bayou and the Gulf of Mexico. The Supreme Court of Texas referenced Article I, Section 17 of the Texas Constitution which prohibits the taking

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[138] 320 F. 2d 157, 163, 18 O & GR 982, 990.

[139] Bigham Bros. v. Port Arthur Canal & Dock Co., 100 Tex.

of property without adequate compensation , and held that the right of a riparian owner to take water from a stream was property and came within this protection.

6. Right of Riparian Owner or Prior Appropriator to Water of a Stream in its Natural State of Quality

Courts reluctant to impose absolute liability for pollution of water on other grounds have been willing to enforce the absolute right of a lower riparian owner or prior appropriator to receive water from the stream without diminution in quality.[140] In states which have adopted the theory of riparian rights, it is well established that :

> One of the cardinal rights of a riparian proprietor is to have the water of the stream come to him in its natural purity, or in the condition in which he has been in the habit of using it for the purposes of his domestic use or his business, and any wrongful pollution, defilement, or corruption of the water, which prevents its use for any of its reasonable or proper purposes, constitutes an actionable infringement of such right. It is the generally accepted doctrine that a riparian owner sustaining substantial injuries by reason of such an invasion of his rights may maintain an action without regard to the motive which prompts the invasion, and the pollution of a stream to the injury of a lower proprietor will not be justified by the importance of the business or that of the upper proprietor to either the public or the wrongdoer,

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(cont.) 192 , 97 S. W. 686 (1906).

[140]Knodell, 49-51.

> or by the fact that the latter is conducting such business with care and in the only known practicable mode.[141]

Louisiana courts reach a similar result based on the Civil Code. Article 660 creates a "Servitude of Drain", in effect that a lower riparian proprietor must accept drainage from a higher riparian proprietor. But the courts have held that the servitude of drain due by the estate below is confined to the reception of water which runs naturally from the estate above, and proprietor of the estate above is prohibited from doing anything whereby this natural servitude may be rendered more burdensome. It follows, the courts say, from the plain text of the art that the proprietor of the estate above has no legal right to discharge into a natural drain the waste oil and salt water proceeding from wells sunk on his premises, and is responsible for the resulting damages to the estate below.[142]

In those states which have adopted the doctrine of appropriation rather than that of riparian rights, the courts have uniformly held that :

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[141] 56 Am. Jur. 826-27, Waters Par. 405; Accord, Southland Co., v. Aaron, 221 Miss. 59, 72 So. 2d 161, 49 ALR 2d 243, 3 O & GR 822 (1954); Pfeiffer v. Brown, 165 Pa. 267, 44 Am. St. Rep. 660, 30 A. 844 (1895); Bingham Bros. v. Port Arthur Canal & Dock Co., 100 Tex. 192 , 97 S.W. 686 (1906); Benjamin v. Gulf, C.& S. F. Ry. Co., 49 Tex. Civ. App. 473, 108 S.W. 408 (1908, writ ref'd); Teel v. Rio Bravo Oil Co., 47 Tex. Civ. App. 153, 104 S. W. 420 (1907 no writ history).

[142] McFarlain v. Jennings-Heywood Oil Syndicate, 118 La. 537, 43 So. 155, 156-157 (1907).

> . . . It is an established rule . . . that an appropriator of waters of a stream, as against upper owners with inferior rights of user, is entitled to have the water at his point of diversion preserved in its natural state of purity, and any use which corrupts the water so as to essentially impair its usefulness for the purposes to which he originally devoted it, is an invasion of his rights. Any material deterioration of the quality of the stream by . . . others without superior rights entitles him to both injunctive and legal relief. . . .[143]

B. Defenses

Returning to our primary interests of pollution of surface and subterranean water, we ask what can an operator do when sued for polluting ? What are his defenses ?

1. Limitations

One very common defense is the statute of limitations. The problem in pollution cases is when do limitations start to run? One Colorado opinion involving damage from seepage of an irrigation ditch makes a point that also applies where pollution of subterranean waters

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[143] Wright v. Best, 19 Cal. 2d 368, 121 P. 2d 702, 709 (1942); Accord, Arizona Copper Co. v. Gillespie, 230 U. S. 46, 57 L. ed. 1384, 33 S. Ct. 1004 (1913); Sussex Land & Live Stock Company v. Midwest Refining Company, 294 F. 597, 34 ALR 249 (8th Cir. 1923); Levaroni v. Miller, 34 Cal. 231, 91 Am. Dec. 692, 12 Mor. Min. Rep. 232 (1867); Wixon v. The Bear River and Auburn Water and Mining Co., 24 Cal. 367, 85 Am. Dec. 69, 1 Mor. Min. Rep. 656 (1864); Logan v. Driscoll, 19 Cal. 623, 81 Am. Dec. 90, 6 Mor. Min. Rep. 172 (1862).

is concerned. The court stated a general rule that :

> [A cause of action] accrues immediately upon the happening of the wrongful act or the breach, even though the actual damage resulting therefrom may not accrue until some time afterwards. ... But in cases of waters escaping by percolation and seepage from irrigation ditches, owing to the uncertainty of its course and extent, the length of time required after the construction and operation of such properties for it to develop as to its uncertain course and slow state of career under the ground depending upon the conditions of the earch through which it must pass, the lay of the land, and all other elements tending to make uncertain its future location and extent, at least until it commences to show its results at certain places, we do not think the rule . . . above . . . would make a practical, equitable, or fair test as to the time when a cause of action for damages in this class of cases should be held to accrue . . . . We think by adopting the rule that the statute of limitations begins to run from the date the lands were first visibly affected and injured by the seepage which, and with its continuance from the same source, caused the injury for which the suit is brought, is . . . a rule which will prove the most equitable, fair and just to all. . . .[144]

By similar reasoning the courts have held that limitation does not begin to run against a cause of action for subterranean pollution until injury complained of becomes apparent, or should have been discovered by due diligence on the part of the party affected by it.[145] Any other rule

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[144] Middlekampt v. Bessmer Irrigating Ditch Co., 46 Colo. 102, 103 P. 280, 282-283 (1909); Accord, Beck v. American Rio Grande Land & Irrigation Co., 39 S.W. 2d 640 (Tex. Civ. App. 1931).

[145] Crawford v. Yeatts, 395 S.W. 2d 413, 24 O & GR 65 (Tex. Civ. App. 1965, error ref'd n.r.e.); Geochemical Survey v. Dietz, 340 S.W.2d 114, 14 O & GR 409 (Tex. Civ. App. 1960, error

would have the effect of barring the action in many, if not most, cases before the discovery of the condition. The courts have said that if an action, such as disposing of salt water in open pits, by the defendant is lawful when done, the plaintiff may assume it is performed in a non-negligent manner and will cause him no harm. To say that a cause of action accrues prior to the time the damage becomes apparent to the plaintiff in the exercise by him of due care and attention to his property would require him to be overly and unduly suspicious.[146]

In the case of surface pollution the courts have applied the general rules governing the running of the period of limitation. The Supreme Court of Texas, for example, held that where waste water from the defendant's gas transmission plant was continuously discharged across plaintiff's property, the plaintiff's "legal injury" arose at the time the discharge of water commenced. It made no difference that the greater part of the damage did not occur until the two years next

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(cont.) ref'd n.r.e.); Gulf Oil Corp. v. Alexander, 291 S. W. 2d 792, 6 O & GR 457 (Tex. Civ. App. 1056, error ref'd n.r.e.); Harper-Turner Oil Company v. Bridge, 311 P. 2d 947, 7 O & GR 1017 (Okla. 1957); Cities Service Gas Co. v. Eggers, 186 Okla. 466, 98 P. 2d 1114, 126 ALR 1278 (1940).

[146]Geochemical Survey v. Dietz, 340 S. W. 2d 114, 117, 14 O & GR 409, 411-412 (Tex. Civ. App. 1960, error ref'd n.r.e.).

preceding the filing of suit.[147]

2. Incurred Risk

If the plaintiff, or those in privity with him, consented to the acts or omissions which caused his injury, he is barred by the doctrine of volenti non fit injuria or incurred risk. But

> A plaintiff's right to recover cannot be defeated on the theory that he assumed the risk of injury under the doctrine of volenti non fit injuria unless it appears that with full knowledge of the nature and extent of the danger involved he put himself in the way of the particular risk involved as the result of an intelligent choice.[148]

The doctrine was applied in a case where the plaintiff was a tenant of a landowner who sold a portion of the property for a carbon black plant and was paid for any damages to the remainder of the property. Subsequent to the sale, plaintiff leased the property and later sought damages to his crops from smoke and soot. The court held that the landowner knew what the defendant intended to construct and that it would

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[147] Tennessee Gas Transmission Co. v. Fromme, 153 Tex. 352, 269 S. W. 2d 336 (1954).

[148] Triangle Motors of Dallas v. Richmond, 152 Tex. 354, 258 S.W.2d 60 (1958).

produce smoke and soot, and "for a consideration has expressly consented and encouraged its construction".[149]

On the other hand in Brown v. Lundell [150] the defendant failed to show consent to the actual injury and therefore the court refused to apply the doctrine.

> The operator says that, since the lessor consented to the construction of the earthen pit, knowing that the salt water and other waste would be deposited in it and accepted payment for that use of the premises, she cannot recover and the operator is not to be held guilty of negligence in exercising the right that was granted. This argument, like the disposal pit, will not hold water. What Brown failed to allege and prove is that the lessor had reason to know or to be aware that the salt water would probably percolate downward and pollute the fresh water supply. If that had been shown as a fact then equitable estoppel might be employed against her claim for damages and the foregoing rule [volenti non fit injuria] brought into play. We think that the fact that Brown paid for the privilege of constructing and using an earthen pit will avail him nothing.[151]

In a California case,[152] the plaintiff sought to enjoin the discharge of mining débris upstream on a creek. Almost a hundred years earlier the predecessors of title of the parties had settled earlier litigation to enjoin pollution of the creek by a written agreement which granted

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[149] Crawford v. Magnolia Petroleum Co., 62 S.W.2d 264 (Tex. Civ. App. 1933, no writ history.).

[150] Brown v. Lundell, 344 S.W.2d 863, 14 O & GR 611 (Tex. 1961).

[151] 344 S.W.2d 863, 869 , 14 O & GR 611, 618-619.

[152] Wright v. Best, 19 Cal. 2d 368, 121 P. 2d 702 (1942).

the right to discharge gravel, dirt and mining débris from any of the defendant's predecessor's mines, into the creek. The trial court held the agreement a valid defense but on appeal the Supreme Court reversed and held that the agreement created an easement for the benefit of the mine properties owned and operated by the defendant's predecessor at the time and to hold the easement extended to other properties operated by the defendant would be to permit the burden of the easement to be increased beyond the scope of the grant.

Thus while consent is a good defense, the defendant must be able to prove the plaintiff, or some privity to him, has consented to the exact event which caused the injury and the courts will take a narrow view of what property was covered.

3. Right to Consume Gives Right to Pollute

In Brown v. Lundell[153] it was contended that the right to consume gives the right to pollute. The lessee contended that by virtue of his dominant estate he had the right to use the subsurface water and therefore he should not be liable for polluting it. The court did not question the proposition that he had the right to use the water, "but the right to use does not imply the right to damage negligently or unnecessarily."[154]

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[153] Brown v. Lundell, 344 S.W.2d 863, 867, 14 O & GR 611, 616.

4. Need Only Refrain from Intentional, Willful or Wanton Injury

Last but far from least of its effects: Brown along with General Crude Oil Co. v. Aiken[155] laid to rest the contention, based primarily on Warren Petroleum Corp. v. Martin,[156] that the only duty owed by the lessee to his lessor was to refrain from intentional, willful, or wanton injury. The court restricted the Warren language to cases involving domestic animals -- "fence" or "cow" cases -- and held that while the surface estate is servient to the mineral estate that right is to be reasonably exercised with due regard to the rights of surface owners.[157]

5. Failure To Establish Causation

There must be a causal connection between the act of the defendant and the injury received. Without this causal connection there is no liability to the plaintiff no matter how wrongful the defendant's

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[154] Id.

[155] General Crude Oil Co. v. Aiken, 344 S.W.2d 668. 14 O & GR 409 (Tex. 1961).

[156] Warren Petroleum Corp. v. Martin, 153 Tex. 475, 271 S.W. 2d 410, 3 O & GR 1565 (1954).

[157] General Crude Oil Co. v. Aiken, 344 S.W.2d 668, 671, 14 O & GR 631, (Tex. 1961).

acts.[158] It is difficult to extract from the cases any broad rules as to the quantum or quality of proof necessary to establish a causal connection[159] but a typical example would be the case in which a Louisiana court affirmed judgment for the plaintiff on testimony of a water inspector that his tests indicated a high salt content in the plaintiff's irrigation water and that his search revealed no source emptying salt water into the coulee from which the plaintiff irrigated except the defendant's oil lease.[160] While experts will normally be used to establish causation,[161] the services of a professional chemist are not necessary. In one case the plaintiff from time to time poured water from his polluted well into several Pyrex dishes, permitted the water to evaporate and tasted the whitish residue. The plaintiff's testimony that it was salt was held to be proper proof even though he was not a chemist and could

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[158] Jackson v. Clark, 264 P.2d 727, 3 O & GR 198 (Okla. 1953).

[159] For a number of examples see Knodell, pages 63 through 70.

[160] Dubon v. Buckley, 161 So. 2d 301, 20 O & GR 330 (La. App. 1964). Breaux v. Magnolia, 131 So. 2d 615 (La. App. 1961) gives an example of a failure to establish causation.

[161] Raschke, Smith & Wills, Let Engineering Know-How Solve Salt-Pollution Problems, THE OIL AND GAS JOURNAL, August 9, 1965 at 75, discusses a scientific approach to determining the origin of the contaminating fluid.

not testify as an expert as to the chemical components of the residue.[162] The Supreme Court of Oklahoma recently ruled that a cattle owner had failed to establish a causal relationship between the escape of salt water from neighboring oil operations and the salt water poisoning of his cattle. Evidence of the condition existing after his injury was inadmissible to prove that such a condition was the proximate cause of injury unless it was shown there had been no change in conditions since the injury. The failure barred his recovery of damages notwithstanding the Oklahoma Statute that prohibits the release of salt water from oil operations.[163]

6. Balancing Equities

In a case where the state sought injunction against the polluting of certain rivers or their tributaries, the defense raised the issue of balancing equities.[164] In answering this contention the court said:

> . . . as to balancing equities. There simply are no equities in behalf of anyone who is polluting public waters which are used for domestic purposes.

Wallace, who was one of the defense counsel, had this to say concerning

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[162] Danciger Oil & Ref. Co. v. Donahey, 205 Okla. 390, 238 P. 2d 308, 1 O & GR 100 (1951).

[163] Lewis v. Berry & Company, ____ P.2d ____, 2 Environment Reporter 1041 (Okla. 1970).

[164] Magnolia Petroleum Co. v. State, 218 S.W.2d 855 (Tex. Civ. App. 1949 error ref'd n.r.e.).

the case:

> In that case, three entire oil fields had been produced for some 25 years with the salt water stored in pits and dumped during flood time. The entire economy over parts of three counties depended on these fields, and evidence showed beyond question that had an injunction been granted on the date of filing the suit, these fields would have been shut-in, production irreparably lost; some 2,000 people would have been without income; these counties would have lost a great part of their taxable values; lending institutions would have lost their security, and so forth. Incidentally, it was only by some delay between the time of institution of the suit and the time the injunction became permanent that injection wells were drilled and equipped.
>
> As a practical matter, equities were balanced by the law enforcement agencies for many years because most of these officials in the oil producing states chose in favor of oil when the choice was either oil or catfish. These officials might not likely make the same choice or balance these equities in the same way as of 1966.[165]

7. Unclean Hands

It is also unlikely that the courts would except unclean hands as a defense. If pollution exists courts will most likely grant injunctions even though the plaintiff is itself guilty of polluting.[166] It is well established that:

> Pollution of a stream by others is no justification to a defendant charged with fouling the water. The fact that a water course is already polluted does not entitle other persons to add thereto, or preclude persons through whose lands it flows from obtaining relief against its further pollution.[167]

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[165] Wallace, 28-29.

[166] Wallace, 29.

8. Other Defenses

Other defenses have been raised or suggested in pollution cases including that the damage was a result of an act of God. But for this defense to avail, the act of God must have been solely responsible for the injury. If the defendant's conduct contributed in any degree thereto, he is liable.[168] One somewhat limited defense was the contention that the damages, or at least some part of them, was the result of the plaintiff refusing the defendant's request for permission to enter upon the plaintiff's land for the purpose of attempting to repair the damage.[169] And finally a rather novel defense was made when a defendant claimed he had become "a victim of the plaintiff's quest for evidence which prompted him to turn the bleeder down to allow the wanton flow of salt water from defendant's separating tank."[170] The court refused to accept the contention and held the plaintiff's position was well supported.

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[167] 56 Am. Jur. 834, Waters par. 416, cites among other cases Wendfohr v. Johnson's Estate, 57 S.W.2d 215 (Tex. Civ. App. 1932).

[168] Champlin Refining Company v. Rayburn, 323 P. 2d 967, 8 O & GR 1082 (Okla. 1958).

[169] Pfeiffer v. Stanolind Oil & Gas Co., 207 Okla. 48, 247 P.2d 520, 1 O & GR 1270 (1952).

[170] White v. Edgerby Petroleum Company, 4 La. App. 20 (1925).

In what may be a landmark decision, a California court refused to accept as a defense the fact the defendant was in compliance with water quality control requirements. The court held that a defendant complying with the Water Quality Control Board of the state could still be held criminally liable for violating the pollution law.[171]

C. Joint and Several Liability

The courts have been far from unanimous in deciding how the doctrine of joint liability should apply in water pollution cases. Ordinarily several tortfeasors are not held jointly liable unless they act in concert in the commission of a wrong.[172] But it is not a problem only in states where absolute liability is not imposed for:

> Once a tort is found to exist, then problems as to causation and damage are the same as in states imposing liability. One of the problems is whether independent tortfeasors are jointly and severally liable. If they are, it is usually possible for the injured party to make out a prima facie case as to damages. On the other hand, if plaintiff must establish how much of the damage is attributable to the activities of a given tortfeasor, it will always, or at least almost always, be impossible to make out such a prima facie case.[173]

In 1930 the Texas Commission of Appeal decided Sun Oil Co. v.

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[171] People v. Union Oil Co., 268 Cal. App. 2d 721, 74 Cal. Rpter 78 (1968).

[172] Knodell, pp. 57-62.

[173] Note 3 O & GR 780, 781.

Robicheaux[174] and held :

> The rule is well established in this state, and supported by almost universal authority, that an action at law for damages for tort cannot be maintained against several defendants jointly, when each acted independently of the others and there was no concert or unity of design between them. In such a case the tort of each defendant is several when committed, and it does not become joint because afterwards its consequences, united with the consequences of several other torts committed by other persons in producing damages. Under such circumstances, each tort-feasor is liable only for the part of the injury or damages caused by his own wrong; that is, where a person contributes to an injury along with others, he must respond in damages, but if he acts independently, and not in concert of action with other persons in causing such injury, he is liable only for the damages which directly and proximately result from his own act, and the fact that it may be difficult to define the damages caused by the wrongful act of each person who independently contributed to the final result does not affect the rule. [175]

But in 1952 the Supreme Court of Texas speaking through Associate Justice Calvert overruled Sun Oil Co. v. Robicheaux. The opinion in Landers v. East Texas Salt Water Disposal Co.[176] has to be one of the most clear, concise and unequivocal ever written. The fact situation was most unusual. The plaintiff had a lake stocked with fish. On the

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[174] Sun Oil Co. v. Robicheaux, 23 S.W.2d 713 (Tex. Com. App. 1930.)

[175] 23 S.W.2d 713, 715 .

[176] Landers v. East Texas Salt Water Disposal Co., 151 Tex. 251, 248 S.W. 2d 731, 1 O & GR 935 (1952).

same day, the Disposal Company's pipeline broke and allowed salt water to flow across land to the lake and a Sun Oil Co. pipeline broke and emptied salt water into a spring branch which flowed into the plaintiff's lake. The opinion declares:

> The rule of the Robicheaux case, strictly followed, has made it impossible for a plaintiff, though gravely injured, to secure relief in the nature of damages through a joint and several judgment by joining in one suit as defendants all wrongdoers whose independent tortious acts have joined in producing an injury to the plaintiff, which although theoretically divisible, as a practical matter and realistically considered is in fact but a single indivisible injury. As interpreted by the Courts of Civil Appeals the rule also denies to a plaintiff the right to proceed to judgment and satisfaction against the wrongdoers separately because in such a suit he cannot discharge the burden of proving with sufficient certainty, under pertinent rules of damages, the portion of the injury attributable to each defendant . . . our courts seem to have embraced the philosophy . . . that it is better that the injured party lose all of his damages than that any of several wrongdoers should pay more of the damages than he individually and separately caused. If such has been the law, from the standpoint of justice it should not have been; if it is the law now, it will not be hereafter. The case of Sun Oil Co. v. Robicheaux is overruled.[177]

The next important Texas case on joint and several liability was Burns v. Lamb,[178] a Court of Civil Appeals case. The plaintiff had sued the defendant for damage to land caused by pollution from salt water escaping

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[177] 151 Tex. 251, ___, 248 S. W. 2d 731, 734, 1 O & GR 935, ____.

[178] Burns v. Lamb, 312 S. W. 2d 730, 8 O & GR 1262 (Tex. Civ. App. 1958, error ref'd n. r. e.).

from the defendant's lease. Evidence established that not only the defendant's activities but those of other oil and gas operators caused the damage. On appeal the defense argued that (1) there were no findings that other operators' conduct was negligent or willful, (2) Landers applies only to conduct of joint tort-feasors, and (3) there being no joint tortfeasors in the case, Landers was inapplicable. The Court rejected this idea and thus extended Landers by holding a tort-feasor liable for cumulative damage even though other damaging parties are not liable.[179] And finally a tort-feasor can maintain an action for contribution against another tort-feasor who was not a party to the judgment even though the judgment was an agreed judgment and not one judicially determined at the conclusion of trial.[180]

Louisiana courts have reached the same result as Landers based on the civil law doctrine of solidarity.[181] This joint liability has been applied to a case where at least some of the pollution in question

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[179]Sellers, 392; Note 8 O & GR 1267.

[180]Callihan Interest, Inc. v. Duffield, 385 S.W.2d 586 (Tex. Civ. App. 1964, error ref'd.).

[181]Phillips Petroleum Co. v. Hardee, 189 F.2d 205 (5th Cir. La. 1951); Williams v. Pelican Natural Gas Co. 187 La. 462, 175 So. 28 (1937); McFarlain v. Jennings-Heywood Oil Syndicate, 118 La. 537, 43 So. 155 (1907); Eagen v. Tri-State Oil Co., 183 So. 124 (La. App. 1938); Greer v. Pelican Natural Gas Co., 163 So. 431 (La. App. 1935); White v. Edgerly Petroleum Company, 4 La. App. 20 (1925).

came from oil wells on the plaintiff's own land, operated by a company other than the defendant. The court stated the defendant could not escape liability to the plaintiff. The defendant's status was that of a joint tort-feasor and therefore solidarily bound for the damages resulting from such relationship.[182]

Oklahoma has long been squarely in the camp of joint and several liability for all parties who contribute to pollution[183] but in Walters v. Prairie Oil & Gas Co.[184] the court carved out an exception. The defendants were able to show that the plaintiff's lessee producing from the plaintiff's own land had also contributed to the pollution. The court felt that it would be unfair to require the defendants not producing from the plaintiff's land to pay the plaintiff for damage caused by operations on his own land. The court ruled that the landowner must bear the burden of producing "evidence which will enable the court to separate the amount of damage inflicted by the group of defendants sued from the amount of damages resulting from the acts of the [lessee], and to enter judgments against the defendants for the damages thus shown".[185]

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[182]Greer v. Pelican Natural Gas Co., 163 So. 431 (La. App. 1935).

[183]Harper-Turner Oil Company v. Bridge, 311 P.2d 947, 7 O & GR 1017 (Okal. 1957).

[184]Walter v. Prairie Oil & Gas Co., 85 Okla. 77, 204 Pac. 906 (1922).

[185]85 Okla. 77, ____, 204 Pac. 906, 908.

In Cities Service Oil Co. v. Merritt[186] the plaintiff did not challenge Walters but sought to avoid its effect by simply waiving on the record all claims for damage from pollution that was "privileged" because it was necessary to the operation of the lease on the plaintiff's land, and having the jury instructed not to consider the same. The effectiveness of such an instruction is questionable but the approval of this course by the Supreme Court of Oklahoma points the way for a plaintiff to avoid the effects of Walters.

Oklahoma has held that a lessee and his drilling contractor can be joint and severally liable for pollution[187] as can a lessee and the pumper in charge of his lease.[188] Although there seem to be no other cases on these points, it would seem that the normal rules of joint and several liability would require the same result in other jurisdictions.

Kansas holds the defendants jointly and severally liable in pollution cases[189] but Mississippi courts seem disinclined to do so.[190]

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[186] Cities Service Oil Co. v. Merritt, 332 P.2d 677, 9 O & GR 1136 (Okla. 1958).

[187] Franklin Drilling Co. v. Jackson, 202 Okla. 687, 217 P.2d 816, 19 ALR 2d 1015 (1950).

[188] Zarrow v. Hughes, 282 P.2d 215, 4 O & GR 664 (Okla. 1955).

[189] Polzin v. National Co-op Refinery Association, 175 Kan. 531, 266 P.2d 293, 3 O & GR 776 (1954).

[190] Southland Company v. Aaron, 221 Miss. 59, 72 So. 2d 161, 49 ALR 2d 243, 3 O & GR 822 (1954).

In California the leading case, Slater v. Pacific American Oil Co.,[191] held there was no joint and several liability. Where land was injured by substances contributed by several companies, the defendants were liable only for the portion of the damage which its contribution bore to the whole of the substances. The court held that the plaintiff must produce some evidence from which the defendants' proportionate liability may reasonably be deduced to collect for damages. However, if the plaintiff can produce evidence which proves that the defendant contributed to the pollution, then this would be grounds for injunctive relief.

There is however some question as to whether Slater is still the law. In later cases of joint and several liability the California Courts have been more favorable to the plaintiff. In Summers v. Tice,[192] a case involving a hunting accident where both defendants fired in the plaintiff's direction, the court cited with approval the statement by Dean Wigmore:

> The real reason for the rule that each joint tortfeasor is responsible for the whole damage is the practical unfairness of denying the injured person redress simply because he cannot prove how much damage each did, when it is

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[191] Slater v. Pacific American Oil Co., 212 Cal. 648, 300 P. 31 (1931).

[192] Summers v. Tice, 33 Cal. 2d 80, 199 P. 2d (1948).

> certain that between them they did it all; let them be the one to apportion it among themselves. Since, then, the difficulty of proof is the reason, the rule should apply whenever the harm has plural causes, and not merely when they acted in conscious concert. * * * (Wigmore, Select Cases on the Law of Torts, Sec. 153).

And the court went on to say of the defendants :

> They are both wrongdoers -- both negligent toward plaintiff. They brought about a situation where the negligence of one of them injured the plaintiff, hence it should rest with them each to absolve himself if he can.[193]

In Griffith Company v. San Diego College for Women,[194] after discussing Slater, the court says :

> But the Slater case in turn has been distinguished and disregarded so often that Professor Prosser in Law of Proximate Cause in California, 38 California Law Review 369, at page 388, says: "* * * The California courts and others have said many times that the defendant cannot escape liability because his own wrong has made it impossible to measure the damages. Although this state has the only case the writer has ever found in which the plaintiff was denied recovery for lack of evidence, it is almost certainly out of line and cannot be accepted as the present law. Beginning in 1940, the intermediate courts have taken the bull by the horns and adopted the suggestion of several writers, that where it is clear that a defendant has been at fault and that he has caused some part of the plaintiff's damages, the burden of proof should rest on him to show the extent of his contribution, and that if he cannot sustain it he should be liable for the entire loss." . . . [The court discussed support for this conclusion.] . . . This seems to leave the California Rule

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[193] 33 Cal. 2d 80, 86 , 199 P. 2d 1, 4 (1948).

[194] Griffith Company v. San Diego College for Women, 280 P.2d 203 (Cal. App. 1955).

> in this shape : If defendant is shown with reasonable certainty to have caused some damage to plaintiff by tort of breach of contract, or if he is shown prima facie to be one of a group of joint tort-feasors with whom a wrong originate, the burden rests on the defendant to show that his act did not contribute at all to the damage or that some other cause for which the defendant was not responsible did produce an identifiable and identified portion of it. "It is well settled that one who contributes to a damage cannot escape liability because his proportional contribution to the result may not be accurately measured." Reclamation Dist. No. 833 v. American F. Co., 209 Cal. 74, 80, 285 P. 688, 690. "Where parties contribute to damage which has been caused by their acts and the acts of another they cannot escape liability because their proportionate contribution is not accurately measured." Switzer v. Yunt, 5 Cal. App. 2d 71, 41 F. 2d 274, 978. [195]

Thus it seems likely that today a case like Slater v. Pacific American would now go the other way.

D. Plaintiff's Relief

1. Damages

The courts of the oil producing states are in substantial agreement on the measure of damage when real estate is damaged permanently by pollution. [196] A typical statement of the rule is:

> . . . the law is well settled that where injury to real estate from salt water is permanent, the measure of damages is

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[195] 280 P.2d 203, 213-214 (Cal. App. 1955).

[196] Jones, 216 ff.; Measure, Elements and Amount of Damages, 56 Am. Jur. 841, Waters part. 422; Pollution, 9 Am. Jur. Proof of Facts 491; Measure and Elements of Damages for Pollution of a Stream, 49 ALR 2d 253 (1956). Knodell, 83.

> the difference between the value just prior and just after the injury. . . also . . . plaintiff is entitled to reimbursement for emergency expenditures . . . made to minimize her damages.[197]

But where the damage is temporary there is no hard, fast rule. However, the courts will usually follow the same general principles.[198]

> . . . Damages arising from temporary injury to land is measured by different standards depending upon the varying circumstances of each particular case. It has been held, for instance, that the reduced rental value of the property after such injury is a proper measure . . . The cost of restoring such property into its prior condition and the value of its use while in its injured state, has also been held to be a proper measure of recovery . . . , The measure of damages is the value of grass as it then stood, with interest, and not the difference in the value of the land before and after the [injury]. . . . It is only when injury to real property is permanent, that the damages therefor are measured by the depreciation in the market value of the property. . . .[199]

In determining damage to growing rice crops, there should be considered the average yield and market value of crops of same kind of rice planted and cared for in the same manner in the same community.[200] The measure of damages to an oyster crop caused by oil pollution is the

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[197] Cities Service Oil Co. v. Merritt, 332 P.2d 677, 687, 9 O & GR 1136 _____ (Okla. 1958). Accord: Phoenix v. Graham, 349 Ill. App. 326, 110 N.E.2d 669, 2 O & GR 325 (1953); Wendtlandt v. National Co-Operative Refinery Ass'n, 168 Kan. 619, 215 P.2d 209 (1950); Gulf Oil Corp. v. Hughes, 371 P.2d 81, 16 O & GR 1016 (Okla. 1962); Deep Rock Oil Corp. v. Micco, 262 P.2d 451, 3 O & GR 187 (Okla. 1953); Darby Petroleum Corp. v. Mason, 176 Okla. 138, 54 P.2d 1046 (1936); Moran Corp. v. Murray, 381 S.W.2d 324 (Tex.Civ.App. 1964, no writ history).

[198] Jones 219 ff. and the cases cited therein.

[199] Humble Pipe Line Co. v. Day, 172 S.W.2d 356 (Tex. Civ. App. 1943, error ref'd, want of merit).

difference between normal yield and the amount plaintiff was able to salvage times the normal sales price plus the actual expenses of the salvage operation.[201] In general the damage to trees, timber and crops are measured by the value of them at the time of the injury.[202] For temporary injury to land the reduced rental value seems to be the standard most often used.[203] It has been held that the proper measure of damages for anticipated loss of crops which could not be planted because of spraying by oil and salt water was the reasonable rental value of the land and not the anticipated profit.[204] And a provision that lessee "shall pay for damages caused by its operations to growing crops on said land" does not include "natural products of the soil, such as native grasses used for grazing cattle."[205]

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[200] Dubois v. Phillips Petroleum Co., 221 La. 161, 59 So. 2d 107 (1952); Watkins v. Gulf Refining Co., 206 La. 942, 20 So. 2d 273 (1944).

[201] Skansi v. Humble Oil & Refining Co., 176 So.2d 236, 23 O & GR 378 (La. App. 1965).

[202] Watkins v. Gulf Refining Co., 206 La. 942, 20 So. 2d 273 (1944); Bean v. Tennessee Gas Transmission, 136 So.2d 315 (La. App. 1962); Champlin Refining Co. v. Rayburn, 323 P.2d 967, 8 O & GR 1082 (Okla. 1958); Windfohr v. Johnson's Estate, 57 S.W.2d 215 (Tex. Civ. App. 1932).

[203] Sussex Land & Live Stock Company v. Midwest Refining Company, 294 F. 597, 34 ALR 249 (8th Cir. 1923); Zarrow v. Hughes, 282 P.2d 215, 4 O & GR 664 (Okla. 1955; Ingram v. City of Gridley, 100 Cal. App. 2d 815, 224 P.2d 798 (1950); 39 Am. Jur. 395, et seq.

[204] Franklin Drilling Co. v. Jackson, 202 Okla. 687, 217 P.2d 816, 19 ALR 2d 1015 (1950).

In view of the differences in the measure of damages, the courts must decide whether the damage is permanent or temporary. If a nuisance or damage can be abated by the expenditure of labor or money, it is not permanent.

> The word "permanent" in a legal sense is not equivalent to perpetual, or unending, or unchangeable. Permanency, in a legal acceptation of the term does not mean forever -- indefinitely long is sufficient.[206]

In awarding damages, courts have held that in determining rental value it is proper to consider not only the land itself but also its value in connection with the owner's other property and business;[207] that you do not balance conveniences or estimate the difference between the injuries sustained by the plaintiff and the loss which may result to the defendant from having his business declared a nuisance;[208] that the existence of additional water rights may only be urged in mitigation of damages and not as a complete bar;[209] that values used are those at

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[205] Wohlford v. American Gas Production Company, 218 F.2d 213, 4 O & GR 448 (5th Cir. Tex. 1955).

[206] Danciger Oil and Ref. Co. v. Donahey, 205 Okla. 390, 238 P. 2d 308, 1 O & GR 100 (1951).

[207] Sussex Land & Live Stock Company v. Midwest Refining Company, 294 F. 597, 34 ALR 249 (8th Cir. 1923).

[208] Ingram v. City of Gridley, 100 Cal. App. 2d 815, 224 P. 2d 798, 801 (1950); 39 Am. Jur. 395, et seq.

[209] Wright v. Best, 19 Cal. 2d 368, 121 P.2d 702, 712 (1942).

the time of the injury, thus evidence of the value of the land at the time of the trial with and without such pollution is insufficient to support a verdict;[210] and that the plaintiff's refusal of the defendant's request for permission to enter upon the plaintiff's land for the purpose of attempting to repair the damage may be grounds for reducing or denying damages.[211]

Punitive damages have been permitted under some circumstances.[212] In general:

> Where the evidence tends to establish grossly negligent acts and omissions on the part of the oil lease operator amounting to a wanton disregard of the rights of the owner of the land damaged by pollution, the submission of the question of punitive damages to the jury under appropriate instructions is proper, and an award of punitive damages in an amount greater than the compensatory damages awarded is not unauthorized and will be sustained, unless shown to have been awarded under the influence of passion or prejudice.[213]

An example of the application of this rule is Jordan v. Peek[214] where:

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[210] Mid-Continent Pipeline Co. v. Ebenwein, 333 P.2d 561, 9 O & GR 1150 (Okla. 1958).

[211] Pfeiffer v. Stanolind Oil & Gas Co., 207 Okla. 48, 247 P.2d 520, 1 O & GR 1210 (1952).

[212] Jones, 226 ff.; Knodell, 89 ff.

[213] Syllabus by the Court, Jordan v. Peek, 268 P.2d 242, 3 O & GR 332 (Okla. 1954).

[214] Jordan v. Peek, 268 P.2d 242, 3 O & GR 332 (Okla. 1954).

It was shown that hundreds of thousands of barrels of salt water produced from defendant's wells were deposited in a series of hillside pits and pools which were leaking fluid approximately as fast as the salt water was placed into them. This continued from the time the first well was brought in, in January, 1949, until September, 1950, when after a series of complaints had been lodged by the representatives of plaintiffs to defendant, a disposal well was put into operation. This should have bettered the situation, but it appears that through disregard of the rights of the plaintiffs and of gross negligence on the part of defendant, the deleterious substances were not pumped from the pits and ponds theretofore provided into the disposal well, but, instead, a dike was either cut or a break-through therein allowed to develop, and this waste continued to flow upon the lands of the plaintiff. The defendant himself testified that he did not exercise the same degree of care in the operation of the lease as ordinary, because in this instance he owned the land itself; that "where I don't own the surface, I naturally keep the lease up." We think that the evidence showed aggravating circumstances sufficient to justify the submission to the jury of the question of punitive damages. . .[215]

2. Injunction

In appropriate circumstances injunction has always been a proper remedy to abate water pollution. Since injunction is an equitable remedy, it is within the discretion of the court to grant, subject to review and supervision by the courts of appeal. The guide most frequently used by equity courts in exercising discretion in awarding injunctive relief in pollution cases is the doctrine of "balancing the injuries". Under this doctrine, an injunction will not be awarded to plaintiff if the injury defendant will suffer by reason of granting the injunction is great and the injury plaintiff will suffer if the injunction is not granted is slight.[216]

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[215] 268 P. 2d 242, 246 , 3 O & GR 332, 337.

[216] Knodell 77. Also see 56 Am. Jur. 839, Waters § 421.

Examples of the utilization of this doctrine are the cases Windfohr v. Johnson's Estates[217] and Wright v. Best.[218] In Windfohr the court held that the landowner was not entitled to injunction against operation of oil well producing salt water, which occasionally overflowed the defendant's reservoirs and reached the plaintiffs' land "since (1) it does not appear that the nuisance complained of was permanent and not abatable; (2) the damages which will result to the defendants by an injunction restraining further operation of the well would be so much greater than any temporary injury to the plaintiffs." In Wright the court refused to balance the injuries because an uncontaminated supply of water was of more than a little benefit to the plaintiff and the record did not show the defendant would be unable to operate his mine in the face of the injunction. The court went on to state that the courts of California were reluctant to balance the injuries where the tort is willful, unless granting the injunction would produce great public mischief. The court also held that it is no defense to a request for injunction that others also polluted the stream.

But balancing the injuries is not the only guide used by the

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[217] Windfohr v. Johnson's Estate, 57 S.W.2d 215 (Tex. Civ. App. 1932).

[218] Wright v. Best, 19 Cal. 2d 368, 121 P. 2d 702 (1942).

courts. In Sussex Land & Live Stock Co. v. Midwest Refining Company,[219] an injunction would not lie against the use of land for development of oil, to prevent partial injury to land lying lower down a stream into which some of the oil flowed, for the injury was temporary, although extending over a considerable period of time, and could be compensated by an award of damages.[220] Estoppel may have also been a factor in this case since the lower owner had accepted money payments for injuries during the course of development of the oil property.[221]

It should be noted that while the principle set out in Windfohr and Sussex Land are still good, it is unlikely that a court today would reach the same result in cases where salt water pits were allowed to over-flow or oil allowed to flow in a stream. The present day applications will more likely be cases where the damages are very slight and the pollution preventable only by extraordinary expenses. With the present day concern for the environment injunctions against polluting activities will be much easier to get.

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[219] Sussex Land & Live Stock Company v. Midwest Refining Company, 294 F. 597, 34 ALR 249 (8th Cir. 1923).

[220] 294 F.597, 605-607, 34 ALR 249, 259-260.

[221] 294 F. 597, 606-607, 34 ALR 249, 260.

VI. REGULATION

Congress and the state legislatures have not closed their eyes to the pollution problem and in recent years nearly every session of Congress and many of the legislatures have produced statutes dealing with air or water pollution. And administrative agencies have been active in their rule making capacities.

A. State

Texas, for example, has had water pollution control statutes of some type since 1860,[222] but most of those currently in force have been enacted since 1960. We will examine a few of the new statutes and rules that are relevant to the oil and gas industry. The first of the new statutes was Art. 7621d, the State Water Pollution Control Act of 1961.[223] This created the Water Pollution Control Board which was authorized to issue permits to discharge wastes. It was the Board's duty to balance the desire "to maintain purity of the waters of the State" with the desire to encourage "the industrial development of the State"[224] in issuing

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[222] Acts 1860 at 97.

[223] Tex. Rev. Civ. Stat. Ann. Art. 7621d.

[224] Tex. Rev. Civ. Stat. Ann. Art. 7621D, Sec. 1.

permits. All water pollution control functions were not brought under one roof and the State Department of Health, Parks and Wildlife Department, General Land Office, Texas Water Development Board, Texas Water Rights Commission, Texas Water Well Drillers Board, and the Railroad Commission share the responsibility with the Water Pollution Control Board. In dealing with the Railroad Commission, Art. 7621d originally provided only that the commission would continue to exercise its authority to control the disposition of waste and the prevention of pollution resulting from activities associated with oil and gas exploration, development and production operations.[225] This resulted in a question as to whether the Railroad Commission or the Board or both had jurisdiction of the disposal of oil and gas field wastes. The Attorney General of Texas ruled that they held concurrent jurisdiction, but a district court held that the Board had no jurisdiction in the matter.[226] At this point the 1965 legislature amended Art. 7621d to state that the Railroad Commission "shall be solely responsible for the control and disposition of waste, and the abatement and prevention of pollution of water, both surface and subsurface", resulting from activities associated with oil and gas exploration, development and production operations.[227]

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[225]The Railroad Commission's authority is contained in Tex. Rev. Civ. Stat. Ann. Art. 6029a.

[226]Hooper, Public Law Remedies for Water Pollution, PROCEEDING UNIVERSITY OF TEXAS WATER LAW CONFERENCE (1966) [hereinafter cited as Hooper].

The Commission also could issue permits for the discharge of such wastes. Then in 1967 the legislature enacted the Texas Water Quality Act of 1967[228] and the Water Pollution Control Board was replaced by the Texas Water Quality Board.

This 1967 Act places emphasis on "quality control of the waters" as distinguished from "the abatement and prevention of pollution". The Railroad Commission's sole responsibility for the control of oil and gas exploration, development and production operations is continued but the Board has the exclusive authority for the establishment of water criteria for all the waters of the state. Therefore for the permits issued by the Commission to be valid, they must not result in bringing the water quality in Texas waters below the criteria established by the Water Quality Board.[229] The permits issued by the Board to pipeline operations, refineries, and other transporting or processing activities or by the Commission to exploration, development, or production activities, are subject to amendment, modification or revocation and never become a vested right. Thus there is no legal assurance that the holder of a permit will not have to modify or replace his discharge

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[227] Tex. Rev. Civ. Stat. Ann. Art. 7621d(10)(c)(4).

[228] Tex. Rev. Civ. Stat. Ann. Art. 7621d-1.

[229] Tex. Rev. Civ. Stat. Ann. Art. 7621d-1(4).

treatment facilities long before they are worn out or fully depreciated.[230]

The Railroad Commission's jurisdiction over the disposal of oil and gas field wastes by subsurface injection is vested by the Injection Well Act,[231] and over the activities of truckers in disposing of oil field brine is established by the Salt Water Hauler's Permit Act.[232] Under the Injection Well Act a person applying to the Railroad Commission for a permit to dispose of oil and gas field wastes by injection must submit a letter from the Texas Water Development Board stating that the drilling and operation of the injection well will not endanger any fresh water strata.[233] The Permit Act prohibits hauling salt water for hire without a permit. The main criteria for granting or denying a permit are:

(1) Is the equipment such as will prevent leakage during transportation?

(2) Does the hauler have permission to dispose of the salt

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[230]For additional analysis of the Water Quality Act see McGinnis p. 28 ff.

[231]Tex. Rev. Civ. Stat. Ann. Art. 7621b.

[232]Tex. Rev. Civ. Stat. Ann. Art. 6029b.

[233]Hooper, p. 77-78 gives additional discussion of the Injection Well Act.

water he hauls in a disposal system approved by the Railroad Commission?[234]

Another pollution control statute relevant to the oil and gas industry is Art. 6005[235] as amended in 1965. It gives the Railroad Commission authority to plug abandoned wells which were never properly plugged or which require replugging because pressure differentials, cement failures or corrosion have caused leaks which developed later and in spite of the fact that the well was originally properly plugged. This law places the duty to plug a well on the operator, non-operators, and landowner, in that order. If some one other than the operator plugs the well he is given a cause of action against those with a "higher" duty and if he pays more than his proportionate share of the cost, he is given a cause of action against others in his class. If a well is not properly plugged by any of these interested classes and if they cannot be found or do not have the assets to plug the well, the Commission may plug the well and the state is given a cause of action to recover the reasonable cost against the operator, non-operator and landowner successively.[236]

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[234]McGinnis p. 22-23 gives additional discussion of the Salt Water Hauler's Permit Act.

[235]Tex. Rev. Civ. Stat. Ann. Art. 6005.

[236]McGinnis, 27 raises the point that:

> If this act be construed to give the state a cause of action to recover the cost of replugging a well which was originally properly plugged before the statute was passed, it may possibly be challenged on the ground that it is a retroactive law in conflict with Article I, Section 16, of the Constitution.

The statute authorizes the Commission to accept money from private persons and use the money to plug or replug any well. Since the statute provides :

> Evidence that a person has paid money to the Commission is not admissible against the person in any suit in which the person's obligation to plug a well is an issue, and introducing the evidence is a compulsory ground for mistrial.[237]

A way is created for persons who were, or thought they might be, responsible for the improper plugging to fulfill their obligations without the admission against interest in a damage suit that voluntary plugging would be. Further, the Commission can authorize a third party to plug a well without the third party assuming liability for any damage prior to it plugging the well. Thus an operator planning a water flood operation can get an authorization to go in and correct possible sources of trouble before he starts his water flood.[238]

Under Art. 6005 at the end of 1969, 343 wells had been plugged at a total cost of $425, 591. Of this total, industry contributed $127,745 and other agencies have helped the Commission finance plugging operations. For example, the Colorado River Muncipal Water District contri-

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[237]Tex. Rev. Civ. Stat. Ann. Art. 6005.

[238]McGinnis, 25-28 gives additional discussion of Article 6005.

buted one-half of the money used to plug and abandon wells polluting the Colorado River.[239]

On the administrative front Texas has also been active. After issuing numerous special field-wide, county-wide and multi-county "no-pit" orders. on April 3, 1967, the Railroad Commission adopted Statewide Rule 8C which prohibited the use of all salt water pits throughout the entire state. There is no blanket exception for lined pits and the backfilling and compacting of abandoned pits is required. The new rule also prohibits disposal of oil field brine into any surface drainage water course, be it dry creek, flowing creek or river.

The Railroad Commission will grant exceptions on special request for good and sufficient cause. The exceptions are based on "guidelines" approved by the Commission. These guidelines authorize the Commission to grant an exception when "there are no fresh water sands to be affected", if "the volumesof salt waters are so small as to present no real danger of pollution," or if "the preponderance of the evidence would warrant granting . . . an exception by applying the 'rule of reason' ". In application the guidelines have been held to mean it is unreasonable for the Commission to prohibit the use of salt water pits if it is economically impracticable for an operator to drill and install

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[239]Water Pollution Control in Texas, 48 Tex. L. R. 1029, 1111 (June 1970) (Tim Corssow, Project Ed.).

an expensive injection well system or if it is impossible to find a subsurface water zone for salt water disposal reasonably close to the point at which the salt water is produced.[240] This is a ground for exception often championed by operators who urge that exceptions should be granted "because the cost of drilling a salt water disposal well or trucking off the salt water would be prohibitive and would force a premature abandonment of the oil well with the consequent waste of hydrocarbons."[241] As time goes on the Commission will be less and less likely to accept this argument when the choice is water or oil. One answer to this problem is that where there is one such well there are usually others and it may be feasible for the operators to get together in a community-type operation.

From the time the statewide "no-pit" rule went into effect in January 1969 until June 1970 the Railroad Commission granted nearly 2,000 exceptions. The majority, 1,718, were lease exceptions as opposed to field exceptions. Of these 1,718 exceptions, 896 were for unlined pits, 543 were for lined pits and 279 were for fresh water pits.[242]

The Commission has also acted to protect fresh water strata by strengthening Statewide Rule 14 covering the plugging and abandoning of

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[240] Id. at 1095-96.

[241] McGinnis, 20.

[242] Water Pollution Control in Texas, 48 Tex. L. R. 1029, 1095.

wells. It now insists that a Commission witness be present during a plugging operation and there are cases where an operator had to go back and replug a well when he didn't wait for a Commission inspector to watch the job.[243]

Statewide Rule 8(D) directs producers to refrain from polluting the waters of the Texas offshore and adjacent estuarine zones.

To summarize briefly the statutes dealing with pollution of some of the other oil and gas producing states:

OKLAHOMA -- As discussed earlier 52 O. S. A. 296, the "salt water law", has been in effect since 1910. It prohibits permitting salt water "to flow over the surface of the land". But Oklahoma has other statutes dealing with pollution. 52 O. S. A. 139, et seq. enlarged the powers of the Corporation Commission in controlling pollution resulting from oil and gas operation. The Commission can by general rule establish standards for the use of surface pits and plugging wells. 29 O. S. A. 409 is a criminal statute providing:

> No person, firm or corporation shall deposit, place, throw, or permit to be deposited, placed or thrown, any lime, dynamite, or other explosives, poison, drug, sawdust, salt water, crude oil or other deleterious substance, in any of the streams, lakes or ponds of this state or in any place where the same will run or be washed into said streams, lakes or ponds. . .

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[243] Texas Cracks Down on Brine Pollution, THE OIL AND GAS JOURNAL, August 2, 1965 at 80.

Where oil and gas operators are involved a complaint is filed with the Corporation Commission and the Commission immediately notifies the operator to remedy the pollution. If this is not done then a criminal indictment is filed.[244] 52 O. S. A. 309 et seq. gives the Commission power to authorize an affected party to go upon any lands where there is an abandoned well believed to be improperly plugged. It purports to exonerate the party remedying such a situation from tort liability resulting from his attempts to properly plug the old well. The need for this statute arose when water flood projects increased pressure in some areas to a level where some older wells began to leak even though properly plugged under the rules in effect when abandoned.

LOUISIANA -- La. R. S. 38:216 prohibits the draining of salt water, oil or other noxious or poisonous gases or substances into any natural stream or drain from which water is taken for irrigation purposes which would render the water unfit for such purposes except during an open season between October 1 and December 31 of each year. La. R. S. 56:1451 is similar but applies to natural streams, not just those used for irrigation, and prohibits the drainage in quantities sufficient to destroy the fish therein. La. R. S. 56:1431-1445 established a Stream Control Commission with authority to control waste disposal by any

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[244] Fell and Wolfe v. Oklahoma, 480 P.2d 277, 2 E R 1172 (Okla. Ct. of Crim. App. 1971).

person into the waters of the state for the prevention of pollution of such waters tending to destroy fish life or to be injurious to the public health, the public welfare or to other aquatic life or wild of domestic animals or fowls. La. R.S. 14:58 defines the crime of contaminating water supplies as being the intentional performance of any act tending to contaminate any private or public water supply and establishes two scales of fines and imprisonment based on whether the act foreseeably endangers the life or health of human beings.

CALIFORNIA -- Water pollution control is the function of a State Water Resources Control Board and nine regional boards. Calif. Water Code § 13000ff. Open pit disposal of salt water is still allowed in California, provided that no fresh water bearing formations are within the likely drainage of the pit. Calif. Fish & Game Code § 5650 prohibits water pollution and expressly prohibits depositing or permitting to pass into the waters of the state any petroleum or petroleum product. A defendant complying with the State Water Quality Control Board can still be held criminally liable for violation of this pollution law.[245]

Most of the oil producing states now have statutes which attempt to regulate pollution from oil and gas operations. All states now have the water quality standards required by Federal Water Pollution Control Act, infra.

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[245] People v. Union Oil Company, 268 Cal. App. 2d 721, 74 Cal. Rptr. 78 (1968).

In considering state regulation of pollution a few points need to be kept in mind. First, that the lsgialature has provided punishment by fine and imprisonment for pollution does not affect the power of the state to seek an injunction when the provisions of the law are inadequate to effect the purpose intended nor is a conviction or criminal charge a prerequisite to issuance of injunction. A court is not deprived of jurisdiction to enjoin a public nuisance merely because it is an injury of the property or civil rights of the public at large. Pollution is a public nuisance and is lodged in the courts, independent of any statute.[246] Second, in at least one state the question is open as to whether a firm or corporation can be indicted or tried under the criminal laws.[247] And third, to hold a superintendent of a corporation liable individually there must be shown a connection between him and the negligence.[248] Thus it would seem that a state's most effective means to regulate pollution by a corporation would be an injunction.

B. Federal

As mentioned before, Congress has not closed its eyes to the

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[246] Goldsmith & Powell v. State, 159 S.W.2d 534 (Tex.Civ.App. 1942, writ ref'd) (Approved in Ex Parte Genocov, 143 Tex. 476, 186 S.W. 2d 225, 160 ALR 1099).

[247] Judge Lynch International Book & Publishing Co. v. State, 84 Tex. Crim. App. 459, 208 S.W. 526 (1919).

[248] Myers v. State, 148 Tex. Crim. App. 77, 184 S.W.2d 924 (1945).

pollution problem and by enacting the Water Quality Act of 1965[249] declared its purpose to be . . . "to enhance the quality and value of our water resources and to establish a national policy for the prevention, control and abatement of water pollution." Prior to that time the participation of the Federal Government in water pollution control was largely limited to encouraging the states. The Act created the Federal Water Pollution Control Administration within the Department of Health, Education and Welfare[250] with responsibility for coordinating and developing a Federal program of water pollution abatement. However, one of the act's chief purposes was still to encourage the individual states to act. The states had until October 2, 1966, to file a letter of intent with the Secretary of Health, Education and Welfare that such state would, before June 30, 1967, adopt (a) water quality criteria applicable to interstate waters and (b) a plan for the implementation and enforcement of the water quality criteria adopted. If the states failed to act, the Secretary could prescribe regulations but all fifty states did enact the necessary legislation.[251]

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[249] 79 Stat. 903 (1965), 33 U. S. C. § 466 (Supp. 1965).

[250] Reorganization Plan No. 2 of 1966 (H. Doc. 388, 89th Cong., 2d Sess.) effective May 10, 1966 transferred the F W P C A to the Department of the Interior.

[251] Kansas was the last state to have its standards approved. 4 Tex. Pollution Report No. 11 (May 7, 1969).

Enforcement of the water quality criteria is principally a state matter but the Act makes it unlawful to discharge any matter into interstate water which will reduce its quality below the standards established under the Act. Such pollution is subject to judicial abatement after a 180-day notice to the pollutor by the Administrator of the Environmental Protection Agency.[251a] If the area where the health or welfare of people is endangered by the pollution is entirely within the state where the pollution occurs, suit can be brought only with the written consent of the governor of the state. If more than one state is involved, the Administrator may proceed to file suit in the Federal District Court.[251b] The Court is to give due consideration to the practicability and to the physical and economic feasibility of complying with the applicable water quality standards and the Court is required to enter judgment as the public interest and equities of the case require.

Another enforcement tool was established in 1970. As a prerequisite for any federal license or permit for any activity which may

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[251a] 33 USCA 1160(b), (c)(1), (c)(5). Reorganization Plan No. 3 of 1970 (July 9, 1970 eff. Dec. 2, 1970, 35 F.R. 15623, 84 Stat.) established the Environmental Protection Agency and transferred from the Department of Interior and HEW as well as other agencies most of their environmental responsibilities. Sec. 2(a)(1) expressly transfers Interior's functions under the Federal Water Pollution Control Act as amended.

[251b] 33 USCA 1160(c)(5).

result in any discharge into the navigable waters of the United States the applicant must obtain certification from the appropriate water quality control agency that there is reasonable assurance the applicable water quality standards will not be violated.[251c]

In 1970 Congress enacted the Water Quality Improvement Act of 1970.[252] In addition to amending the existing law in some minor ways, Section 11(b)(1)[252a] states:

> The Congress hereby declares that there should be no discharges of oil into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone.

The act then goes on to give those who discharge oil upon such waters the burden of proof that they are not at fault. Unless they can prove that the "discharge was caused solely by (A) an act of God, (B) an act of war, (C) negligence on the part of the United States Government, or (D) an act or omission of a third party without regard to whether any such act or omission was or was not negligent, or any combination of the foregoing clauses," they must reimburse the Federal Government

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[251c] 33 USCA 1171(b). If the nevigable water is not interstate there may be no applicable standards since the requirement for criteria applies only to interstate waters. However, proposed regulations would require state certification if the state has established standards.

[252] Pub. L. 91-224, 84 Stat. 91, 33 USC 1152, 115, 1156, 1158, 1160-1175.

[252a] 33 USC 1161(b)(1).

for its costs in cleaning up the mess they have caused. The limits of liability are the lesser of $100 per gross ton or $14,000,000 for a vessel and $8,000,000 for a facility either onshore or offshore. However, if the government can show the "discharge was the result of willful negligence or willful misconduct within the privity and knowledge of the owner, such owner or operator shall be liable to the United States Government for the full amount of such costs.[252b] Persons responsible for discharging oil upon offshore waters have a duty to give prompt notice to federal authorities. If they fail to do so, they are subject to civil or criminal penalties.[253] There are also provisions for the establishment of a National Contingency Plan for removal or discharged oil.[253a]

A much older act recently given new life by the courts is the River and Harbors Act of 1899.[254] Section 13 of this Act makes it a misdemeanor to "throw, discharge, or deposit any refuse matter of any kind or description whatever . . . into a navigable body of water in the United States."[254a] In United States v. Standard Oil Co.,[255] the defendant

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[252b] 33 USC 1161(f).

[253] 33 USC 1161(b)(4)-(5).

[253a] 33 USC 1161(c).

[254] 30 Stat. 1152 (1899), 33 USC § 407 (1964).

[254a] It can be seen that there is some overlap between Section 13 of the River and Harbors Act of 1899 (sometimes referred to as the Refuse Act of 1899) and 33 USC 1161. Keener, Federal Water Pollution Legislation and Regulations with Particular Reference to the Oil Industry, 4 NAT. RES. LAWYER 484 at 498(1971) contends that the Refuse Act was repealed in so far as oil is concerned by 33 USC 1161. "Since the jurisdictional limits of the two statutes are different, the amounts of oil which

was indicted for accidentally discharging 100 octane gasoline into the St. Johns River in violation of Section 13. The district court dismissed the indictment, agreeing with the defendant that "refuse matter" did not include a commercially valuable product. In an opinion by Mr. Justice Douglas, the Supreme Court reversed, saying "There is nothing more deserving of the label 'refuse' than oil spilled into a river."[256] All indications are that the Supreme Court will take a broad view of the law in pollution cases under this or other statutes.

(cont.) would constitute an offense are different, and the penalties are different, it would seem illogical to conclude that Congress intended that both continue to be applicable." It seems better, however, to assume both are still in effect. The Water Quality Improvement Act expressly repealed the Oil Pollution Act of 1924 (33 USC 433). It did not do so to the Refuse Act.

[255] United States v. Standard Oil Co., 384 U.S. 244, 16 L. Ed. 2d 492, 86 S. Ct. 1427 (1966).

[256] 384 U.S. at 229-230.

VII. INDUSTRY PERFORMANCE

In recent years the overall performance of the oil and gas industry has been exemplary. Most of the industry has realized that it is in its best interest to get its own house in order before some government agency forces it to do so. In 1968 the industry spent approximately $ 222.8 million on water conservation and pollution prevention.[257] In 1970 the oil industry was spending at the rate of $1.5 million daily for pollution control equipment and environmental research.[258] The expenditure continues to go up each year. In 1969 the American Petroleum Institute alone spent $600,000 on research and development projects for pollution control.[259]

As early as 1942 producers in the giant East Texas Field organized the East Texas Salt Water Disposal Company for the sole purpose of disposing of the salt water produced from the Field. Since

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[257] CROSSLEY, S-D SURVEYS, INC., REPORT ON AIR AND WATER CONSERVATION EXPENDITURES OF THE PETROLEUM INDUSTRY IN THE UNITED STATES 4 (1968).

[258] Statement by the President of the American Petroleum Inst., Mr. Frank N. Ikard to their annual meeting on 17 Nov. 1970 as reported in 1 Environment Reporter, Current Developments at 752.

[259] Water Pollution Control in Texas, 48 Tex. L. R. 1114 (June 1970).

then the ETSWDC has disposed of over three billion barrels of salt water. Today almost 100 per cent of the salt water being produced from the Field is being reinjected into the Woodbine Formation. This represents approximately 350,000 barrels of salt water a day.[260]

An area covered by the Salt Flat,Darst Creek and Luling Oil Fields, twenty years ago was a wasteland. But today after the expenditure of several million dollars to reinject as much as 400,000 barrels of salt water a day plus proper housekeeping, including bulldozing slush pits, and covering up open ditches and salt water pits, the countryside blooms again. The properties were fenced and modern homes built. Expensive cattle now graze over what was almost worthless barren land.[261]

A survey of pollution-agency personnel conducted by the Oil and Gas Journal found that they generally felt the states have had surprisingly good cooperation from most operators in the overall effort at pollution abatement.[262] While there are occasional instances of human failures, acts of God, or accidents, in recent years the industry's record has been good and is getting better.

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[260] Edwards, A Practitioner Looks at Pollution, 18 INST. ON OIL & GAS LAW 433 (1967).

[261] Wallace, 29.

[262] Enright, 84.

VIII. THE FUTURE

In the future we anticipate the legal consequences of pollution to be affected by a number of factors, chief of which is the fact that the public, administrative officials, legislatures and Congress will hold the oil and gas industry, along with industry in general to a higher duty in preventing pollution. Juries will be more likely to convict or assess damages for pollution and the appellate courts will not dig too deeply into the legal theories supporting convictions, damage awards, or injunctions.

In general the industry can look forward to continued expenditures for research and preventive measures to fulfill its social and legal duties. The public interest will continue to emerge as a dominant interest and absolute ownership will yield to it in many ways. Less and less of what a person does with his land will be considered solely his own business because of the far reaching effects that pollution has on us all. The industry will continue to feel that it is generally better to adjust to pressures than to wait until law forces it to do so.

Research will be increasingly directed into using waste products instead of just disposing of them in a non-polluting manner. Dr. John Manning, a consultant for the Valley Waste Disposal Company

which operates in the San Joaquin Valley of California, has done some research in the use of waste water by plants and trees. At the Valley Waste Disposal Company Race Track/Edison Disposal Facilities waste water containing approximately 4,000-5,000 mg/l of salt, and varying amounts of boron and fluoride is disposed of by a combination of ponding, evaporation and transpiration. The Facility is designed for approximately 20,000 barrels per day and is currently handling approximately 12,000-13,000 barrels per day. An irrigation system is gravity fed from ponds located higher on the hillside and water is utilized by a variety of salt resistent plants which transpire the water. Good results have been obtained with trees such as the tamarisk and salt cedar and with grasses including wild rye, tall wheat and certain types of bermuda. These plantings provide satisfactory forage for domestic animals including horses, cattle, and sheep, as well as a forage and cover locality for quail and other wild life. Valley Waste Disposal is now considering a second such installation.[263]

The predecessors of the first oil wells were drilled to find salt water and oil was considered a useless pollutor. This brine was then evaporated for its salt content. It is possible that salt water will again be processed for its mineral content. It is estimated that dissolved in

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[263] Information obtained in conversation with Dr. Manning.

the salt water produced from oil field operations are 105 million tons of various salt compounds such as sodium chloride, sodium sulfate, sodium bicarbonate, sodium bromide, sodium iodide and similar salts of lithium, potassium, calcium, magnesium, strontium, barium, boron, iron, manganese and other elements. Oil field brines are very similar to sea water but they often contain higher concentrations of dissolved solids. Several companies already extract minerals from sea water. Dow Chemical extracts magnesium and bromine, W. R. Grace extracts magnesium and calcium, Merck extracts magnesium and other compounds, Kaiser Refractories extracts magnesium, and Leslie Salt recovers sodium chloride. Some American companies already recover minerals from subsurface brines, Dow Chemical extracts iodine, bromine, calcium, potassium, and other minerals and Michigan Corp. recovers bromine, while iodine is recovered from subsurface brines in Japan, Indonesia, Java, France,England, Germany, and the U.S.S.R. It may be that it would not be economical to produce the brines solely for their mineral content; however, from the viewpoint of the petroleum industry, the real test is how do the economics compare with those under the more orthodox disposal practices.[264]

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[264] Collins, Here's How Producers Can Turn Brine Disposal Into Profit, THE OIL & GAS JOURNAL, July 4, 1966 at 112.

In refineries, as already mentioned, the trend is toward chemical processes to recover useful products from waste water. Chevron Research Co., for example, has developed a waste water treating system which recovers almost pure ammonia and hydrogen sulfide from flow-water streams, converting these pollutants into salable products. Since this system went on steam in Standard Oil Co. of California's Richmond, California refinery in April 1966, the company has calculated a 25 per cent per year return on its investment but if the alternative disposal costs of stripping and incinerating are considered the return becomes 75 per cent per year.[265] Thus with enough research pollution control may be able to pay its own way and even turn a profit.

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[265] Chevron Turns Waste Water Into Profit, THE OIL & GAS JOURNAL, April 1, 1968 at 79.

IX. SUMMARY

The oil and gas industry has in general responded well to the need to get its house in order and prevent pollution from its wide ranging activities. It has some ghosts in its past which come back to haunt it in this day of concern for the environment but it must be remembered that most of these bad practices at the time were considered socially acceptable and in many instances legally permissible. Only recently has the burden of a greatly increased population driven home to us the fact that we do not have an infinite supply of fresh water. The industry must continue to so respond or face even stricter state and federal control.

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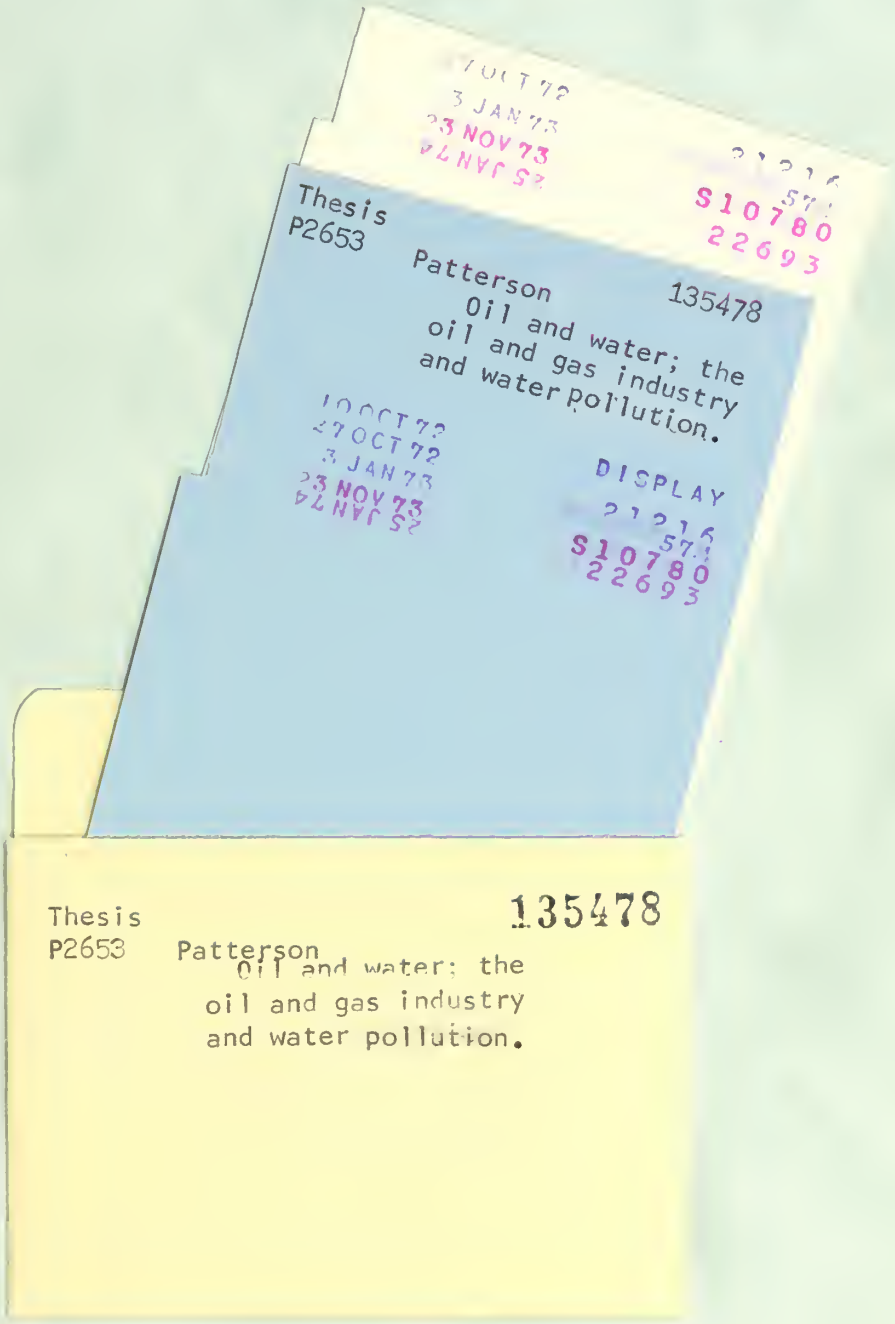
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