Determination of Source Point Outfalls for Produced Water Surface Discharges

A Discussion of Applicable Texas Laws
Effecting Source Point Outfall Determinations in
Whole Effluent Toxicity Standards for
Fresh, Produced Water Discharges
East of the 98th Meridian; Texas

March 14, 2014

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PURPOSE OF REPORT:

This paper is submitted to the Environmental Protection Agency Region 6 (EPA) in Dallas, Texas and to the Texas Railroad Commission (TRRC) in Austin, Texas. Its purpose is to address Texas laws applicable to the determination of source point outfalls in whole effluent toxicity testing standards currently proposed in *EPA, Draft NPDES Permit TXG330000 for Discharges from the Oil and Gas Extraction Point Source to Coastal Waters of Texas And Onshore Stripper Well Category East of the 98th Meridian.*

This document may also be viewed here:
http://www.scribd.com/doc/211049099/Determination-of-Source-Point-Outfalls-for-Produced-Water-Surface-Discharges

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Abstract:

The ownership of groundwater in Texas follows the principles of English Common Law and the rule of capture. The surface estate owns the groundwater and when discharged to the land from which it originated that water is private water. It may be captured through artificial or natural conveyances, held in lakes and ponds and put to beneficial use or sold to third parties by the surface owner. Private groundwater becomes surface water and part of the public domain at such time as it leaves the possession and control of the surface estate.

The authors hold that water produced in conjunction with oil, natural gas and mineral extraction, when treated and put to beneficial use, is similarly aligned with the mineral estate from which it originated. Its ownership is also absolute and private. It can be captured and retained for the benefit of the mineral estate or the surface estate. It can be sold to third parties. That water and the discharge process itself must comply, however, with applicable regulations for oil and gas operations in strict accordance with rules set forth by the Railroad Commission of Texas.

In Texas mineral law the surface estate is subservient to the mineral estate. As long as due regard is exhibited to the surface, it may be used for whatever means necessary to the benefit of mineral extraction. The use of that surface may include artificial and natural conveyances that provide the produced water exposure to sunlight, soil, atmospheric conditions, photosynthesis, the introduction and maintenance of vegetation, trees, grass, reeds, shrubbery, microbe colonization, erosion and sediment barriers, the construction of riffles, stagnant pools, stock ponds and any other methods that aid in abiotic environmental factors that render the produced effluent of better quality.

Only when produced water leaves the direct ownership and control of the mineral estate from which it was developed does it become surface waters of the State.

We contend that for purposes of whole effluent toxicity testing the source point outfall for produced water discharges should be at that point where the produced water leaves the boundaries of the mineral estate and becomes surface water of the State.

Determination of Source Point Outfalls for Produced Water Surface Discharges

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I. INTRODUCTION

Fresh, usable-quality water produced from stripper oil wells (1) located east of the 98th meridian in Texas is discharged to the land surface under regulatory standards set forth by the Environment Protection Agency, Region 6 (EPA) and the Texas Railroad Commission (TRRC). (2) This water is of exceptional quality; it has been discharged to the land surface in Central Texas for nearly 70 years and provides a valuable resource to the biological integrity of the receiving area. This produced water is used extensively for livestock and wildlife watering and has great beneficial use.

The EPA is currently proposing a modification to its existing National Pollution Discharge Elimination System (NPDES) General Permit TXG330000 (2012) that clarifies and incorporates a stricter permitting process for produced water discharges east of the 98th meridian from the Carrizo Wilcox, Bartosh and Reklaw formations. The General Permit modification adds new whole effluent toxicity testing (WET) standards for these specific discharges. (3)

Operators in five Texas counties affected by the proposed General Permit modifications have done extensive WET testing of the produced water effluent at the end of pipe in the oil and water treatment system. Those WET tests pass the Pimephales Promelas (fathead minnow) test species but occasionally fail the Daphnia pulex (water flea) test species. (4)

Extensive Toxicity Identification Evaluations (TIE) and Toxicity Reduction Evaluation (TRE) studies performed on the effluent by several affected operators show there to be no chemical toxins or other contaminates in the produced water stream associated with the mineral extraction or treatment process. (5) (6) Occasional Daphnia pulex mortality at end of pipe sampling is due to bicarbonate and non-carbonate ion composition imbalances in the water. Minor Kaolinite clay feldspars

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1. Definition of Stripper Well; 40 CFR (F)

2. TRRC Statewide Rule 8 (d). See also 14 Texas Administrative Code (TAC) (1) 3.8

3. *EPA, Draft NPDES Permit TXG330000 for Discharges from the Oil and Gas Extraction Point Source to Coastal Waters of Texas and Onshore Stripper Well Category East of the 98th Meridian; Section C-2.*

4. EPA-821-R-02-012; See also 40 CFR 136.3 (2021.0)

5. *Toxicity Characteristic Studies; MCA Petroleum Corp., Arnim Unit and Southwest Muldoon Field Battery 2, December 5, 2013;* Atkins North America, Inc. Environmental Toxicology Laboratory Job No. 100036935.

6. *Produced Water Discharge Toxicity Study, Sellers Lease Service, Thomas Clifton Lease, October 26, 201;* Pastor, Behling and Wheeler, LLC.

produced from the formation itself were found to have impacted the digestive system in some of the Daphnia species but that form of morality is also believed to be charge related ion irregularity. This clay particulate is submicron in size and cannot be filtered economically. Clay is a natural component of the earth's sediments. Pretreating the produced water samples with aeration, additional membrane-type filtration and C-18 solid phase extraction techniques to eliminate total dissolved solids (TDS) related alkalinity had no effect in reducing the mortality of Daphnia pulex species in WET testing. Numerous other test species have been substituted for Daphnia with similar observed mortality rates. Failure of the invertebrate test species in WET testing is a direct result of the natural characteristics of the formation water.

"Depending on the discharge situation, TDS toxicity may not be viewed with the same level of concern as other, more traditional, toxicants. These discharge situations often do not require the conservative safety factors required by other toxicants." And further, "Cost-effective waste treatment control options for a facility, whose effluent is toxic because of total dissolved solids (TDS) or because of specific ion(s), are scarce, at best." (Goodfellow, etal., 1999) (7)

Additional WET testing downstream of the end of pipe always passes both Promelas and Daphnia pulex test species and complies with proposed EPA standards (40 CFR 136.3 2021.0). Natural ion composition imbalances in the produced water come into equilibrium downstream from end of pipe over short periods of time and short distances in the discharge flow regime. This produced water poses no threat to aquatic life in ephemeral creeks in the receiving area once that water becomes surface waters of the State. (8)

These natural changes in the produced water discharge begin to occur due to changes in flow velocities of the water downstream of end of pipe turbulence. As produced water travels down artificial and natural ditches, canals and discharge runways, temperature, sunlight, bicarbonate venting to the atmosphere, photosynthesis, biodegradation of minor organic constituents, leaching and contact with the soil, nutrient enrichment from algae growth and residence time all work to improve the quality of the discharge. Watercourses and stock ponds built by surface owners to capture the effluent for livestock and wildlife watering purposes are

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7. *Major Ion Toxicity in Effluents; A Review with Permitting Recommendations;* William L. Goodfellow, Lawrence W. Ausley, Dennis T. Burton, Debera L. Denton, Philip B. Dorn, Donald R. Grothe, Margarete A. Heber; Teresa J., November, 2009, Environmental Toxicology and Chemistry, Volume 19, Issue 1 (2000), Society of Environmental Toxicology and Chemistry (SETAC)

8. *Aquatic Bio Monitoring in Little Five Mile, West Brook and Big Five Mile Creeks, Fayette and Gonzales Counties, Texas, January 16, 2014;* Mike Shellman, MCA Petroleum Corp. Submitted to the EPA and the TRRC on January 23, 2014

also part of the produced water management process. Those features in the landscape are maintained by the mineral Lessee.

If WET standards are implemented as proposed by the EPA, affected operators will not be able to comply. Operators are given one chance to pass WET tests and if the test does not pass, the discharge must be shut-in (Draft NPDES Permit TXG330000). Additional WET testing, TIE and TRE work cannot be subsequently made to prove persistent toxicity if the discharge is shut-in.

Ephemeral watercourses downstream of the leased mineral premises are considered "surface water" of the State and in those watercourses this fresh, produced water passes both fresh water test organisms in WET standards consistently. This water is a valuable natural resource to the people of Texas. After nearly 70 years of discharging in the area any harm to the environment and the aquatic sustainability of the receiving creeks would have certainly manifested itself by now. In reality, the produced water in these creeks supports an entire ecosystem.

Operators affected by new WET implementation standards seek consideration from the EPA and the TRRC in determination of actual source point outfalls and where that produced water becomes public waters of the State. It is our contention that those outfalls occur at the boundary of the mineral estate from which the produced water was extracted. We submit the legal basis for that claim.

II. Water Quality and Beneficial Use:

Water produced in association with crude oil from shallow wells from the Carrizo Wilcox, Bartosh and Reklaw formations east of the 98th meridian in Central Texas is of exceptional quality. The water typically contains TDS contents ranging from 400 mg/l to 1200 mg/l and chloride content of less than 25 mg/l. Drinking water in Texas typically contains TDS content of 500 mg/l or less as set forth in Texas Water Quality Standards (9) and livestock and wildlife can drink water that contains upwards of 7000 mg/l TDS without adverse, long-term health effects to animals. (10)

Approximately 389,000,000 gallons of usable, high quality, fresh water is discharged to the land surface in Central Texas from shallow oil wells located east of the 98th meridian every year. Ephemeral creek beds that receive the fresh water effluent provide a valuable source of surface water to the State. For eight to nine months out of each year, this produced water is the *only* surface water there is in this part of Texas. Many living creatures and organisms rely on this water. Because of its association with hydrocarbon extraction, this water source is not considered water suitable for human use. After its treatment by the mineral estate from which it was extracted its beneficial use to livestock, wildlife, insects, birdlife and numerous aquatic species that rely on the consistent source of water is vital to the biological integrity of the area. The use of fresh, produced water for livestock precludes the need for water withdrawal from groundwater sources actually suitable for human use. This produced water contributes to the natural hydrologic cycle of the area. It augments downstream tributary flow where mixing occurs during periods of above-normal rainfall and increases naturally low dissolved oxygen levels in stagnant pools.

"Without the large volume of base flows supplied by the discharge water, numerous negative impacts would occur. Many riparian grasses, shrubs and trees that provide creek bank integrity and reduce floodwater velocities would die. The increased sediment load would degrade water quality and the ability of aquatic areas to sustain fish and wildlife. Riparian and upland-associated wildlife, many of which are identified as "species of concern" federally and by the State of Texas, would be harmed without miles of free water and healthy riparian habitats to depend on." (11)

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9. 30 TAC 290.0

10. *Evaluation of Drinking Water Quality for Livestock,* Soltanpour, P.N., and W. L. Raley. (1982) Colorado State University Extension Service

11. *Ecological Impacts of Freshwater Discharge from the Reklaw Formation***;** Keith Olenick and Jay Kane. Landmark Wildlife Management, LLC. Submitted to the Environmental Protection Agency, Region 6 (EPA) and to the Texas Railroad Commission (TRRC) on January 23, 2014

Fifty four percent of Texas counties are currently classified as in a moderate to severe drought stage and several of those counties lie east of the 98th meridian in Central Texas. Only 64% of the available surface water reservoir capacity in Texas is full. (12) The drought in Texas is so severe that on February 14, 2014, Texas Gov. Rick Perry renewed the Emergency Disaster Proclamation certifying that exceptional drought conditions pose a threat of imminent disaster in specified counties in Texas. (13) The stress that current drought conditions have placed on Texas surface water is critical.

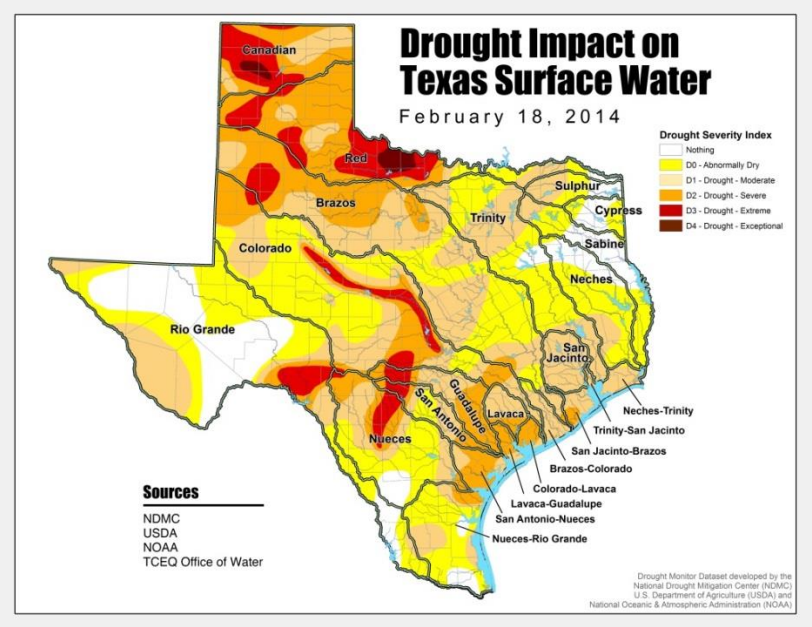

Figure 1

The oil and natural gas industry in Texas uses approximately 3% of all water consumed and used in Texas each year. It renders very little of its flow-back frac water or produced water usable and beneficial to the environment. There are currently seven bills before the 83rd Legislature of the State of Texas encouraging the energy industry in Texas to recycle and, or render its wastes usable and beneficial in the State.

Producers discharging fresh, produced water to the surface east of the 98th meridian in Central Texas have rendered its produced water usable and of great beneficial use to the people of Texas for nearly 70 years.

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12. Texas Water Development Board

13. *Proclamation by the Governor of the State of Texas*; The Honorable Governor, Rick Perry to Nadita Berry, Secretary of State; February 14, 2014

III. Surface Water Law in Texas

Surface water rights in Texas have historically evolved from Mexican and Spanish influence in the early 1800's to riparian doctrines of English common law. Laws governing surface water use are complex and ever changing within the judicial and legislative system in Texas. *Regulation* of surface water in Texas is also ever evolving, as are the bodies of water and types of watercourses that should be regulated by various authorities. Water in Texas, as in much of the arid West, is generally managed by crisis. Sustained drought in Texas has placed surface water management in a state of crisis. A discussion of surface water laws are beyond the scope of this paper. We instead focus on current definitions, permitting and regulatory jurisdiction over Texas surface waters.

There are basically two forms of water recognized in the State: groundwater and surface water (Horton 2013). (14) Groundwater will be discussed in Section IV.

Surface water can be defined as tributary water, or affluent in a natural watercourse in many well established watersheds and river basins in Texas. Tributary water that exists in natural watercourses in Texas is considered surface water and of the public's domain. "State" water is regulated by the Texas Water Code (TWC) and the Texas Commission on Environmental Quality (TCEQ) through Texas Surface Water Quality Standards. (15) (16)

Diffused water is a form of surface water but significantly different than surface water. Diffused water is generally defined as storm water runoff, or snow-melt, that *sheds* across the surface estate and does not become surface water until it reaches "some bed or channel in which water is accustomed to flowing."(17) Furthermore, diffused surface water belongs to the owner of the land on which it gathers as long as it remains on that land prior to its passage into a natural watercourse. (18) Diffused water can be captured by the surface estate from which it crosses and used without permitting and regulatory restraints except for the size of lakes and reservoirs. (19)

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14. *Surface Water, State Bar of Texas, Water Rights 10;* Shana L. Horton, 2013. We rely heavily in this section and throughout the paper on Ms. Horton's excellent paper regarding surface water.

15. TWC 11.021

16. 30 TAC 307

17. *City of Princeton v. Abbott*, 792 S.W.2d 161, 163 (Tex. App.–Dallas 1990, *writ denied*)

18. *Domel v. City of Georgetown*, 6 S.W.3d 349, 353

19. TWC 11.142, See also 30 TAC 297.21

Surface water in public tributaries or natural watercourses is State water. (Horton 2013)

A concise understanding of the definition of Texas surface water cannot be made without a similar understanding of the definition of "watercourses." (20) (21) More precisely, it is important to separate public tributaries, or natural watercourses that contain appropriated water of the State from man-made, artificial conveyances such as canals and ditches on the surface built to convey *private* water. Natural gullies and depressions in the surface that have received discharged produced water over the past 70 years now have defined banks. Riparian vegetation of many varieties, including hardwood trees, grows along those banks because of consistent, fresh water flows. Those gullies now appear natural but in reality they too are man-made. Produced water owned by the mineral estate may also be conveyed within the boundaries of the mineral lease(s) by artificial means. It does not matter whether it is in a pipe, ditch, canal or ravine, it is still private water. (22) (23)

"If a body of water was artificially created, or if water never accumulated in the area before modifications were made to the landscape for the purpose of capturing the water, the artificial conveyance or impoundment system is probably not a watercourse and the water within it is <u>not</u> State owned." (Galant and Johnson 2009) (24) (25)

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20. 30 TAC 291.7 (61)

21. *Hoefs v. Short;* 114 Tex. 501, 273 S.W. 785 (1925).

22. *State v. Hidalgo County Water Control and Improvement District No. 18, et. al.*, 443 S.W.2d 728, at p. 748, 750-753.

23. *Historical Development of Texas Surface Water Law: Background of the Appropriation and Permitting System;* Glen Jarvis, 2008. We rely heavily on this excellent paper as to private irrigation acts and precedence relative to the private ownership of artificial conveyances of groundwater.

24.. *Exempt Uses of Groundwater and Surface Water*, Oil, Gas and Energy Resources Law Section Report, State Bar of Texas, Vol. 33, No, 3; Carl Galant and Russell Johnson (March 2009)

25. *Citizens Against Landfill Location v. TCEQ;* 169 SE 3rd 258

IV. Groundwater Law in Texas

Groundwater is not surface water. (Horton 2013)

Groundwater is considered the real property of the surface estate and generally follows principles of English common law and the fundamental rule of capture. The surface owner owns the very corpus of groundwater. (26) For over 100 years Texas has traditionally upheld the doctrine of absolute ownership of groundwater by the surface estate. (27)(28) Save some isolated instances in which underground water is subject to underflow characteristics similar to that of an underground river, groundwater ownership and control is absolute and protected by the 5th Amendment of the Constitution of the United States.

Groundwater extracted from the subsurface is not incidental water to the surface; it is "developed" water. When discharged to the land surface, groundwater meets the definition of "outside sources not ordinary in the watercourse." Furthermore, "When groundwater is used to augment a natural watercourse it is through artificial means and that water is also private water. When that groundwater is captured on the surface it is privately owned and not public water owned by the State." (Jarvis 1998) (29) (30)

The surface estate may convey groundwater from which it was developed down artificial ditches, canals, waterways or pipes into ponds or lakes to use for livestock watering, aquatic agriculture, irrigation or for sale to third parties. For example; thousands upon thousands of source water wells are drilled in the Carrizo Wilcox Groundwater Aquifer for drilling and frac water in the prolific Eagle Ford shale play of South Texas. Those source wells require no permitting by the TCEQ because the use of unlimited amounts of groundwater is a right afforded the mineral Lessee by the mineral estate. That groundwater is conveyed to large holding ponds and lakes from one lease to another by artificial means (e.g. pipelines and ditches). It may be sold or used on other adjoining leases. To comply with provisions in the mineral lease and restoration of the surface estate many of those ponds and lakes are eventually de-watered prior to closing. That groundwater is discharged to the land surface. Much of it ultimately joins natural watercourses off the leased premises and

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26. Texas Water Code 36.002

27. *Houston & T.C. Railway Co. v. East;* 98 Tex, 146; 81 SW 279 (1904)

28. *Acton v. Blundell,* 12 M.&W. 234, 152 E.R. 1223 (Ext. 1843)

29. *Texas Ground and Surface Water Law Before and After House Bill (HB) 1*, Presented at the 8th Annual Texas Water Law Conference, Austin, Texas as part of the program "Overview of Texas Water Law) Glen Jarvis (1998)

30. *Harrell v. H.F. Vahlsing,* 248 SW 2nd 762

becomes Texas surface water.

"Under the rule of capture, and common law, the surface landowner may reduce to possession all the percolating groundwater that he can and use it as he wishes." (Horton 2013) (31) (32)

Groundwater is not "diffused water" that is incidental with natural occurrences such as storm water runoff or snow melt. Both groundwater and diffused water can be captured, even in depressions in the surface topography; both belong to the surface owner. That water is private water as long it remains in the possession of the surface estate. (33)

"Once the water (groundwater) has escaped the owner's physical control and re-joins (joins) a watercourse his rights to the water terminate. He no longer owns the corpus of the water, only the right to use." (Jarvis 1998) (34)

Title to groundwater is absolute. "Ownership and rights of the owners of the land and their lessees and assigns in groundwater are recognized by the State and nothing in the Texas Water Code shall be construed as depriving or divesting the owners or their lessees and assigns of the ownership or rights, (subject to rules promulgated by a groundwater conservation District)." (Wagner 1999) (35)

When discharged to the land surface, groundwater is reduced to the possession and control of the surface estate from which it was derived. Groundwater is private water and does not become surface water of the State until such time as it leaves the control and possession of the surface estate.

31.*Houston & Tex. Central Ry. Co. v. East*; 98 Tex. 146, 149, 81 S.W. 279, 281 (1904)

32. *City of Corpus Christi v. City of Pleasanton*, 154 Tex. 289, 292–295, 276 S.W. 2d 798, 799–803 (1955)

33. 30 TAC 297.3

34. *South Texas Water Co. v. Beri; 247 SW 2nd 268*. See also TWC 11.046

35. Groundwater (Background and Recent Cases), Texas Water Law Institute, Water for the Millennium; Bruce Wagner, Bickerstaff, Heath & Smiley, LLP. October 1, 1999

V. PRODUCED WATER AND MINERAL LAW IN TEXAS

Groundwater is private water.

The authors hold that water produced in association with the extraction of minerals is fundamentally the same. It is private water. If that produced water requires disposal, or re-injection, the cost of eliminating that waste lies entirely on Lessee of the mineral estate. If that water is rendered usable and beneficial, and potentially sellable to third parties, the corpus of that water remains with the mineral estate from which it was extracted. Produced water, like groundwater, is analogous to fundamental principles of English common law and rule of capture. Groundwater ownership is absolute and joined with the soil and the surface estate. In a like manner, produced water extracted from oil and gas operations is joined with the mineral estate and title to that water is vested in the mineral estate. Produced water is private water.

To confirm the comparison of produced water title to that of groundwater, we rely on a recent Texas Supreme Court ruling in *Edwards Aquifer Authority v. Day*, 274 S.W.3d 755 (Tex. App.-San Antonio 2008) where the absolute ownership of groundwater by the surface estate was confirmed. In doing so the Texas Supreme Court categorically stated "A landowner owns the groundwater under his land, in place, as a property right that cannot be taken for public use without adequate compensation guaranteed by the takings clause of the Texas Constitution."

Based on the *Edwards AA v. Day* case, "No one would now seriously argue that oil and gas does not belong to the landowner by virtue of his ownership of the soil itself. Nor can anyone now seriously contend that groundwater should be treated any differently." Oil, gas, and other minerals, including associated water, is corollary with groundwater. (Jones and Little 2010) (36) (37) (38) (39).

Confirming that the title to produced water lies entirely with the mineral estate, we also look to a recent bill passed by the 83rd Legislature of the State of Texas, HB 2767, and review the amendments enacted by the bill that previously existed in the Natural Resource Code 1 (d) (3) 122.0. (40)

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36. *The Ownership of Groundwater in Texas: a Contrived Battle for State Control of Groundwater;* Marvin W. Jones and Andrew Little, Baylor Law Review (August 2010)

37. *Coastal Oil & Gas Corp. v. Garza Energy Trust,* 268 S.W.3d 1 (Tex. 2008)

38. *Halbouty v. Texas Railroad Commission;* 163 Tex. 417, 357 S.W.2d 364 (1962)

39. *Atlantic Ref. Co. v. Texas Railroad Commission;* 162 Tex. 274, 346 S.W.2d 801 (1961)

40. *Review of Texas (83) (R) (2013) HB 2767;* Phil King, Energy Resources Committee Report

Chapter 122 was added to the Texas Natural Resources Code by the Texas Legislature to remove barriers to the beneficial re-use of produced water and to encourage recycling by the oil and gas industry. The law took effect on September 1, 2013 and addressed the legal ambiguity about produced water's ownership. "The statute transfers the ownership and liability of produced water from the producer [or, driller] to the recycler and then on to the water purchaser or end user." (Halldorson 2014) (41)

The relationship between the surface estate and the mineral estate is well established in Texas oil, gas and mineral law. The surface estate is subservient to the more dominate mineral estate.

Produced water is developed water and when it flows or is pumped, lifted, staged, jetted or augured out of the subsurface, it is reduced to the possession of the mineral estate. Once on the surface from which it was extracted the Lessee of the mineral estate has the unencumbered right to use the surface estate to treat that water, hold it, store it, convey it, sell it, dispose of it or re-inject it as may be required, to the benefit of the mineral estate. The mineral estate may use produced water for the benefit of its own cattle. It may enter into use agreements with surface owners when the surface estate and the mineral estate are severed. It is private water.

Typically an oil, gas and mineral lease in Texas contains the following introductory language as the basis for agreement between Lessor of the mineral estate and Lessee:

"This Agreement grants, leases and lets exclusively unto Lessee for the purpose of investigation, exploring, prospecting, drilling and mining for and producing oil, gas (and all other minerals), laying pipe lines, building roads, tanks, power stations, telephone lines and other structures thereon and on, over and across lands owned or claimed by Lessor, adjacent and contiguous thereto, to produce, save, take care of, treat, transport, and own said products and housing its employees, the following described land," to which a surveyed, metes and bounds description of the subject land is attached and made a part thereof. (42)

Without the express right to ingress and egress, and the unqualified use of the surface, the mineral estate could not be developed and would have no value. The use

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41. Before the 24th Annual Symposium of the Produced Water Society, Houston, Texas; Brent Halldorson, Speaker

42. *The Law of Oil and Gas Leases, Second Edition, 1983; Earl A. Brown, Jr. Member, Texas, Oklahoma, Montana and New York Bar Associations;* Mathew Bender Publishers

of the surface must be reasonable, however, (43) and due regard must be shown for the surface estate. (44)

We hold that the right to use the surface estate by the mineral Lessee includes the erecting of tanks and "other receptacles" (45) and the building of skim pits, retention ponds and stock ponds to retain the water for beneficial use, (46) and to build, construct and maintain artificial discharge runways, canals, watercourses and ditches to aid in the treatment of the produced water stream after it leaves the end of pipe. Artificial conveyances and stock ponds are part of the produced water management practice.

Produced water discharged to the surface from which it originated is private water owned in its entirety by the mineral estate. It is fundamentally the same as groundwater owned by the surface estate. It is not diffused water. It is not surface water of the State. It does not become surface water of the State until such time as it leaves the leased mineral estate, and the possession and control of the Lessee, and enters, or re-enters a natural watercourse.

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43. *Getty Oil Co. v. Jones*, 470 S.W.2d 618, 621 (Tex. 1971)11.

44. *Texas Genco, LP v. Valence Operating Co.*, 187 S.W.3d 118, 125 (Tex. App.-Waco 2006, pet. denied)

45. *Magnolia Petroleum Co, v. Howard*; 182 Okla 101 77 (1938);

46. *LeCroy v. Barney* (8th Circuit 1926) 12 F2d 363, which holds that an earthen storage tank is a structure within the provisions of the oil, gas and mineral lease, The Law of Oil and Gas Leases, Second Edition, 1983; Earl A. Brown, Jr. Member, Texas, Oklahoma, Montana and New York Bar Associations; Mathew Bender Publishers

VI. Conclusions

In Guelker et al. v. Hildago County Water Improvement District (47) the court reaffirmed that the title of water transferred by means of artificial conveyance, in this case an irrigation ditch, belonged to the owner from which the water originated. That court went on to say that the use of such water was not subject to regulation by the Board of Engineers, a predecessor to the Texas Natural Resource Conservation Commission (TNRCC), a predecessor to the TCEQ. (Jarvis 2008)

We make no comment as to the applicability of that case to this discussion and instead recognize the absolute jurisdiction of the TRRC to regulate all activities associated with the exploration, development and production of oil and natural gas in Texas, (48) particularly the prevention of pollution. (49)

We rely on the definition of source point outfall set forth in the Texas Administrative Code (50) "The point or location where waterborne waste is discharged from a sewer system, treatment facility or disposal system into or adjacent to water of the State."

For fresh water produced from the Carrizo Wilcox, Bartosh and Reklaw formations east of the 98th meridian, the definition of "treatment facility" should include all the land(s) identified in the legal description of the lease documents and provisions of those documents associated therewith.

To insure compliance with Section 301 (a) of the Clean Water Act (CWA) (51) and CWA 301, 304, 306, 401 and 403 protecting the waters of the United States, as well as Texas Surface Water Quality Standards protecting the waters of Texas, (52) we hold, for the purpose of WET standards, the source point discharge outfall for produced water discharges should be defined as the lease boundary. That is the point at which produced water leaves the ownership and control of the mineral estate and becomes surface water of the great State of Texas.

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47. *Guelker v. Hidalgo County Water Improvement District No. 6;* 269 S.W. 2nd 551, 555 (Tex.Civ.App.-San Antonio 1954)

48. TCRC 3; 26 TWC; 27 TWC; 16 TAC

49. 16 TAC 4.0

50. 30 TAC 305.2 (25)

51. 33 USC 1311 (a)

52. 30 TAC 307

Photograph by Catherine Shellman

VII. References

1. Aquatic Biology Reconnaissance Studies for Little Five Mile, Creek, West Brook Creeks and Southwest Muldoon Oil Field Discharge Canals, Fayette County, Texas; David L. Buzan, Aquatic Ecologist, Atkins North America Corp, Austin, Texas; (2014)

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