

Updated Survey of Texas Law on Horizontal Drilling and Subsurface Trespass

By W. Ray Whitman and Jasper Mason

A trespass may be committed on, beneath or above the surface of the earth.¹ While at one time it was feasible to think about trespass in terms of impermeable lines extending across swaths of land and vertically above and below the earth, such a circumscription does not fit neatly into present-day reality. Recognizing this reality, the Texas Supreme Court concluded that the maxim “*cujus est solum ejus est usque ad coelum et ad inferos*” – land ownership extends to the sky above and the earth’s center below – “has no place in the modern world.² ... The law of trespass need no more be the same two miles below the surface than two miles above.”³

Trespass is a creature of common law.⁴ Thus the principles and rules delineating the law of trespass have been developed through the judgments of courts recognizing its application through usage and custom. With technological innovations, shifts in public policy and new fact patterns come the opportunity for Texas courts to examine anew the harm that occurs from the intrusion onto the property of another. In recent cases, the Texas Supreme Court has begun to tackle head-on the key question of whether trespass is a viable claim when applied to specific subsurface oil and gas extraction practices.

While there are many ways to organize the court’s application of trespass law to surface and subsurface activities, this article will focus on two main themes: what

we know and what questions remain unanswered.⁵ The goal is to use hypotheticals as a road map for identifying where a client’s practices shift from clearly lawful into a realm of uncertainty.

I. Background Concepts

A. What are the legal theories that address harm caused by intrusion onto or into another’s property?

Trespass is only one of several theories available to address harm. Nuisance law may apply if a condition substantially interferes with the use and enjoyment of land by causing unreasonable discomfort or annoyance to persons of ordinary sensibilities.⁶ Property owners have alleged nuisance claims when the intrusion is caused by foul odors, dust, noise and bright lights.⁷ Negligence law may also apply where an intrusion causes harm to property.⁸

If the alleged harm from the unlawful intrusion is drainage of oil and gas (regardless of the method used to cause the drainage, such as hydraulic fracturing), then the affected

¹ *City of Arlington v. City of Fort Worth*, 873 S.W.2d 765, 769 (Tex. App. – Fort Worth 1994, writ dismissed w.o.j.).

² *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 11 (Tex. 2008) (internal quotations and citation omitted) (hereinafter “Garza”).

³ *Id.* at 11.

⁴ *Id.* at 36 (concurrency) (“Trespass is a court defined doctrine. It falls squarely on this Court’s shoulders to decide what is actionable.”).

⁵ Indeed, there are a number of articles providing insights into the same cases and issues raised in this paper, including Bruce M. Kramer, *Horizontal Drilling and Trespass: A Challenge to the Norms of Property and Tort Law*, 25 *Colo. Nat. Resources Energy & Env’tl. L. Rev.* 291 (2014); and Owen L. Anderson, *Subsurface “Trespass”: A Man’s Subsurface is Not His Castle*, 49 *Washburn L.J.* 247 (2009-2010).

⁶ See *Natural Gas Pipeline Co. of Am. v. Justiss*, 397 S.W.3d 150, 153 (Tex. 2012).

⁷ *Schneider Nat. Carriers, Inc. v. Bates*, 147 S.W.3d 264, 269 (Tex. 2004).

⁸ See, e.g., *Seminole Pipeline Co. v. Broad Leaf Partners, Inc.*, 979 S.W.2d 730, 738 (Tex. App. —Houston [14th Dist.] 1998, no pet.).

owner may be able to engage in self-help by drilling a well to offset drainage from its property.⁹ The mineral owner of the drained subsurface may also have a claim against its own lessee for breach of the implied covenant to protect against drainage and the implied covenant to develop mineral rights with reasonable diligence.¹⁰

B. What is trespass?

“Trespass to real property is an unauthorized entry upon the land of another, and may occur when one enters – or causes something to enter – another’s property.”¹¹ It encompasses three elements: (1) entry (2) onto the property of another (3) without the property owner’s consent or authorization.¹² The burden of proving these elements, including unauthorized entry, lies with the plaintiff.¹³

Although there is no pattern jury charge for a “trespass to real property” cause of action in Texas, courts have upheld use of the following instructions.

Did [defendant] trespass on [plaintiff’s] property?

“Trespass” means an entry on the property of another without having consent of the owner. To constitute a trespass, entry upon another’s property need not be in person but may be made by causing or permitting a thing to cross the boundary of the property below the surface of the earth. Every unauthorized entry upon the property of another is a trespass, and the intent or motive prompting the trespass is immaterial.

Answer yes or no.¹⁴

“Trespasser” means one who enters on the property of another without having consent of the owner. To constitute a trespass, entry upon another’s property need not be in person but may be made by causing or permitting a thing to cross the boundary of the premises. Every unauthorized entry upon land of another is a trespass, and the intent or motive prompting the trespass is immaterial.

⁹ See *Garza*, 268 S.W.3d at 14.

¹⁰ See *id.* at 14, 17-21.

¹¹ *Env’tl. Processing Sys., L.C. v. FPL Farming Ltd.*, 457 S.W.3d 414, 422 (Tex. 2015) (citing *Barnes v. Mathis*, 353 S.W.3d 760, 764 [Tex. 2011]) (hereinafter “EPS”) [No. 12-0905, February 6, 2015].

¹² *Id.*

¹³ *Id.* at 423 (rejecting plaintiff’s argument that consent is an affirmative defense to be proved by the defendant).

¹⁴ *Id.* at 417.

Did [defendant] trespass causing damage to [plaintiff’s] property on the date of the fire that is the basis of this suit?¹⁵

C. Who has standing to sue for trespass?

Owners of the surface estate and mineral estate may have standing to sue for injury to property, as may mineral lessors.¹⁶ In *Coastal Oil and Gas Corp. v. Garza Energy Trust*,¹⁷ the Texas Supreme Court specifically addressed the question of whether a mineral lessor who has a royalty interest and the possibility of reverter but no right to possess, explore for or produce the minerals has a possessory interest sufficient to support a claim for trespass or an “injury to the right of possession.”¹⁸ The court answered in the affirmative. Analogizing the lessor’s reversion interest in the minerals to a landlord’s reversion interest in the surface estate (a cognizable legal claim¹⁹), the court held that this interest gave the lessor standing to sue for trespass, provided he could prove actual injury.²⁰

D. What damages are available?

The answer to this question depends on whether the trespass was committed intentionally, negligently, accidentally or through an abnormally dangerous activity.²¹ An innocent trespasser, one who enters upon the property of another with the good faith and honest belief that he or she had the lawful and legal right to do so, may be held liable only for the actual damages sustained.²² Actual damages are the amount necessary to make the property owner “whole” and include such amounts as “the cost to repair any damage to the property, loss of use of the property, and loss of any

¹⁵ *Watson v. Brazos Elec. Power Coop., Inc.*, 918 S.W.2d 639, 645-46 (Tex. App. – Waco 1996, writ denied).

¹⁶ See, e.g., *Seber v. Union Pac. R. Co.*, 350 S.W.3d 640, 653 (Tex. App. – Houston [14th Dist.] 2011) (holding that property ownership is a necessary element of a trespass claim; an easement will not suffice); *BP America Prod. Co. v. Marshall*, 288 S.W.3d 430, 455 (Tex. App. – San Antonio 2008), rev’d on other grounds; 54 Tex. Sup. Ct. J. 978 (Tex. 2011), rehearing denied (Jul 01, 2011), rehearing denied (Aug 19, 2011) (mineral estate owner).

¹⁷ *Garza*, 268 S.W.3d at 4, 9-10.

¹⁸ *Id.* at 10.

¹⁹ *Id.* at n. 24 (citing *Gulf, Colo. & Santa Fe Ry. v. Settegast*, 79 Tex. 256, 15 S.W. 228, 230 (1891)).

²⁰ *Id.* at 11 (emphasizing that actual injury must be shown; thus, nominal damages are not available).

²¹ *Coinmach Corp. v. Aspenwood Apartment Corp.*, 417 S.W.3d 909, 920 (Tex. 2013).

²² *Id.* at 921.

expected profits from the use of the property.”²³

An intentional trespasser, however, may be liable for actual damages and exemplary or punitive damages. This generally requires a heightened burden of proof such that exemplary damages are generally recoverable only when the harm results from fraud, malice or gross negligence.²⁴ Where the only injury is to property, Texas courts express strong disapproval of mental anguish damage awards.²⁵

If an alleged trespasser’s entry upon land was originally lawful but the entrant subsequently abused the privilege by conduct that was itself trespass (e.g., exceeding an easement), the trespasser will be held liable not for the original lawful entry but only for the later misconduct.²⁶

Texas law also permits a landowner to waive the claim of trespass and sue for the reasonable value of the use and occupation of the land under assumption – this option is pertinent to a geophysical trespass when there may not be any actual damages to one’s property.²⁷

II. Hypothetical Number One: Geophysical Survey Trespass

Envision three contiguous tracts of land, Tracts A, B and C. The owner of B, the middle tract, owns the full fee estate and refuses permission to a geophysical surveyor to enter the land. The surveyor sets the vibroseis truck (or the shot hole with dynamite) on Tract A and sets geophones to receive the sound signals on the surface of Tracts A and C.

Three types of invasive “entry” of Tract B can be imagined. First, the survey will release waves of sonic energy into the ground, and the waves will travel through the subsurface of all three tracts. Second, the geophones will receive reflections of the sound waves. The data from the geophones, when processed with mathematical algorithms on computers, will create visual images of the subsurface beneath all three tracts; even though there are no geophones on the surface of Tract B, images of lesser quality of the subsurface of Tract B will still be available for commercial use. Third, the wave energy might lead to

²³ *Id.*

²⁴ *Id.* at 922; Tex. Civ. Prac. & Rem. Code § 41.003(a).

²⁵ See, e.g., *Seminole Pipeline*, 979 S.W.2d at 757.

²⁶ *W.H. Simpson v. Phillips Pipeline Co.*, 603 S.W.2d 307 (Tex. App. – Beaumont 1980, writ ref’d n.r.e.) (rejecting the doctrine of “trespass ab initio”).

²⁷ *Villarreal v. Grant Geophysical, Inc.*, 136 S.W.3d 265, 269 (Tex. App. – San Antonio 2004, pet. denied).

claims of damage to the foundation of a building or to a water well on Tract B.

How does the law currently treat each of these three potential claims by Owner B to enjoin the survey or seek damages from its conduct?

A. The sonic invasion

As an analog, first consider a different kind of survey used in mineral exploration: the aeromagnetic survey. As the name suggests, this survey is conducted with aircraft equipped to detect anomalies in the earth’s magnetic field. We have found no reported cases on trespass and aeromagnetic surveys, but the lack of cases suggests that surface owners have accepted that a plane conducting an aeromagnetic survey appears like any other aircraft over the surface, and they do not perceive it as a trespass.

One might argue, however, that the magnetic measurement is passive (reading the strength of the magnetic field as it is detected in the sky) and therefore different from the geophysical survey in which the surveyor generates the sonic waves underground. Has this distinction mattered? In Texas, it has not.

Seismic testing falls under the rubric of “geophysical trespass,” or the “wrongful entry on land for the purpose of making a geophysical survey on land.”²⁸ Geophysical survey methods include seismic, gravity, magnetic, electrical and geochemical.²⁹

Thus far, Texas courts have taken the position that without an invasion of the surface estate or injury to the property of the complaining landowner, there can be no subsurface trespass for geophysical surveys. This is an area, however, where at least the Court of Appeals of Texas, Fourth District, San Antonio, in *Villarreal v. Grant Geophysical, Inc.*, noted Texas law “has not kept pace with technology.”³⁰ Indeed, this approach to seismic testing would appear to be inconsistent with the tenets that the right to explore for oil, gas and other minerals is a valuable property right accompanying the right of mineral ownership.³¹ Yet, as the Court of Appeals also

²⁸ 8-G H. Williams & C. Meyers, *Oil and Gas Law G.*

²⁹ *Id.*

³⁰ *Villarreal*, 136 S.W.3d at 270.

³¹ *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 590 (5th Cir. 1957) (Cowden I) (citing *Currie v. Harris*, 172 S.W.2d 404 (Tex. App. – Austin 1943, judgment affirmed); *Stanolind Oil & Gas Co. v. Wimberly*, 181 S.W.2d 942 (Tex. App. – El Paso 1944, no writ); *Wilson v. Texas Co.*, 237 S.W.2d 649 (Tex. App. – Fort Worth

observed, “[a]s an intermediate court we must follow established precedent,”³² which it understood to require actual physical entry of the surface estate as an integral component of a geophysical trespass claim.

In *Villarreal*, the plaintiffs, mineral estate owners, sued Grant Geophysical, a company collecting three-dimensional seismic survey data.³³ Grant had obtained permission from both surface and mineral estate owners prior to collecting data.³⁴ The Villarreals, however, declined to grant permission to survey their mineral estate.³⁵ Accordingly, the survey was reconfigured to avoid unpermitted areas.³⁶ Grant also took steps to delete information about the Villarreals’ tract from data sets provided to third parties.³⁷ Nevertheless, it was unavoidable that the seismic testing would capture some information about the Villarreals’ mineral estate.³⁸ Treating this as an invasion of their property, the Villarreals filed suit, claiming that Texas law recognizes subsurface trespass in the oil and gas context and that seismic testing of a mineral estate constitutes subsurface trespass.³⁹ The court declined to so hold absent evidence of physical invasion of at least some of the surface estate.⁴⁰ Thus, there was no trespass.

In reaching this conclusion, the court relied on the precedent set by *Kennedy v. General Geophysical Company*.⁴¹ In *Kennedy*, the surface owner sued for an alleged trespass in the form of vibrations caused by explosions of dynamite in conducting geophysical operations in close proximity to his property.⁴² Following a bench trial, the court concluded that there was no evidence of any trespass on the plaintiff’s land and no evidence of any damage to the physical structure either of the surface or the subsurface thereunder.⁴³ Vibrations themselves were insufficient to give rise to a trespass. “Trespass may [] be committed by shooting onto or over the land, by explosions, by throwing inflammable

substances, by blasting operations, by discharging soot and carbon, but not by mere vibrations.”⁴⁴

The court further found that the record supported the trial court’s findings that the geophysical surveyors were not negligent in their operations; on no occasion did the surveyors set up a receiving set so near the plaintiff’s land that a straight line drawn on the surface of the ground from the one shot-point from which waves were to be received by the receiving set crossed any part of the plaintiff’s land.⁴⁵ Based on these findings, the court affirmed the judgment of the trial court and denied the plaintiff’s request for relief.⁴⁶

B. The taking of information

In certain situations, the information gathered about the subsurface of a tract is highly valuable if the owner is able to keep it secret. Thus, oil companies famously “tight-hole” the results of drilling, logging and testing an initial exploration well in an area. Some even regard their modeling of hydraulic fracturing work as commercially sensitive. So the owner of Tract B might feel it beneficial not to allow the geophysical surveyor to develop information about B’s subsurface. Is the unpermitted gathering of information about an owner’s subsurface a trespass?

In Texas, *Villarreal* holds it is not. Compare this with the position taken by the Fifth Circuit in *Phillips Petroleum Co. v. Cowden*⁴⁷ (*Cowden I*) and *Phillips Petroleum Co. v. Cowden*⁴⁸ (*Cowden II*), which took a more protective stance.⁴⁹ In that series of appeals, the court held that “the mineral estate owner may sue a geophysical trespasser for trespass on the mineral estate as a result of a reflection seismography survey on lands containing the estate” and “permission obtained from the owner of the surface rights only could not authorize the trespass.”⁵⁰ The court in *Villarreal* distinguishes these cases on the grounds that *Cowden* involved a physical use of the surface overlying the mineral estate, whereas no such use was made of the surface above the Villarreals’ mineral estate.

1951, writ ref’d n.r.e.).

³² *Villarreal*, 136 S.W.3d at 270.

³³ *Id.* at 267.

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.* at 267-68.

³⁸ *Id.* at 267.

³⁹ *Id.* at 268.

⁴⁰ *Id.* at 270.

⁴¹ 213 S.W.2d 707 (Tex. Civ. App. – Galveston 1948, writ ref’d n.r.e.).

⁴² *Id.* at 708.

⁴³ *Id.* at 709.

⁴⁴ *Id.* at 711.

⁴⁵ *Id.* at 713.

⁴⁶ *Id.*

⁴⁷ 241 F.2d 586 (5th Cir. 1957).

⁴⁸ 256 F.2d 408 (5th Cir. 1958).

⁴⁹ See, e.g., *Cowden I*, 241 F.2d at 590 (“There can be no doubt that in Texas the right to explore for oil and minerals is a valuable property right that can be legally protected.”).

⁵⁰ 256 F.2d 408, 409 (5th Cir. 1958).

C. Damage to subsurface improvements

In the event of injury to a surface or subsurface improvement, a property owner may have a claim for geophysical trespass.⁵¹

III. Hypothetical Number Two: Drilling And Completing Wells

Continue to envision Tracts A, B and C. As before, the owners of A and C have consented to drilling and production operations; the owner of B has not. The operator elects to place the drill pad on Tract A.

Here, four scenarios of invasion can be considered. First, the well is drilled directionally and is completed for production in Tract B. Second, the operator drills a vertical well on Tract A but hydraulically fractures the zone to be produced so that the fractures and proppants extend into B's estate. Third, the operator encounters difficulties while drilling the vertical well, and the wellbore deviates into B's estate before returning to be completed for production in Tract A. No part of the completion is in Tract B, and the wellbore through Tract B is solely in unproductive strata. Fourth, the well is drilled horizontally, with the well kicking off while still in Tract A, traversing Tract B and ending near the distant end of Tract C. The well has production tubing installed throughout the length of the horizontal section, but the tubing is perforated only in Tracts A and C, leaving that in Tract B's section unperforated.

How does the law treat each of these scenarios?

A. Bottomhole located on Tract B

The drilling of a directional well that bottoms out beneath Tract B is a trespass.

The case most often cited for the proposition that subsurface trespass is an actionable offense is *Hastings Oil Company v. Texas Company*.⁵² In that case, the Texas Supreme Court confirmed the authority of a trial court to enjoin a driller from completing a well and to order a directional survey to determine the well's bottomhole location.⁵³ Implicit in this analysis is the understanding that such directional drilling constitutes trespass.⁵⁴

⁵¹ Villarreal, 136 S.W.3d at 270.

⁵² 149 Tex. 416 (1950).

⁵³ Id. at 429, 431.

⁵⁴ Id. at 428-29.

It was the Legislature, however, that made explicit that which the court did not. The Statewide Spacing Rule (Statewide Rule 37) provides that “[w]ells that were deviated, whether intentionally or otherwise, prior to April 1, 1949, and are bottomed on the lease where permitted, are legal wells,”⁵⁵ but “[a] well that is either bottomed off the lease, deviated after April 1, 1949, drilled in direct violation of a specific condition or limitation placed in the Rule 37 permit, or is in violation of a specific commission order, is an illegal well and it shall not be permitted.”⁵⁶ Thus, absent a permit granting an exception to Statewide Rule 37, directionally drilled wells are illegal.

We have not located any case since *Hastings* alleging a trespass claim in lieu of alleging a violation of Statewide Rule 37.

B. Creating fractures in Tract B

According to the Texas Supreme Court, while hydraulic fracturing may constitute subsurface trespass, the rule of capture precludes a finding of injury if the only injury alleged is drainage. In this sense, it is a viable claim, but one without relief.

In *Coastal Oil and Gas Corp. v. Garza Energy Trust, et al.*⁵⁷ the court was specifically asked to consider whether hydraulic fracturing could constitute trespass when the fractures extend into another's mineral estate.⁵⁸ The dispute arose over production of natural gas from the Vicksburg T formation in Hidalgo County.

The respondents, collectively referred to as “Salinas,” own the minerals in a 748-acre tract of land called Share 13.⁵⁹ Coastal Oil & Gas Corporation was the lessee of the minerals in Share 13 and an adjacent tract, Share

⁵⁵ 16 Tex. Admin. Code § 3.37(m).

⁵⁶ 16 Tex. Admin. Code § 3.37(m)(5).

⁵⁷ 268 S.W.3d 1 (Tex. 2008).

⁵⁸ Id. at 4. The exact same question was posed to the U.S. District Court for the North District of West Virginia in *Stone v. Chesapeake Appalachia, LLC*, 2013 WL 2097397 (N.D.W. Va. Apr. 10, 2013), which came down firmly on the side of the plaintiff. “The Garza opinion gives oil and gas operators a blank check to steal from the small landowner.” Id. at *6. Thus, the court held “[t]his Court finds, and believes that the West Virginia Supreme Court of Appeals would find, that hydraulic fracturing under the land of a neighboring property without that party's consent is not protected by the ‘rule of capture,’ but rather constitutes an actionable trespass.” Id. at *8. This order, however, was vacated upon joint motion of the parties following settlement. See *Stone v. Chesapeake Appalachia, LLC*, 2013 WL 7863861 (N.D.W. Va. July 30, 2013).

⁵⁹ Garza, 268 S.W.3d at 5.

15.⁶⁰ Coastal also leased, and then acquired, the mineral estate in a 163-acre tract known as Share 12.⁶¹ As the court described the drilling operations:

From 1978 to 1983, Coastal drilled three wells on Share 13, two of which were productive, the M. Salinas No. 1 and No. 2V, though the other, the B. Salinas No. 1 (“BS1” on the diagram), was not. In 1994, Coastal drilled the M. Salinas No. 3, and it was an exceptional producer. The No. 3 well was about 1,700 feet from Share 12. The closest well on Share 12 was the Pennzoil Fee No. 1 (“P1” on the diagram), but Coastal wanted one closer, so in 1996, Coastal drilled the Coastal Fee No. 1 in the northeast corner of Share 12, as close to Share 13 (and the M. Salinas No. 3) as Texas Railroad Commission’s Statewide Spacing Rule 37 permitted—467 feet from the boundaries to the north and east. That location was too close to the Pennzoil Fee No. 1, and the Commission refused Coastal an exception because both wells would drain from Share 13. So Coastal shut in the Pennzoil Fee No. 1, a producing well, in order that it could operate the Coastal Fee No. 1 well near Share 13. In February 1997, Coastal drilled the Coastal Fee No. 2, also near Share 13.⁶²

For the Coastal Fee No. 1 well, Coastal designed the hydraulic fracture length to extend more than 1,000 feet from the well.⁶³ The parties’ experts agreed that the hydraulic and proposed length exceeded 1,000 feet from the well, but they disagreed over whether the effective length also did.⁶⁴ The longest distance from the well to the Share 13 lease line was 660 feet.⁶⁵

Salinas alleged that Coastal’s hydraulic fracturing of the Coastal Fee No. 1 well invaded the reservoir beneath Share 12, causing substantial drainage of gas.⁶⁶ Thus, Salinas contended that the incursion of hydraulic fracturing fluid and proppants into another’s land two miles below the surface constituted a trespass for which the mineral owners could recover damages equal to the value of the royalty of the gas thereby drained from the land.⁶⁷

The justices diverged on the proper approach to analyzing this question. The majority sidestepped the opportunity to squarely address the question of

⁶⁰ Id.

⁶¹ Id.

⁶² Id. at 6 (footnotes omitted).

⁶³ Id. at 7.

⁶⁴ Id.

⁶⁵ Id.

⁶⁶ Id.

⁶⁷ Id. at 9.

whether subsurface hydraulic fracturing can give rise to an action for trespass and instead held that actionable trespass requires injury and, on the facts presented, the rule of capture precluded a finding of injury. The concurring justice agreed with the outcome but argued that he would have found that hydraulic fracturing is not wrongful and therefore cannot result in trespass, making it unnecessary to invoke the rule of capture. And the dissenters disagreed with the application of the rule of capture, asserting that it was first necessary to determine whether hydraulically fracturing across lease lines is a trespass.

The majority’s analysis invokes the rule of capture. Under the rule of capture, a mineral rights owner has “title to the oil and gas produced from a lawful well bottomed on the property, even if the oil and gas flowed to the well from beneath another owner’s tract.”⁶⁸ Because Salinas’ only claim of injury was that Coastal’s hydraulic fracturing of Coastal Fee No. 1 made it possible for gas to flow from beneath Share 13 to Share 12, the court held that Salinas could not have been injured by trespass because injury in this scenario is precluded by the rule of capture.

Salinas made two arguments as to why the rule of capture should not apply to hydraulic fracturing – (1) because the practice is “unnatural” and (2) that hydraulic fracturing is no different than drilling a deviated or slant well.⁶⁹

The court rejected both arguments. First, it noted that hydraulic fracturing is commonplace in the industry and necessary for commercial production and that if “unnatural” means “due to human intervention,” then the drilling of a well is itself an unnatural practice and human intervention provides the very basis for the rule.⁷⁰ Second, the court noted that gas produced from a deviated well does not migrate from another’s property – it presumably remains in place and thus is already on another’s property.⁷¹ “Nor is there any uncertainty that a deviated well is producing another owner’s gas.”⁷²

The court demurred that it is not “changing the rule of capture,” and then outlined four reasons for not changing the rule of capture to allow one property owner to sue another for oil and gas drained by hydraulic fracturing that extends beyond lease lines:

⁶⁸ Id. at 13.

⁶⁹ Id.

⁷⁰ Id.

⁷¹ Id. at 14.

⁷² Id.

(1) There are already remedies available to protect the mineral owner, including self-help (drilling one's own well to offset drainage from one's property); suits against the lessee for breach of the implied covenant to protect against drainage and the implied covenant to develop mineral rights with reasonable diligence; offers to pool; forced pooling; and Commission regulation.⁷³

(2) It is the role of the Commission to prevent waste of the state's natural resources while also protecting the correlative rights of owners with interests in the same mineral deposits. The Commission has not found it necessary to regulate hydraulic fracturing.⁷⁴

(3) The practical reality is that the litigation process is not equipped to determine the value of oil and gas drained by hydraulic fracturing, nor does the process permit judges and juries to take into account "social policies, industry operations, and the greater good, which are all tremendously important in deciding whether fracking should or should not be against the law."⁷⁵

(4) No one in the industry appears to want or need the change.⁷⁶

Justice Willett, in his concurrence, wrote separately to explain that his approach would be to focus on the act itself rather than on the injury.⁷⁷ Thus there is no need to even invoke the rule of capture as precluding a finding of injury.⁷⁸ "Injury is the result of trespass, not part of its definition, and this case should turn not on the absence of injury but on the absence of wrongfulness."⁷⁹ He would conclude that hydraulic fracturing is not just a nonactionable trespass, but it is not even a trespass at all.⁸⁰ In reaching this conclusion, he stressed that trespass is a court-defined doctrine better analyzed through a balancing-of-interests test as more commonly employed in nuisance cases.⁸¹ Using such a test would show that hydraulic fracturing is not wrongful because it generates societal and economic benefits that outweigh any harm to individual operators.⁸²

Justice Willett's concurrence is notable not only for its use of colorful industry-related metaphors, including the

⁷³ Id. at 14; 17-21; 45.

⁷⁴ Id. at 15.

⁷⁵ Id. at 16.

⁷⁶ Id.

⁷⁷ Id. at 29-30.

⁷⁸ Id. at 29.

⁷⁹ Id. at 30.

⁸⁰ Id.

⁸¹ Id. at 36-37.

⁸² Id. at 37.

term "tres-frac," but also for its emphasis on the societal costs which would result from opening the door to liability for trespass by hydraulic fracturing.⁸³ His opinion outlines the importance and benefits of efficient energy production and concludes "[t]he interplay of common-law trespass and oil and gas law must be shaped by concern for the public good."⁸⁴

The dissenting justices departed from the majority opinion on the issue of whether the rule of capture precludes damages, concluding that it is first necessary to determine whether hydraulic fractures that extend across lease lines constitute a trespass. Essential to the dissent's analysis was deference to the jury's finding that Coastal trespassed on Share 13 by means of its hydraulic fracturing operations on Share 12, a fact uncontested by Coastal on appeal.⁸⁵

The dissent also criticized the majority for modifying the rule of capture. The distinction between the majority's position and the dissent's interpretation of the rule lies in the argument that in order to come under the rule of capture, the gas recovered must be legally produced. In other words, "[w]ithout [the word 'legally'], the rule of capture becomes only a license to obtain minerals in any manner, including unauthorized deviated wells, and vacuum pumps and whatever other method oilfield operators can devise."⁸⁶ The analogy to deviated wells found sympathy with the dissenters in that "both involve a lease operator's intentional actions which result in inserting foreign materials without permission into a second lease, draining materials by means of the foreign materials, and 'capturing' the minerals on the first lease."⁸⁷ The dissent further cautions that "legally" should not sanction all methods other than those specifically prohibited by statute or rule of the Railroad Commission.⁸⁸

While the dissent did not directly answer the question of whether hydraulic fracturing across legal lines constitutes subsurface trespass, it noted that the evidence in the record supported the jury's finding that the effective length of the fractures extended into Share 13.⁸⁹ The dissent also expressed concern that there may be an imbalance of power between mineral owners and

⁸³ Id. at 27-34.

⁸⁴ Id. at 34.

⁸⁵ Id. at 42-43.

⁸⁶ Id. at 43.

⁸⁷ Id. at 44.

⁸⁸ Id. at 43-44.

⁸⁹ Id. at 44-45.

operators, citing the concern that not all mineral owners have the knowledge or resources to benefit from the other remedies available.⁹⁰ “Even if it were to be decided that hydraulic fracturing is subject to traditional trespass rules, equitable considerations are proper in determining the availability of damages for trespass related to the recovery of minerals.”⁹¹ In an effort to offer one method of giving the industry peace of mind that there are limits to liability for a tres-frac, the dissenters suggested that exemplary damages could be precluded by presenting a defense that “in light of industry standards at the time, a reasonably prudent lessee could have believed the fracturing operation was necessary to economically recover the minerals from the lessee’s estate.”⁹²

In sum, under the majority opinion, trespass by hydraulic fractures could still provide the basis for a claim that is premised on an injury other than drainage.

C. Deviated wellbore partly in Tract B

Although a recent decision discussed in III. D. below suggests an answer, we have not located any Texas cases where a deviated wellbore that traverses Tract B but bottoms in Tract A is the basis for a trespass claim.

D. Horizontal wellbore through but not completed in Tract B

In *Lightning Oil Company v. Anadarko E&P Onshore, LLC*,⁹³ the Texas Supreme Court provided clarity on who may grant permission to traverse a mineral estate – and to the practitioner new to the peculiar treatment of the bundle of sticks that comprises Texas property law vis-à-vis oil and gas, the result may not be intuitive. If we stay true to the hypothetical, that the owner of Tract B owns the full fee estate and refuses to grant entry to anyone, Tract B’s owner does have a claim for trespass. However, make the fact pattern more elaborate by adding a severed mineral estate or a lessee of a valid oil, gas and mineral lease, and this scenario illustrates the difficulty of negotiating with discrete owners of a tract from which the surface has been severed from the minerals. According to the court, an operator drilling through another’s leased mineral estate does not commit an actionable trespass, so long as the owner of the *surface* estate has granted the operator the right to drill through the tract in question, even if there is no privity of contract between the surface

owner and the mineral estate lessee. This exact set of circumstances led to a lawsuit filed by Lightning Oil Company against Anadarko E&P Onshore, LLC. To wit, Lightning asserted a claim that Anadarko’s plan to drill through Lightning’s mineral estate to reach its own adjacent mineral estate constituted a trespass and that a third-party surface owner with no interest in Lightning’s mineral estate could not consent to Anadarko’s drilling activity.⁹⁴ The surface owner did own the tract of land directly above the mineral interest Lightning had leased but did not have any interest in the lease itself nor, Lightning contended, any right to invade or permit an invasion of the subsurface beneath the surface owner’s tract.

The casual student of Texas oil, gas and mineral law might hear such facts and conclude that since the courts in Texas have long held the mineral estate to be “dominant” over the surface, there is no way Anadarko could steer a wellbore through the subsurface for which Lightning held a valid lease. That conclusion would misconstrue, however, the nature of the ownership rights held – by both the lessee and the mineral estate owner (the party from whom Lightning had taken the lease, *i.e.*, *not* the surface owner). As the court noted in its holding, the “rights accruing to the dominant mineral estate are well established, but they are not absolute.”⁹⁵ “[T]he surface overlying a leased mineral estate is the surface owner’s property, and those ownership rights include the geological structures beneath the surface.”⁹⁶ Thus the right to grant access to the land beneath the surface rests with the surface owner, as the surface owner and not the mineral owner “owns all non-mineral ‘molecules’ of the land, *i.e.*, the mass that undergirds the surface”⁹⁷ of the parcel. The mineral estate owner, after all, owns nothing but the minerals in place while they are located in the subsurface, and the mineral lessee holds the right to develop those minerals but not the minerals themselves until they are recovered via production. “Thus, an unauthorized interference with the place where the minerals are located constitutes a trespass as to the mineral estate only if the interference infringes on the mineral lessee’s ability to exercise its rights.”⁹⁸

The result in *Lightning* is easy to remember and

⁹⁰ *Id.* at 45.

⁹¹ *Id.* at 47.

⁹² *Id.*

⁹³ 520 S.W.3d 39 (Tex. 2017).

⁹⁴ *Id.* at 43.

⁹⁵ *Id.* at 48 (citing *Humble Oil & Refining Co. v. West*, 508 S.W.2d 812, 815 [Tex. 1974]).

⁹⁶ *Id.* at 46 (citing *West*, 508 S.W.2d at 815).

⁹⁷ *Id.* at 46 (citing *Dunn-McCampbell Royalty Interest, Inc. v. Nat’l Park Serv.*, 630 F.3d 431, 441 [5th Cir. 2011]).

⁹⁸ *Id.* at 49.

apply properly if one thinks of the operator's actions as derivative of the surface owner's rights under the accommodation doctrine. The mineral lessee holds the right to develop the minerals in place (and, in fact, has a duty to do so on behalf of the mineral lessor/mineral estate owner[s] under the implied covenant to develop wrought by the lease terms), but such activity must accommodate the surface owner's existing or previous use. Put another way, the lessee may engage in operations as it deems prudent inasmuch and insofar as any instant (not potential or contingent) surface use is not molested. As the rights of the operator (Anadarko, in this case) derive from the surface owner's rights since the operator is the surface owner's assignee, "its activities are a surface use for accommodation doctrine purposes."⁹⁹ Therefore, as long as Anadarko's wellbore preceded Lightning's actual use of that segment of the subsurface, Lightning is required to tolerate, or make reasonable accommodation of, the Anadarko use of the area.

The takeaway from this section is this: The right to grant (or deny) access through the subsurface of a tract in which take points are not perforated in the production tubing (and are thus not "producing" in said tract) belongs to the surface owner, not the mineral owner or mineral lessee, unless such access interferes with the mineral lessee's existing efforts to develop the hydrocarbon molecules contained therein. Left unresolved is the possibility that an actionable trespass might occur where the adjacent mineral interest owner can show actual, demonstrable interference with its ability to develop its estate.

In addition, in the interest of avoiding conflict with neighboring operators, it may still be prudent for operators who are able to secure what might fairly be called "derivative surface rights" or "the right to be accommodated" to involve the mineral lessee of the tract they are planning to penetrate. The advent and refinement of horizontal drilling techniques and the deployment of longer horizontal wells have ushered in a new era of cooperation and creative drafting to protect and clearly define the correlative rights of interest owners. It is reasonable to believe in the wake of *Lightning* that neighboring operators might collaborate to maximize their recoverability factors even further, especially given the premium put on efficient operations in the current low commodity price environment.

⁹⁹ *Id.* at 52.

IV. Hypothetical Number Three: Surface Access

Now picture two tracts – Tract A and Tract B, both of which lie west of a public highway. Tract A is an unsevered full fee estate, subject to a mineral lease issued in 1960. The minerals under Tract B were severed in 1950, and at that moment, the minerals were unleased. The Tract B minerals were separately leased in 1960 to the lessee of Tract A. Later, a Railroad Commission order is entered pooling Tract A and Tract B, and because of spacing rules, the pooling order prescribes that only one well can be drilled in the area. The pooling order is not issued until 2000. In 2015, the lessee decides he wants to drill a well on Tract A. In order to reach the desired well site from the public highway, the lessee wants to build a road across Tract B.

Does this scenario expose the lessee to a trespass claim?

One would think the answer lies in chronology – that "timing is everything." In the example above, the severance of the surface in 1950 predates the 1960 lease. The severed surface is subject to certain "surface" rights in favor of the mineral owner: the right of the mineral owner to use so much of the surface as is reasonably needed to develop the reserved mineral estate. So far, there appears to be no disagreement in the case law. But from here, opinions begin to differ. The surface owner will say, "I must allow the mineral owner to use the surface of my land to access minerals under my surface, but I must first consent if the mineral owner's lessee wishes to cross my surface to develop minerals on the adjoining tract." But what if the mineral owner of B elects to give its lessee the right to pool or unitize Lease B with other acreage? And does it matter that the 1960 lease giving such a right is issued after the 1950 severance of the surface?

A. Without pooling

Without the pooling of Tracts A and B's minerals, the lessee needs B's permission to build a road to access the well site on Tract A. This appears to follow *a fortiori* from the decision of the Texas Supreme Court in the waterflooding case of *R.O. Robinson v. Robbins Petroleum Corporation*.¹⁰⁰

In that case, in 1943, the Wagoners bundled several fee

¹⁰⁰ 501 S.W.2d 865 (Tex. 1973).

parcels in a single 221-acre oil and gas lease to Robbins Petroleum Corporation (RPC).¹⁰¹ The lease lacked a clause allowing the lessee to pool or unitize the acreage with lands outside the lease. In 1964, the Wagoners severed the surface rights to an 80-acre tract within the 221-acre lease in a grant to Robinson. All agreed that Robinson took his surface subject to the Wagoner lease. That meant, among other things, that the lessee could cross Robinson's surface to go anywhere on the lease to develop the oil and gas.

After Robinson acquired his surface, RPC formed a waterflood unit covering some 2,000 acres and included the Wagoner lease within the units. RPC used a former oil well located on Robinson's tract to produce salt water to be injected into the secondary recovery unit.¹⁰² Robinson sought to recover damages from the operator and owners of the waterflood units for salt water taken from his tract for purposes of waterflooding the entire unit.¹⁰³

After first determining that the use of the salt water was a right belonging to Robinson as surface owner, the court acknowledged that mineral ownership "carries with it the right to use the surface, including water, to the extent reasonably necessary to develop and produce the minerals."¹⁰⁴ It did not follow, however, that the mineral owner is entitled to the use of Robinson's surface for the secondary recovery unit that includes acreage *outside the Wagoner lease*.¹⁰⁵ "Nothing in the Wagoner lease or the reservation contained in Robinson's deed authorized the mineral owner to increase the burden on the surface estate for the benefit of additional lands."¹⁰⁶ Balancing Robinson's entitlement to protection from uses of the surface without his consent for the benefit of owners beyond the premises of the Wagoner lease against the mineral owners' entitlement to protection in their use of the salt water, which was reasonably necessary to produce oil under the terms described in the Wagoner lease, the court concluded that Robinson was entitled to recover the value of that portion of the salt water which has been consumed for the production of oil for owners of lands outside the Wagoner lease.¹⁰⁷

So, if RPC could not use Robinson's surface (or use rights appurtenant to surface ownership) to access

unitized acres outside the Wagoner lease, it would appear to follow *a fortiori* that RPC could not use Robinson's surface if there were no unit or pool at all. But what if the Wagoners had included the right to pool or unitize in the 1943 lease? Because the purpose of the pooling clause is to allow the lessee to pool without the further consent of the lessor, it would appear that Robinson, taking the surface subject to that clause, could not insist that he had a right to stop the pooling when the Wagoners did not.

B. With pooling

The Texas Supreme Court's decision in *Key Operating & Equipment, Inc. v. Will Hegar and Loree Hegar*¹⁰⁸ introduced a new wrinkle for surface owners whose surface estate is burdened for purposes of horizontal drilling. In *Key*, it appeared that the surface of the "Curbo tract" was severed from the mineral estate before the year 2000.¹⁰⁹ In 2000, Key received a lease from an undivided interest owner of the mineral estate. The lease contained the right to pool. Key promptly pooled some of the Curbo acres with acres in an adjoining tract. In 2002, the Hegars obtained rights to the relevant part of the Curbo surface. Sometime after 2004, Key began producing a well in the pooled acreage and crossed the Hegars' surface to access the wellpad. The Hegars conceded that the use of their surface was lawful if the new well were in fact draining oil from beneath their surface, but they contended the drainage radius of the well did not extend underneath that surface. The Hegars sued for trespass.

The Supreme Court did not adopt the view that the timing of the original severance was significant. It instead determined that "the Hegars took their surface title subject to the mineral lease assigned . . . to Key."¹¹⁰ As a result of *Hegar*, lawfully pooling will preclude Tract B's surface estate owner from claiming trespass.

Thus, the question presented to the court was this: When parts of two mineral leases have been pooled but production is from only one lease, does the mineral lessee have the right to access the surface of the nonproducing lease in order to access the producing lease?¹¹¹

¹⁰¹ *Id.* at 866.

¹⁰² *Id.*

¹⁰³ *Id.* at 866.

¹⁰⁴ *Id.* at 867.

¹⁰⁵ *Id.* (emphasis added).

¹⁰⁶ *Id.* at 868.

¹⁰⁷ *Id.*

¹⁰⁸ 435 S.W.3d 794 (Tex. 2014).

¹⁰⁹ 403 S.W.3d 318, 315 (Tex. App. 1st Dist. 2013) (noting surface owners' argument that a pooling clause could be effective to allow access across the surface only if the clause were in existence before the severance of the surface estate, and agreeing that the pooling clause was not in the surface owners' "chain of title").

¹¹⁰ 435 S.W.3d at 800.

¹¹¹ *Id.*

John Adams famously said in the early 1770s that “facts are stubborn things.” They can also be messy things, and the reader should be aware that the facts in *Hegar* are more complicated than what was distilled above.

Key Operating and Equipment, Inc., (Key) has operated the Richardson No. 1 well on the sixty-acre Richardson tract since 1987. In 1994 Key acquired oil and gas leases on a 191-acre contiguous tract—the Curbo/Rosenbaum Tract—and reworked the Rosenbaum No. 2, an existing well on that property. That same year Key built a road on the Curbo/Rosenbaum tract to access both the Richardson No. 1 and the Rosenbaum No. 2. The Rosenbaum No. 2 stopped producing in 2000, and Key’s lease on the Curbo/Rosenbaum tract expired. But also in 2000, Key’s owners purchased an undivided twelve-and-a-half percent interest in the mineral estate of the Curbo/Rosenbaum Tract, which they promptly leased to Key. The lease gave Key the right to pool the minerals with other property in the immediate vicinity. Key then pooled its leased minerals under ten acres from the Curbo/Rosenbaum tract with its leased minerals under thirty acres from the adjoining Richardson Tract.

In 2002, Will and Loree Hegar bought eighty-five acres of the Curbo/Rosenbaum Tract (the Hegar Tract). Their acreage included the road Key used to access the Richardson No. 1, and they were aware when they bought the tract that Key used the road in its mineral operations.

In 2003 or 2004, the Hegars built a house on their acreage, used the road to access it, and for several years took no action to restrict Key’s use of the road. That forbearance stopped when Key drilled the Richardson No. 4 well on the Richardson tract. Following that drilling, traffic on the road increased, prompting the Hegars to file suit claiming that by using the road, Key was trespassing.¹¹²

To the question presented – whether Key could use Hegar surface to produce a well within the pooled area – the court answered in the affirmative and held that production from a tract pooled with others is legally treated as production from each tract within the unit. From that conclusion it followed, therefore, that the mineral lessee has an “implied property right” to use the surface of any of the units’ pooled tracts in its production activities.¹¹³ Stated otherwise, “[t]he right of ingress and egress includes the right to ingress and egress over the surface of any pooled acreage for the purpose

of producing minerals from any part of the pooled acreage.”¹¹⁴ Because production from the pooled part of the Richardson tract was legally also production from the pooled part of the Hegar tract, Key had the right to use the road to access the pooled part of the Richardson tract.

The court reasoned that when pooling is authorized by a lease, then the mineral lessees of multiple tracts may pool some or all of the tracts by combining them into a single unit.¹¹⁵ “The primary legal consequence of pooling is that production and operations anywhere on the pooled unit are treated as if they have taken place on each tract within the unit.”¹¹⁶ So, once pooling occurs, the pooled parts of the tracts no longer maintained separate identities insofar as where production from the pooled interests was located.¹¹⁷ Combine this consolidation of mineral tract identities with the mineral owner’s right to use as much of the surface as is reasonably necessary for production and you have permission to access the surface of any pooled tract.

After *Key*, the answer to the hypothetical posed still appears uncertain. If the owner of the surface of Tract B is the same owner to whom the severed estate was granted in 1950, the analysis of *Key* might be distinguished; unlike in *Key*, there is no later assignee of the B surface who took the surface subject to the 1960 lease. Or perhaps the rationale of *Key* will prove to be that a mineral estate owner implicitly reserves the power to lease after severance and allow pooling or unitization (and access to B’s surface) without the further consent of the surface owner, even if the well operations are on the adjoining tract.

V. Regulatory Issues

A. Does possession of a permit from an administrative agency excuse an otherwise actionable trespass?

Likely no – a permit “is not a get out of tort free card.”¹¹⁸ In *FPL Farming Ltd. v. Environmental Processing Systems, L.C.*, the Texas Supreme Court addressed whether “a regulatory permit to drill an injection well

¹¹⁴ *Id.* at 800.

¹¹⁵ *Id.* at 798.

¹¹⁶ *Id.* (internal quotations and citation omitted).

¹¹⁷ *Id.* at 799.

¹¹⁸ *FPL Farming Ltd. v. Environmental Processing Systems, L.C.*, 351 S.W.3d 306, 311 (Tex. 2011).

¹¹² *Id.* at 796.

¹¹³ *Id.* at 798; 799.

absolves the holder from civil tort liability for conduct authorized by the permit.”¹¹⁹

In response to FPL’s claim for trespass based on alleged subsurface migration of water injected into a deep wastewater injection well, Environmental Processing Systems (EPS) argued that FPL could not recover in tort for trespass damages because the wells were authorized by a permit issued to EPS by the Texas Commission on Environmental Quality.¹²⁰ In analyzing this defense, the court looked to the language of the Injection Well Act and prior case law, which reflected a split among the Texas courts of appeals as to whether a state-issued permit serves to immunize the permit holder from liability.¹²¹

The court restated the “general rule” that “a permit granted by an agency does not act to immunize the permit holder from civil tort liability from private parties for actions arising out of the use of the permit.”¹²² It “grants no affirmative rights to the permittee” and instead merely “removes the government imposed barrier to the particular activity requiring a permit.”¹²³ So, whether a permit immunizes a trespasser turns on whether statutory remedies have preempted common law.¹²⁴ In the case of the Injection Well Act, the statute did not preempt any civil action; the act provides that “[t]he fact that a person has a permit issued under this chapter does not relieve him from any civil liability.”¹²⁵

B. Is there a requirement to seek administrative review by the Texas Railroad Commission before filing a subsurface trespass lawsuit in court?

The answer, at least for hydraulic fracturing, is no.

Gregg v. Delhi-Taylor Oil Corporation,¹²⁶ frequently cited for its discussion of trespass via hydraulic fracturing, is first and foremost a case about jurisdiction. Delhi-Taylor Oil Corp. filed suit to enjoin Gregg from hydraulically fracturing “the common formation between Gregg’s own property lines and into Delhi-Taylor’s lease.”¹²⁷ Gregg objected to the lawsuit on the grounds that the Railroad

Commission of Texas had primary jurisdiction over the injuries alleged by Delhi-Taylor; therefore, Delhi-Taylor’s failure to first bring its complaint to the Commission deprived the court of jurisdiction.¹²⁸ Accordingly, the question presented on appeal to the Texas Supreme Court was “whether the courts have the power to determine whether a subsurface trespass is occurring or is about to occur, or whether this power rests with the Railroad Commission to the exclusion of the Courts.”¹²⁹

The court concluded that courts do have jurisdiction over questions of subsurface trespass.¹³⁰ Because the Legislature had not explicitly granted exclusive jurisdiction to the Commission, the courts had not been ousted from hearing the suit.¹³¹ Indeed, Delhi-Taylor had pointed out that the Legislature had not specifically delegated the question of subsurface trespassing or sand fracturing to the Commission; the Commission asserted no such jurisdiction, and the Commission had not adopted rules regarding the subject.¹³²

Author contact information:

*W. Ray Whitman, Partner, BakerHostetler,
811 Main Street, Suite 1100, Houston, TX 77002-6111,
rwhitman@bakerlaw.com, +1.713.646.1367*

*Jasper Mason, Counsel, BakerHostetler,
811 Main Street, Suite 1100, Houston, TX 77002-6111,
jmason@bakerlaw.com, +1.713.276.1678*

¹¹⁹ *Id.* at 307.

¹²⁰ *Id.* at 307-08.

¹²¹ *Id.* at 309.

¹²² *Id.* at 310.

¹²³ *Id.* at 310-11.

¹²⁴ *Id.* at 311.

¹²⁵ *Id.* at 312 (citing Tex. Water Code § 27.104).

¹²⁶ 162 Tex. 26 (1961).

¹²⁷ *Id.* at 27.

¹²⁸ *Id.*

¹²⁹ *Id.* at 29.

¹³⁰ *Id.* at 33.

¹³¹ *Id.*

¹³² *Id.* at 31.