LORD COKE, THE RESTATEMENT, AND MODERN SUBSURFACE TRESPASS LAW

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I. INTRODUCTION

The First Restatement of Property provides that "'property' . . . denote[s] legal relations between persons with respect to a thing."[1] The "thing" considered in this article is the subsurface of real property, and the legal relationship involved is the extent to which persons may deal with invasions of their right to exclusive possession of the subsurface. While the right to exclude trespassers is a fundamental incident of

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1. RESTATEMENT OF PROP.: INTRODUCTORY NOTE (1936).

property ownership,[2] this right, like other incidents, neither is nor should be absolute. The precise focus of this article, however, is to consider how courts have treated subsurface invasions and to argue that the Second Restatement of Torts, which states that any subsurface intrusion is actionable,[3] should be revised.[4] The right to exclude trespassers[5] from the subsurface of real property should be much more limited: subsurface trespass should not be actionable whenever the trespasser's subsurface intrusion accomplishes an important societal need (including private commercial needs) if the subsurface owner suffers no actual and substantial harm. And because courts have largely refused to find harmless deep subsurface invasions actionable, the ALI should consider whether the Second Restatement of Torts, which essentially embraces Lord Coke's *ad coelum* doctrine,[6] accurately reflects the trend of subsurface trespass case law.

In the oil and gas arena, technological advancements in deep subsurface horizontal drilling and reservoir stimulation techniques that may encroach upon another's subsurface, once as inconceivable as airplanes encroaching upon another's airspace, are now so commonplace that courts must consider whether these and other deep subsurface activities can give rise to an action in trespass.[7] The current utility of such remote underground entries challenges the notion that the right to bar them should be the same as the right to bar surface trespass.[8]

To offer clarity to both judges and lawyers who must regularly confront issues of such uncertainty, the ALI drafted the Restatements of

2. *See* Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 435 (1982).

3. RESTATEMENT (SECOND) OF TORTS § 159 (1965).

4. For additional articles that touch on this topic, see generally Owen L. Anderson, *Subsurface "Trespass": A Man's Subsurface Is Not His Castle*, 49 WASHBURN L.J. 247 (2010); Owen L. Anderson, *Subsurface Trespass After* Coastal v. Garza, 60 INST. ON OIL & GAS L. & TAX'N 65 (2009); Owen L. Anderson, *Geologic CO_2 Sequestration: Who Owns the Pore Space?*, 9 WYO. L. REV. 97 (2009); Owen L. Anderson & John D. Pigott, *Seismic Technology and Law: Partners or Adversaries?*, 24 ENERGY & MIN. L. INST. 285 (2004); Owen L. Anderson, *Geophysical "Trespass" Revisited*, 5 TEX. WESLEYAN L. REV. 137 (1999); and Owen L. Anderson & John D. Pigott, *3-D Seismic Technology: Its Uses, Limits, & Legal Ramifications*, 42 ROCKY MTN. MIN. L. INST. 16-1 (1996).

5. Although I argue that some subsurface invasions should be privileged, I will, for convenience, refer to intruding parties throughout this article as trespassers. Unless the context indicates otherwise, when I refer to a subsurface trespasser, I am referring to a party that is lawfully engaged in activities vis-à-vis both the surface and subsurface of the land, where that party is conducting the surface activities but where those activities result in a physical invasion of the subsurface of neighboring land. Thus, strictly speaking, as to neighboring land, the party is a subsurface trespasser under the common law *ad coelum* doctrine.

6. Though the maxim is often attributed to the advocacy of Lord Coke, its roots may be traced to fourteenth-century Italian jurist and poet Cino da Pistoia. *See* Stuart S. Ball, *The Vertical Extent of Ownership in Land*, 76 U. PA. L. REV. 631 (1928).

7. *See, e.g.*, Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 29 (Tex. 2008) (Willett, J., concurring) ("[O]rthodox trespass principles that govern surface invasions seem to me to have dwindling subterranean relevance, particularly as exploration techniques grow ever sophisticated.").

8. *See* DAN DOBBS, THE LAW OF TORTS § 55 (2000).

the Law to provide a suitable aid for approaching complex legal questions and to distill from the various jurisdictions the black letter law.[9] In this regard, "the Restatement has been a vital force in shaping the law of torts . . . ."[10] However, the present text of the Second Restatement of Torts relating to subsurface trespass no longer reflects either the weight of decisions or the proper policy. Specifically, the Second Restatement makes no express distinction between surface trespass and harmless subsurface intrusions, though courts have regularly done so over the past half century. Rather, the Restatement expressly states that "a trespass may be committed on, beneath, or above the surface of the earth."[11] The lone exception carved from this broad categorization relates to airspace intrusions—specifically, to the space used by aircraft beyond the immediate airspace just above the surface of the earth.[12] The Restatement should distinguish in a similar fashion those subsurface invasions that occur beyond the immediate reaches of the surface and that cause no harm. While subsurface invasions may have a more permanent and constant presence than airplane flyovers, the lack of actual or substantial damage properly supports treating the two invasions in the same manner.

While some critics may go further and argue that subsurface invasions should be left to the law of nuisance and negligence and not trespass,[13] I am reluctant to go this far, although the ALI may choose to do so.[14] The law relating to airspace trespass provides a more convincing and certain guide than the much looser law of nuisance, and proving negligence should not be required where a subsurface invasion causes substantial

9. *Overview: Projects*, THE AM. LAW INST., http://ali.org/index.cfm?fuseaction=about.institeprojects (last visited Feb. 28, 2011).

10. RESTATEMENT (SECOND) OF TORTS: INTRODUCTION (1965).

11. *Id.* § 159.

12. *Id.* cmt. g. Though this exception would technically apply to any airspace, it more generally applies to the airspace extending upward beyond the immediate reaches of the surface, as aircraft rarely come within the useable reaches of most land. In its seminal *Causby* decision, the Court granted relief to a chicken farmer who suffered actual harm resulting from low-flying aircraft. United States v. Causby, 328 U.S. 256, 266–67 (1946).

13. *See* Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 30 (Tex. 2008) (Willett, J., concurring).

14. *Cf.* RESTATEMENT (SECOND) OF TORTS § 159 cmt. m (1965) (providing that, in cases of intrusions that are not within the immediate reaches of the surface, liability should rest upon the basis of nuisance rather than trespass). I hesitate to leave subsurface invasions to the law of nuisance because when one intentionally injects a substance that physically invades the subsurface of a neighboring landowner, money damages should be recoverable for any actual and substantial damage caused without having to engage in the uncertainty of balancing whether the gravity of harm to the landowner outweighs the utility of the defendant's conduct. My reluctance about nuisance is best expressed by the famous passage in *Prosser and Keeton on the Law of Torts*: "[t]here is perhaps no more impenetrable jungle in the entire law than that which surrounds the word 'nuisance.'" W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 86 (5th ed. 1984). Moreover, I am reluctant to limit subsurface trespass to situations where the trespassing injector is negligent. If a subsurface invasion causes actual and substantial damages, proof of negligence should not be required.

harm.

Additionally, treating deep subsurface trespasses akin to aerial trespasses would allow the ALI to adopt my proposition without significantly altering the current text of the Restatement. Throughout this paper, the cases presented share a common thread: absent actual harm, no actionable trespass results when a subsurface intrusion occurs.[15] Because modern case law addressing both aerial and deep subsurface trespasses requires actual harm, it seems logical to adopt a uniform exception that applies equally to both forms of trespass.

Thus, I do not suggest that the availability of a trespass cause of action for subsurface invasions should be eliminated entirely. Rather, the ALI should adopt a rule that would preserve a more limited claim for trespass—one that requires proof of actual and substantial damages over merely theoretical or speculative harm.[16] Accordingly, just as the Restatement preserves an actionable trespass where an aircraft causes actual damages, the rule should support a claim for trespass where a deep subsurface invasion "interferes substantially with the other's use and enjoyment of his land."[17] As such, the recovery for loss of speculative value in a subsurface trespass action should not be permitted.

The most serious threat to efficient and utilitarian use of the subsurface is the possibility of injunctive relief or ejectment.[18] Allowing injunctive relief or ejectment for subsurface trespass is particularly troubling and should be limited to situations where the harm to a neighboring landowner clearly outweighs the utility and practical necessity of the subsurface invasion.[19] In general, whether a particular

15. *See, e.g.*, Hinman v. Pac. Air Lines Transp. Corp., 84 F.2d 755, 758–59 (9th Cir. 1936) (applying California law and finding that airplanes flying within 100 feet of the surface would not constitute a trespass "unless it is done under circumstances which will cause injury to appellants' possession."); FPL Farming Ltd. v. Envtl. Processing Sys., L.C., 305 S.W.3d 739, 745 (Tex. App.—Beaumont 2009, pet. granted) (rejecting plaintiff's claim that nonhazardous waste disposal resulted in trespass, the court held "no actionable common law trespass ha[d] occurred").

16. Thus, I reject the holding in *Grynberg v. City of Northglenn*, in which testing of the subsurface by surface owner's permittee, which revealed that the property had no recoverable coal reserves, caused speculative-value loss to the coal lessee. 739 P.2d 230, 236–38 (Colo. 1987). I also reject the implicit holding in *Marengo Cave Co. v. Ross*, in which the use by an adjacent landowner of a portion of a cave that lay beneath neighboring land would be an actionable trespass. 10 N.E.2d 917, 923 (Ind. 1937). The primary issue in *Marengo* involved an assertion of adverse possession, which would not lie under my proposed approach because the subsurface use would be privileged. *Id.* at 919.

17. RESTATEMENT (SECOND) OF TORTS § 159 (1965).

18. *See, e.g.*, Gregg v. Delhi-Taylor Oil Corp., 344 S.W.2d 411 (Tex. 1961) (suit to enjoin hydraulic fracturing on subsurface trespass grounds).

19. Such situations should be rare, but consider a situation where a freshwater supply is being displaced or polluted, or when injected substances leach out of what is supposed to be a confined reservoir, causing serious pollution of the surface or subsurface that cannot otherwise be stopped and remediated. Under such facts, injunctive relief or ejectment may be appropriate. As another example, a mineral owner should be permitted to enjoin subsurface trespass when necessary to allow for the diligent extraction of minerals that are actually and economically

subsurface invasion should be prohibited or stopped should be left to regulatory agencies, not to courts and landowners. Accordingly, the ALI should prudently evaluate the appropriateness of any rule that contemplates the availability of injunctive relief. In circumstances where a landowner or mineral owner suffers actual and substantial subsurface damages,[20] courts should generally limit relief to money damages and deny injunctive relief or ejectment.[21] However, money damages should not be permitted where the only harm alleged is the mere loss of speculative value resulting from a subsurface trespass.

II. THE RESTATEMENT

The Second Restatement of Torts broadly construes the reaches of liability concerning subsurface invasions. Section 158, the principal Restatement provision pertaining to intentional trespasses, states:

> One is subject to liability to another for trespass, *irrespective of whether he thereby causes harm* to any legally protected interest of the other, if he intentionally,
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> (a) enters land in the possession of the other, or causes a thing or a third person to do so, or
> (b) remains on the land, or
> (c) fails to remove from the land a thing which he is under a duty to remove.[22]

Under the Restatement's definition of trespass, an actionable trespass occurs upon *any* intrusion that "enters land" in possession of another.[23] The Restatement uses the word "intrusion" to denote specifically that a possessor has an exclusive interest in his land, and the unprivileged presence of any person or thing otherwise amounts to an invasion of that interest.[24] This clearly reflects the common law tendency to afford great protection to a landowner seeking to maintain his right of exclusive possession,[25] but some limitations must exist, especially where an owner's

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recoverable and that would otherwise be displaced or become unrecoverable if the subsurface invasion were allowed to occur.

20. Because I would require a showing of actual and substantial subsurface damages, a plaintiff would have to show much more than a mere possibility of trespass. *Cf.* Williams v. Cont'l Oil Co., 14 F.R.D. 58 (W.D. Okla. 1953). In other words, merely establishing a subsurface intrusion is insufficient. *See, e.g.*, Vill. of DePue, Ill. v. Viacom Int'l, Inc., 632 F. Supp. 2d 854, 865 (C.D. Ill. 2009).

21. To this limited extent, my trespass proposal is similar to nuisance cases where damages are awarded but injunctions are denied. *E.g.*, Boomer v. Atl. Cement Co., 257 N.E.2d 870, 874–75 (N.Y. 1970) (awarding damages for nuisance but denying an injunction where the external costs of defendant's conduct were suffered largely by a few neighboring landowners but where the defendant's conduct provided a societal benefit).

22. RESTATEMENT (SECOND) OF TORTS § 158 (1965) (emphasis added).

23. *Id.* cmt. b.

24. *Id.* cmt. c.

25. *See* KEETON ET AL., *supra* note 14, § 13. ("It seems more reasonable to limit the recovery

use of his property is not impaired and no harm otherwise occurs.[26] Without providing exceptions for harmless subsurface invasions, the Restatement provides a cause of action to redress a host of subsurface activities that do no actual or substantial harm to the possessor's right of exclusive possession.

Although actual harm need not be proved for the rules of the Restatement to hold true, commentators readily recognize the difficulty of applying them when the trespass occurs above or below the surface of the land.[27] The Restatement expressly addresses intrusions upon, beneath, and above the surface of the land:

> (1) Except as stated in Subsection (2), a trespass may be committed on, beneath, or above the surface of the earth.
> (2) Flight by aircraft in the air space above the land of another is a trespass if, but only if,
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> (a) it enters into the immediate reaches of the air space next to the land, and
> (b) it interferes substantially with the other's use and enjoyment of his land.[28]

My concern is that the Restatement offers no provision comparable to Subsection (2) regarding subsurface trespass. The Restatement offers no distinction between deep versus shallow subsurface invasions and as such, directly extends its expansive scope of liability to include *any* activity that occurs beneath the earth, regardless of depth.[29] To support this proposition, the ALI offers a list of older cases,[30] with perhaps the most familiar being two cases involving caves: *Edwards v. Lee* and *Marengo Cave Co. v. Ross*, in which both courts treated the use of a cave extending laterally beneath neighboring land as a trespass.[31] Scholars, however, have been quick to criticize the conclusions reached in each of these

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without proof of damage to cases of intentional invasion, where the trespass action may serve an important purpose in determining and vindicating the right to exclusive possession of the property.").

26. *See* Chance v. BP Chems., Inc., 670 N.E.2d 985, 992 (Ohio 1996) ("Just as a property owner must accept some limitations on the ownership rights extending above the surface of the property, we find that there are also limitations on property owners' subsurface rights.").

27. DOBBS, *supra* note 8, § 50 ("[T]he plaintiff is not required to prove actual harm to the land or to persons or things on it; interference with possession is itself an injury for which the plaintiff can recover at least nominal damages. These rules still hold.").

28. RESTATEMENT (SECOND) OF TORTS § 159 (1965).

29. *Id.* cmt. e. ("Trespass beneath the surface may be committed by . . . any . . . unprivileged entry on land beneath the surface.").

30. City of Chicago v. Troy Laundry Mach. Co., 162 F. 678 (7th Cir. 1908) (applying Illinois law); Maye v. Yappen, 23 Cal. 306 (Cal. 1863); Wachstein v. Christopher, 57 S.E. 511 (Ga. 1907); Mamer v. Lussem, 65 Ill. 484 (Ill. 1872); Milton v. Puffer, 93 N.E. 634 (Mass. 1911); Nat'l Copper Co. v. Minn. Mining Co., 23 N.W. 781 (Mich. 1885); Buskirk v. Strickland, 11 N.W. 210 (Mich. 1882); Huber v. Portland Gas & Coke Co., 274 P. 509 (Or. 1929).

31. Marengo Cave Co. v. Ross, 10 N.E.2d 917, 923 (Ind. 1937); Edwards v. Lee, 19 S.W.2d 992, 992 (Ky. 1929).

cases,[32] labeling them as "dog-in-the-manger law."[33] Moreover, in tunneling cases that do not affect the value of the land, some would suggest that such activities should not be regarded as a trespass at all.[34] In instances where the value of the land is not impaired and the utility to the landowner is not otherwise compromised, courts have not often found an actionable subsurface trespass.

The ALI need not adopt a drastic rule that excludes all subsurface trespasses, which might include harmless shallow subsurface trespasses. Indeed, many shallow subsurface intrusions directly affect the surface and are thus essentially surface trespasses. Like "the immediate reaches of the airspace,"[35] the importance of protecting a possessor's exclusivity against shallow intrusions, even where no harm occurs, should be carefully considered.[36] Thus, the ALI need not adopt a rule that restricts a landowner from suing in trespass for the unauthorized connection to private sewage lines,[37] unauthorized placement of cable lines,[38] or any other shallow subsurface use that could directly or indirectly impair the surface of the property. On the other hand, for deeper subsurface activities such as waste injection operations (e.g., CO_2, saltwater, or other nonhazardous waste injection), gas storage operations, enhanced recovery operations, and hydraulic fracturing, most of which result in harmless deep subsurface invasions to neighboring property, the ALI should except these activities from liability for trespass. Presently, such invasions constitute intentional subsurface trespasses under the Restatement. In adopting a new rule, the ALI would merely follow the

32. KEETON ET AL., *supra* note 14, § 13 (stating that because the surface owner had no practical access to the caves, either now or in the future, the decisions are "dog-in-the-manger law, and can only be characterized as . . . very bad one[s].") (referencing Marengo Cave Co. v. Ross, 10 N.E.2d 917 (Ind. 1937); Edwards v. Lee, 19 S.W.2d 992 (Ky. 1929)).

33. *Id.*; SAMUEL CROXALL, THE FABLES OF ÆSOP 63 (Flyer Townsend ed., London, Fredrick Warne & Co. 1866) ("A Dog was lying upon a manger full of hay. An Ox, being hungry, came near, and offered to eat of the hay; but the envious, ill-natured cur, getting up and snarling at him, would not suffer him to touch it. Upon which the Ox, in the bitterness of his heart, said: 'A curse light on thee for a malicious beast, who can neither eat hay thyself, nor will allow those to eat it who can!'").

34. DOBBS, *supra* note 8, § 55.

35. RESTATEMENT (SECOND) OF TORTS § 159 (1965).

36. Compare § 159 to comment e which expressly states that a "trespass beneath the surface may be committed by building a foundation wall in such a way as to encroach upon neighboring premises, or by tunneling beneath the surface of the land into adjoining land[.]" *Id.* cmt. e. Though I would disagree that tunneling generally affects the surface of the land, I would not dispute that a landowner should be able to enjoin subsurface uses that more directly affect the surface of the land.

37. *See, e.g.*, Lambert v. Holmberg, 712 N.W.2d 268, 275 (Neb. 2006) (citing RESTATEMENT (SECOND) OF TORTS § 159 (1965)) (finding unauthorized connection to private sewage lines constitutes a continuous and repeated trespass beneath the surface of the land).

38. *But see* Cammers v. Marion Cablevision, 354 N.E.2d 353, 356 (Ill. 1976) (finding mandatory injunction inappropriate where cable television lines were installed without authorization at a depth between two and three feet).

direction courts have already taken.[39]

The current position advanced by the Restatement would hold a defendant liable for at least nominal damages for any intentional intrusions.[40] The intentionality of any subsurface invasion is of paramount concern,[41] given that it is the distinguishing factor in apportioning liability between invasions that do cause harm and those that do not.[42] Because waste injection operations, gas storage operations, and enhanced recovery operations would be considered intentional acts and could be done with intent or at least knowledge that such operations could invade neighboring subsurface, such operations would seem to be actionable for money damages under the Restatement and possibly subject to injunctive relief.[43] Yet, courts have been reluctant to grant such relief.[44]

Most modern courts have addressed subsurface trespass similarly to how the Restatement addresses airspace trespass. Specifically, courts have recognized that, just as airspace ownership is subject to limitations, so must subsurface ownership be subject to similar limits. Generally, in both airspace and subsurface cases, an intrusion results in an actionable trespass only where actual or substantial damages flow directly from the intrusion. The reason courts have distinguished harmless deep subsurface invasions from harmless shallow subsurface invasions pertains to the potential utility of the property interest invaded, like the Restatement has done for airspace invasions:

> Sir Edward Coke once gave utterance to the statement that "*cujus est solum, ejus est usque ad coelum,*" which, taken literally, means that he who owns the soil owns upward unto heaven. This has been repeated in many cases in which there has been no question of anything more than the immediate space above the ground. The

39. *E.g.*, Taco Cabana, Inc. v. Exxon Corp., 5 S.W.3d 773, 780 (Tex. App.—San Antonio 1999, pet. denied) (rejecting plaintiff's theory of trespass under Restatement § 158, which requires no showing of harm where subsurface contamination levels did not exceed thresholds established in the state water code).

40. DOBBS, *supra* note 8, § 14.

41. *See* RESTATEMENT (SECOND) OF TORTS § 163 cmt. b (1965).

42. *See id.* § 165 ("One who recklessly or negligently, or as a result of an abnormally dangerous activity, enters land in the possession of another or causes a thing or third person so to enter is subject to liability to the possessor *if, but only if, his presence or the presence of the thing or the third person upon the land causes harm* to the land, to the possessor, or to a thing or a third person in whose security the possessor has a legally protected interest." (emphasis added)).

43. *But cf. id.* § 166 ("[A]n *unintentional* and *non-negligent* entry on land in the possession of another . . . does not subject the actor to liability to the possessor." (emphasis added)).

44. *E.g.*, Crawford v. Hrabe, 44 P.3d 442 (Kan. 2002) (enhanced recovery); FPL Farming Ltd. v. Envtl. Processing Sys., L.C., 305 S.W.3d 739 (Tex. App.—Beaumont 2009, pet. granted) (wastewater injection). *But see* Hammonds v. Cent. Ky. Natural Gas Co., 75 S.W.2d 204 (Ky. 1934), *partially overruled by* Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust, 736 S.W.2d 25, 28 (Ky. 1987) (gas storage).

> advent of aviation has meant that it can no longer be regarded as law, if it ever was. *There must, in the public interest, and to avoid impossible confusion and hindrances, be limits to the upward ownership of airspace.*[45]

Just as the Restatement points out the importance of limiting the upward ownership of the airspace, courts, which have cited this same proposition as it applies to subsurface,[46] have appropriately accepted that similar limits should apply to the downward ownership of the subsurface. Recognizing the parallels between aerial and deep subsurface trespasses, the current text of the Restatement might be revised as follows:

> (1) Except as stated in Subsection (2), a trespass may be committed on, beneath, or above the surface of the earth.
> (2) Flight by aircraft in the air space above the land of another [or intrusions into the subsurface beneath the land of another] is a trespass if, but only if,
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> (a) it enters into the immediate reaches of the air space [or subsurface] next to the [surface of the] land, and
> (b) it interferes substantially with the other's use and enjoyment of his land.[47]

With such minor changes, the Restatement could more accurately reflect current case law trends, and the ALI would effectively advance its ultimate goal of assisting the legal community in understanding the evolving nature of the law. Moreover, this pragmatic approach to harmless deep subsurface trespass, which treats possessory rights below the surface similarly to those rights above the ground, is not only bolstered with reference to the cases cited herein but also accords with the opinions of scholars who have considered the issue.[48] Most importantly, such a change would further the efficient use of the deep subsurface to meet important societal needs.

III. AIRSPACE TRESPASS LAW

The most ubiquitous use of airspace is by airplanes. As such, the Restatement carves out an exception for air travel in its general formulation of the law of trespass.[49] Despite the somewhat perplexing

45. RESTATEMENT (SECOND) OF TORTS § 159 cmt. g (1965) (emphasis added).

46. *See, e.g.*, Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 11 (Tex. 2008); *FPL Farming Ltd.*, 305 S.W.3d at 743.

47. RESTATEMENT (SECOND) OF TORTS § 159 (1965). I realize that the ALI intends to reorganize the Restatement (Third) of Torts so that the current provisions on trespass will be rolled into a segment on torts related to land and water. *See generally* Ellen Pryor, *Restatement (Third) of Torts: Coordination and Continuation*, 44 WAKE FOREST L. REV. 1383 (2009). Since the ALI has no proposed draft of this segment, I have elected to take this conservative approach to suggesting new language.

48. DOBBS, *supra* note 8, § 55.

49. RESTATEMENT (SECOND) OF TORTS § 159 (1965).

exercise of discretion by the ALI to limit its exception for aerial trespasses to only aircraft,[50] recognition of the need for some limits on the upward ownership of airspace reflects the understanding that all air travel would be rendered impossible if every flight gave rise to a claim for trespass.[51] With this understanding, courts have universally rejected a strict adherence to the *ad coelum* doctrine,[52] generally finding the use of airspace by airplanes non-actionable unless a landowner suffers actual damages.[53] Grounded in this rationale, aerial trespass cases, which have inherently recognized the influence of new technology on the law, lend support to my argument that the ALI should extend this rationale to harmless deep subsurface trespasses.

Beginning with the First Restatement of Torts, the ALI has consistently recognized that flight by aircraft should be privileged from most claims of trespass.[54] Judicial acceptance of this caveat to the common law's stringent protection against trespass is grounded in the continuing need for courts "to adapt the law to the economic and social needs of the times."[55] In the case of aerial trespass, courts were quick to recognize the importance of air transportation on society; with this in mind, courts realized that vestiges of the common law might unnecessarily impede the advancement of society. This much is evident in *Hinman v. Pacific Air Lines Transport Corp.*, where the court observed the impracticality of the *ad coelum* doctrine:

> This formula "from the center of the earth to the sky" was invented at some remote time in the past when the use of space above land actual or conceivable was confined to narrow limits, and simply

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50. *Id.* ("The Institute expresses no opinion as to whether the rule stated in Subsection (2) is to be applied to the flight of space rockets, satellites, missiles, and similar objects").

51. *See* United States v. Causby, 328 U.S. 256, 261 (1946).

52. The full statement of this doctrine relating to surface, airspace, and subsurface is: *cujus est solum, ejus est usque ad coelum et ad inferos*, meaning "to whomsoever the soil belongs, he owns also to the sky and to the depths." BLACK'S LAW DICTIONARY 1834 (9th ed. 2009).

53. *E.g.*, Hinman v. Pac. Air Transp. Corp., 84 F.2d 755, 758–59 (9th Cir. 1936) (construing California law and holding that use of airspace is not unlawful without proof of actual injury); *Causby*, 328 U.S. at 266 (recognizing that airplanes may freely navigate airspace unless the regularity of the flights are so low and constant as to make it impossible for the true owner to reside upon or farm the land).

54. RESTATEMENT OF TORTS § 194 (1934).

> An entry above the surface of the earth, in the air space in the possession of another, by a person who is traveling in an aircraft, is privileged if the flight is conducted:
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> (a) for the purpose of travel through the air space or for any other legitimate purpose,
> (b) in a reasonable manner,
> (c) at such a height as not to interfere unreasonably with the possessor's enjoyment of the surface of the earth and the air space above it, and
> (d) in conformity with such regulations of the State and federal aeronautical authorities as are in force in the particular State.

55. Swetland v. Curtiss Airports Corp., 55 F.2d 201, 203 (6th Cir. 1932) (applying Ohio law).

> meant that the owner of the land could use the overlying space to such an extent as he was able, and that no one could ever interfere with that use.[56]

In *Hinman*, the court observed that the doctrine was "never taken literally, but was a figurative phrase to express the full and complete ownership of land and the right to whatever superjacent airspace was necessary or convenient to the enjoyment of the land. . . . Title to the airspace unconnected with the use of land is inconceivable."[57] The court then reasoned that any use of airspace that actually injures the land or interferes with its possession or beneficial use would be a trespass, but "any claim of the landowner beyond this cannot find a precedent in law, nor support in reason."[58] The court further reasoned that a stricter rule would mean that "any use of airspace . . . without [landowner] consent would be a trespass either by the operator of an airplane or a radio operator," and thus refused to "foist any such chimerical concept of property rights upon the jurisprudence of this country."[59] The court concluded that "traversing the airspace above appellants' land is not, of itself, a trespass at all, but it is a lawful act unless it is done under circumstances which will cause injury to appellants' possession."[60] The court then held that the plaintiffs "do not, therefore, in their bill state a case of trespass, unless they allege a case of actual and substantial damage."[61] Because the plaintiffs had not shown actual damages, the court denied both money damages and injunctive relief.[62] In a later case, *United States v. Causby*, the U.S. Supreme Court found that the particular use of airspace by military aircraft caused actual and substantial damages to a chicken farmer and was found to be a taking.[63] Nonetheless, what remains evident is that "ownership rights in today's world are not so clear-cut as they were before the advent of airplanes . . . ."[64]

Outside the use of aircraft, the courts have adhered to a somewhat stricter view of airspace trespass. Understandably, consistent with the body of case law surrounding "overhang" situations (e.g., when a trespasser constructs an improvement or plants a tree that intrudes into the airspace of neighboring land), the ALI does not provide a broad exception for airspace trespass.[65] Overhang encroachments generally are

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56. *Hinman*, 84 F.2d at 757 (construing California law).
57. *Id.* (responding to plaintiff's argument that they were entitled to absolute title to all airspace to such height as may become useful but no less than 150 feet).
58. *Id.* at 758.
59. *Id.*
60. *Id.* at 758–59.
61. *Id.* at 759.
62. *Id.*
63. United States v. Causby, 328 U.S. 256, 265–66 (1946).
64. Chance v. BP Chems., Inc., 670 N.E.2d 985, 992 (Ohio 1996).
65. *See, e.g.*, Geragosian v. Union Realty Co., 193 N.E. 726, 728 (Mass. 1935) (addressing an

not necessary to meet an important societal or private commercial need. Moreover, these encroachments generally occupy airspace near the surface and therefore are akin to a surface invasion. Thus, in the case of trees, the invaded landowner may trim the branches or demand their periodic removal back to the property line, regardless of whether the landowner suffers any actual harm.[66] Nevertheless, injunctive relief may be denied where a trespassing overhang causes no actual harm to the plaintiff landowner.[67] In keeping with the Restatement's cautious approach to exceptions, only harmless invasions, which occur outside the readily usable reaches of the subsurface, should not be actionable in trespass.

IV. THE STATE OF EXISTING SUBSURFACE TRESPASS LAW

Though much of the existing subsurface trespass case law is consistent with my suggested modifications to the Restatement, the case law does not always directly deal with the trespass issue because the chief concern of the litigants may be something else. For that reason, I have grouped the case law by particular subsurface uses, as the type of use often influences the actual issue put before the court and thus the outcome of the case. Despite this lack of cohesion, my general proposition—that the ALI should treat subsurface intrusions the same as airspace intrusions—is well supported.

A. Traditional Oil and Gas Trespass Cases

In the context of oil and gas development, the most obvious example of a *non*-trespass occurs when an operator drills a directional or horizontal oil or gas well beneath a neighboring tract that is included within a drilling unit for that well.[68] These cases, however, are of little support. The proper establishment of a unit exempts such subsurface use either under the spacing and pooling provisions of the applicable oil and gas conservation act or under the pooling clause of an oil and gas lease.

On the other hand, the most obvious example of actionable trespass is the drilling of a directional well that bottoms out beneath neighboring property that is not part of the drilling unit for that well.[69] The

overhanging fire escape).

66. *See, e.g.*, Jones v. Wagner, 624 A.2d 166, 168 (Pa. Super. Ct. 1993).

67. *Geragosian*, 193 N.E. at 726–28.

68. *See, e.g.*, Nunez v. Wainoco Oil & Gas Co., 488 So. 2d 955, 964 (La. 1986); Kysar v. Amoco Prod. Co., 93 P.3d 1272, 1282 (N.M. 2004); Cont'l Res., Inc. v. Farrar Oil Co., 559 N.W.2d 841, 846 (N.D. 1997).

69. *See, e.g.*, Alphonzo E. Bell Corp. v. Bell View Oil Syndicate, 76 P.2d 167, 171–72 (Cal. Ct. App. 1938); Gliptis v. Fifteen Oil Co., 16 So. 2d 471, 474 (La. 1944). In the context of hard minerals, mining beneath another's property constitutes a similar trespass. *See, e.g.*, Del Monte Mining & Milling Co. v. Last Chance Mining & Milling Co., 171 U.S. 55, 65–67 (1898). English cases treated mining beneath another's property as fraud. Livingston v. Rawyards (1880) L.R. 5

Restatement should continue to consider such trespasses actionable because the trespass is not necessary for the exploitation of oil and gas resources since a non-trespassing well either could be drilled to exploit the same resources or would be a dry hole, which in the latter case would not give the trespasser a correlative right to the oil and gas reservoir. Accordingly, even with the revisions suggested, such entries that "interfere substantially with the other's use and enjoyment" would remain actionable.[70]

In a directional trespass action, the plaintiff will often assert and prove bad faith conversion of oil and gas, which ordinarily achieves a higher recovery than a claim for trespass damages.[71] Because of the rule of capture, the oil and gas converted by the trespasser is generally held to be 100% of the production, even though some of the oil and gas may have been drained from beneath the trespasser's own land.[72] In addition to money damages, such a trespass may be enjoined in appropriate circumstances.[73] The actual measure of damages for conversion is either the net value or gross value of the converted minerals or hydrocarbons.[74] If the court finds that the trespass was committed in good faith (i.e., the trespasser reasonably believed that he was not trespassing), the court will limit the award of damages to net value by allowing the trespasser to deduct the costs of mining or drilling and production in the course of accounting to the rightful owner for the conversion.[75] The ability to deduct costs, however, also depends on whether the mining or hydrocarbon production was economically beneficial to the true owner.[76]

On the other hand, if the court finds that the trespass was committed in bad faith[77] or if the true owner did not economically benefit from mining or hydrocarbon production, the court will award the gross value of the converted minerals or hydrocarbons without allowing the trespasser to deduct costs.[78] Such a remedy serves as a form of punitive damages and discourages the actor from future similar conduct.[79] If prices are volatile,

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App.Cas. 34; Hilton v. Woods, L.R. 4 Eq.Cas. 440; Dean v. Thwaite, 21 Beav. 623; Ecclesiastical Comm'rs for Eng. v. N. E. Ry. Co., L.R. 4, Ch.Div. 860; Trotter v. McLean, L.R. 13, Ch.Div. 585.

70. RESTATEMENT (SECOND) OF TORTS § 159 (1965).

71. *See, e.g.*, Pan Am. Petroleum Corp. v. Long, 340 F.2d 211, 220 (5th Cir. 1964) (construing Texas law).

72. *See, e.g.*, Edwards v. Lachman, 534 P.2d 670, 675–76 (Okla. 1974). In *Gribben v. Carpenter*, 185 A. 712, 715–16 (Pa. 1936), the court awarded damages for the full value of all gas produced and commingled from a trespass well and from a lawful well.

73. *See, e.g.*, Hastings Oil Co. v. Tex. Co., 234 S.W.2d 389, 392 (Tex. 1950).

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

75. *See, e.g.*, Rudy v. Ellis, 236 S.W.2d 466, 468 (Ky. 1951).

76. *See, e.g.*, *Edwards*, 534 P.2d at 675.

77. In some states, willful trespass is presumed, and this presumption must then be overcome by evidence of good faith. *See, e.g.*, *Rudy*, 236 S.W.2d at 528–29.

78. *See, e.g.*, Mayfield v. Benavides, 693 S.W.2d 500, 506 (Tex. App.—San Antonio 1985, writ ref'd n.r.e.).

79. *See, e.g.*, *Wronski*, 279 N.W.2d at 572.

a bad faith trespasser may also be required to account for gross value at the highest market value between the time of conversion and filing of the claim.[80]

In cases of directional trespass resulting in a dry hole, courts have allowed recovery for any resulting devaluation of the land caused by the dry hole.[81] In instances of seismic trespasses, courts have permitted affected landowners to waive their trespass claim and sue in assumpsit.[82] The consistency with which courts have awarded damages in each of these contexts reflects the willingness of courts to grant relief upon a showing of actual harm to the affected land, in either physical or economic terms. As such, should the ALI undertake to modify its current text, it should preserve a cause of action to remediate the harm caused by directional drilling for oil and gas that results in a subsurface trespass.

B. Subsurface Trespass Resulting From Hydraulic Fracturing

In *Coastal Oil & Gas Corp. v. Garza Energy Trust*, addressing subsurface trespass in the context of hydraulic fracturing, the court's recognition of the impact of technological advances on hydrocarbon recovery illustrates why the ALI should consider revising its Restatement.[83] In this case, the Texas Supreme Court held that a subsurface invasion by a hydraulic fracturing operation was not an actionable trespass because the resulting damage—the drainage of hydrocarbons—was protected by the rule of capture.[84] Despite the fact that *Garza* fails to offer direct support given its reliance on the rule of capture, it nonetheless advances the revisions proposed. Specifically, the court offered no sympathy to plaintiffs who alleged a subsurface trespass that caused no actual, substantial, and legally recoverable damages. As such, *Garza* serves as another example of the judicial trend to refuse claims for harmless subsurface intrusions.

The court recognized that the plaintiffs were harmed by the increased

80. *See, e.g.*, Champlin Ref. Co. v. Aladdin Petroleum Corp., 238 P.2d 827, 830 (Okla. 1951); Probst v. Bearman, 183 P. 886, 888 (Okla. 1919).

81. Recovery has been allowed in cases dealing with surface and subsurface trespass and vertical drilling. *E.g.*, Matheson v. Placid Oil Co., 33 So. 2d 527, 531 (La. 1947); Humble Oil & Ref. Co. v. Kishi, 276 S.W. 190, 191 (Tex. Comm'n App. 1925). *But see* Martel v. Hall Oil Co., 253 P. 862, 867 (Wyo. 1927) (denying damages when a trespasser drilled a dry hole).

82. Phillips Petroleum Co. v. Cowden, 241 F.2d 586, 592 (5th Cir. 1957) (applying Texas law). Fortunately, the efficacy of this dictum can now be seriously questioned in light of *Coastal Oil & Gas Corp. v. Garza Energy Trust*, which held that hydraulic fracturing that encroaches into nearby property and results in drainage of hydrocarbons is not actionable because the drainage is protected by the rule of capture. 268 S.W.3d 1, 4 (Tex. 2008).

83. *See generally Garza*, 268 S.W.3d 1.

84. *Id.* at 13–15. In *People's Gas Co. v. Tyner*, the Indiana Supreme Court held that the analogous technique of shooting a well to prime recovery was protected by the rule of capture but also subject to the law of nuisance where the shooting, which was done with nitroglycerin, posed a danger to a densely populated area. 31 N.E. 59, 60 (Ind. 1892).

drainage, but this harm was attributable only to the increased drainage resulting from the hydraulic fracturing operations, not the physical trespass of the fracturing fluids and proppants.[85] Moreover, the harm caused by drainage was not actionable because the drainage was privileged under the rule of capture and thus shielded the draining party from liability as a matter of law.[86] The court reached this decision even though the jury found that a subsurface trespass occurred when the defendants injected fluids and proppants.[87] The court tried to explain away this invasion by reasoning that the drained oil had actually been captured in the wellbore beneath the defendants' land rather than by the fractures.[88] Justice Willett, in his concurring opinion, went even further, suggesting that hydraulic fracturing results in "no trespass at all."[89] Fortunately, the majority offered a more convincing public policy reason for its decision: Hydraulic fracturing prevents underground waste by facilitating hydrocarbon recovery from tight reservoirs not otherwise considered productive.[90] Thus, hydraulic fracturing was necessary to meet an important societal need, the fluids and proppants caused no actual and substantial harm, and the resulting drainage was privileged.

Consistent with my proposed revisions to the Restatement, the court did suggest that it might grant trespass relief if the plaintiffs could show other harm, such as damage to wellbores on their property.[91] The logic of the court's decision is: (1) there was a subsurface invasion of a common reservoir; (2) the subsurface invasion may have caused substantial drainage of hydrocarbons from beneath the invaded property but no other apparent damage; and (3) the rule of capture barred recovery for this drainage.[92] Thus, actual recoverable damage was an essential element for relief.[93] In terms of the broader subject of subsurface trespass, the

85. *Garza*, 268 S.W.3d at 13–14.
86. *Id.* at 14.
87. *Id.* at 8.
88. *Id.* at 14.
89. *Id.* at 29.
90. *Id.* at 16–17. Professor David Pierce criticizes the court's reliance on a trespass and rule of capture analysis, arguing that the court should have grounded its decision in the doctrine of correlative rights—the flip side of the rule of capture coin. Under this approach, the court would have first addressed whether hydraulic fracturing was a permissible operation to develop a common reservoir. If the court determined that hydraulic fracturing was within an operator's correlative right to capture a fair share of the hydrocarbons from a common reservoir, then the rule of capture would bar damages. David E. Pierce, *Minimizing the Environmental Impact of Oil and Gas Development by Maximizing Production Conservation*, 85 N.D. L. REV. 759, 761 (2009).
91. *Garza*, 268 S.W.3d at 17.
92. *See generally Garza*, 268 S.W.3d 1.
93. *Id.* at 11. The court did begin its analysis by finding that, because the cause of action was filed by a lessor, the proper action lay in trespass on the case, for harm to lessor's reversion, rather than in trespass *quare clausem fregit*, which could have been brought by the holder of a present possessory interest. *Id.* at 9–11. The court held that the lessor had standing to sue for trespass on the case, but the court further held that this action required a showing of actual

most important statement in *Garza* is the court's observation that "[t]he law of trespass need no more be the same two miles below the surface than two miles above."[94]

C. Subsurface Trespass Resulting From Horizontal Drilling and Improper Pooling

A potentially troublesome area involves horizontal drilling. In *Browning Oil Co. v. Luecke*, the lessors, collectively called the Lueckes, executed three leases that contained pooling clauses.[95] However, the power to pool was limited by anti-dilution provisions requiring that any pooled unit comprise at least 60% Luecke land.[96] The lessees exercised their pooling power by forming two units and then drilled two horizontal wells, but each unit violated the anti-dilution provision of the Luecke leases.[97] The surface location for the first well was located on Luecke land, but the horizontal portion of the wellbore traversed into some non-Luecke land.[98] The surface location for the second well was not on Luecke land, but the horizontal portion of the wellbore traversed through two separate parcels of Luecke land.[99] Because the units violated the anti-dilution provision—an express limitation on the lessees' pooling power—the Lueckes claimed royalty on all production from the first well. Additionally, because the wellbore for the second well traversed through two separate Luecke tracts, they aggressively sought double royalty on all production from that well.[100]

The trial court found that the anti-dilution provision applied to horizontal wells and that the lessees had breached the provision. The lessees appealed.[101] After much discussion, the appellate court determined that the measure of damages sought by the Lueckes was unworkable and punitive, citing the fact that the horizontal wellbores physically traversed and perforated both Luecke land and non-Luecke land.[102] In reaching its conclusion, the court found that the Lueckes' claim to entitlement of royalties on all production failed because "the

damage. *Id.* at 11. This should not be read as implying that the holder of a present possessory interest would not be required to show actual damages to enjoin hydraulic fracturing; however, the court did suggest that the holder of a possessory interest may be entitled to recover nominal damages. *Id.* The prospect of nominal damages for subsurface trespass does not threaten valuable subsurface uses, but injunctive relief certainly would.

94. *Id.* at 11.
95. Browning Oil Co. v. Luecke , 38 S.W.3d 625, 636 (Tex. App.—Austin 2000, pet. denied).
96. *Id.* at 637.
97. *Id.* at 638–39.
98. *Id.* at 638.
99. *Id.*
100. *Id.* at 639.
101. *Id.*
102. *Id.* at 645.

geophysical characteristics of the formation actually inhibit the natural drainage underlying the rule of capture[.]"[103] In further support, the court noted the following:

> Simply put, the migratory nature of oil and gas that supplies the rationale for the rule of capture and the Lueckes' claim to all production from neighboring tracts does not apply to horizontal wells drilled in highly fractured formations.[104]
> ....Thus, each point along the drainhole is contributing to production from isolated fractures, and no one drillsite is naturally draining minerals from all of the penetrated tracts. Even though the rule of capture and other principles of oil and gas law would afford the Lueckes royalties on all production if a vertical well were drilled on their land without valid pooling, these principles have no application in the case of horizontal wells that contain multiple drillsites on tracts owned by multiple landowners.[105]

Was the court's refusal to apply the rule of capture to horizontal drilling correct? More particularly, should the rule of capture be applied to a hydraulically fractured horizontal well in a *Garza*-like trespass situation? The ALI should discount the position taken in *Luecke*. The Texas Supreme Court is not likely to distinguish *Garza* by refusing to apply the rule of capture to a well that is partially horizontal as opposed to only vertical, so long as the fluids and proppants, and not the horizontal portion of the wellbore, are the only intrusions into neighboring property.[106] Although hydraulically fracturing a horizontal well is a completion technique whereas waterflooding is a secondary recovery technique, the two are not so different: both result in the production of hydrocarbons that would not be recovered absent the subsurface invasion of the horizontal wellbore or the injected water. Thus, the Texas Supreme Court would likely hold that the rule of capture applies to a hydraulically fractured horizontal well—just as it did in *Garza*, when the court cited and relied upon its prior *Manziel* decision that dealt with waterflooding.[107] In any event, while *Luecke* seems

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103. *Id.*
104. *Id.* at 646.
105. *Id.*
106. Moreover, I think the Texas Court of Appeals' holding in *Browning* regarding the measure of damages emasculated the anti-dilution clause of the Lueckes' leases. Recognizing the fact that the well was not wholly confined to Luecke tracts, I submit that the appropriate measure of damages should have been the difference between the royalty that the Lueckes received under the unit as formed and the royalty the Lueckes would have received if the unit had been properly formed in compliance with the anti-dilution clause. *Cf.* Sw. Gas Producing Co. v. Seale, 191 So. 2d 115 (Miss. 1966). The fact that the Lueckes claimed double royalty on the well that traversed two of their tracts and then lost on appeal is an example of the old saw: "Pigs get fed. Hogs get slaughtered."
107. Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 12 (Tex. 2008). Also, see infra Section IV(F) for discussion of *R.R. Comm'n v. Manziel*, 361 S.W.2d 560 (Tex. 1962).

inconsistent with *Garza* on the rule of capture, *Luecke* does not directly address subsurface trespass.

D. Subsurface Trespass Resulting From Subsurface Use to Access Minerals Beneath Other Lands

Suppose that an operator who holds the right to develop Tract B locates a well on the surface of Tract A and uses the surface and subsurface of Tract A to gain access to the Tract B hydrocarbons. Further, suppose that the Tract A surface owner gave the operator permission to use both the surface and subsurface of Tract A for this purpose but that the mineral (hydrocarbon) owner of Tract A did not. Additionally, the surface of Tract B will not readily accommodate an efficient well location, and all well perforations comply with conservation regulations and are limited to Tract B. Given the intentional nature of the intrusions against the mineral owner of Tract A, the Restatement would hold that the operator has committed an actionable trespass.[108] However, in these circumstances, to the extent the operator makes use of Tract A with the surface owner's permission, courts should find otherwise. In other words, using the subsurface of Tract A should not constitute a trespass against the mineral owner *unless* the mineral owner suffers actual and substantial harm beyond drainage—such as where the location of the well or wellbore leaves no suitable well or wellbore location for the mineral owner to exploit the minerals beneath Tract A.

So long as the well is perforated only beneath Tract B, any resulting drainage of Tract A should be protected under the rule of capture, and use of the surface and subsurface of Tract A should not be grounds for an "obstruction" claim by the Tract A mineral owner. In contrast, however, the current text of the Restatement supports a trespass claim that inevitably could lead to underground waste of hydrocarbons. If the courts were to hold that the mineral owner must consent to such use, then the drilling party would likely need to secure the unanimous consent of all co-tenant mineral owners.[109] Due to the proliferation of fractional mineral ownership, obtaining unanimous consent is often difficult and costly,[110] especially since mineral owners have a natural incentive to deny access because of the drainage they might suffer.

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108. *See* RESTATEMENT (SECOND) OF TORTS § 158 (1965).

109. *See, e.g.*, Elliott v. Elliott, 597 S.W.2d 795, 802 (Tex. Civ. App.—Corpus Christi 1980, writ ref'd).

110. In *Ellis v. Arkansas Louisiana Gas Co.*, the court observed that if "the mineral interest owner and not the surface owner . . . had the power to grant storage rights, it would typically mean that hundreds of severed mineral interest owners would have to be contacted if those rights were to be obtained privately." 450 F. Supp. 412, 422 (E.D. Okla. 1978), *aff'd*, 609 F.2d 436 (10th Cir. 1979).

Though the cases addressing the topic have been somewhat mixed,[111] each offers insight into the appropriate role that damages have played in the courts' consideration of physical, though harmless, trespasses. In *Atlantic Refining Co. v. Bright & Schiff*, oil and gas lessors, who were also the apparent surface owners, entered into a surface lease that allowed an oil and gas operator on neighboring property to temporarily locate pits, pumps, and tanks incident to drilling on the surface so the operator could drill a well on its own property.[112] The oil and gas lessee challenged the right of its lessors to issue a surface lease that facilitated drilling on other land.[113] The court rejected this challenge, noting that the lessee "must prove that the use interferes with the reasonable exercise of his own rights under his own lease."[114] The court found that "[t]o do this he must prove that he needs the surface at the time and place then being used by the other user."[115] The court also rejected the lessee's concern that the well in question would end up draining the lessee's tract.[116] The court concluded, "[d]rainage presents no new problem. The rule of capture is settled law."[117] Accordingly, the court refused to enjoin the lessee's operations as an instrument to protect the lessee "from the risk of drainage."[118]

In *Grubstake Investment Ass'n. v. Coyle*, an oil and gas lessee of land adjacent to a river challenged the right of the operator-lessee of the riverbed to erect on the land, with the surface owner's permission, "a small [sic] tollhouse, a boiler, small tanks, and a tent" to aid drilling a well beneath the riverbed.[119] Noting that the well itself was not located on the land at issue, the appellate court affirmed the jury's decision that the operator's surface use did not interfere with the lessee's rights to develop its lease.[120] Thus, the use could not be barred by the complaining lessee.[121]

Dictum in *Union Oil Co. of California v. Domengeaux* suggests that in some cases, a trespassing slant well might not be enjoined:

> [W]e do not wish to be understood as holding that every subsurface

111. Even express contract provisions are sometimes unenforceable on the ground of public policy. In the subsurface trespass context, see *Lachman v. Sperry-Sun Well Surveying Co.*, 457 F.2d 850, 853 (10th Cir. 1972) (construing Oklahoma law and refusing to enforce confidentiality agreement to conceal a directional wellbore that trespassed beneath neighboring land).

112. Atlantic Ref. Co. v. Bright & Schiff, 321 S.W.2d 167, 168 (Tex. Civ. App.—San Antonio 1959, writ ref'd n.r.e.).

113. *Id.*

114. *Id.* at 169.

115. *Id.*

116. *Id.*

117. *Id.*

118. *Id.* at 170.

119. Grubstake Inv. Ass'n. v. Coyle, 269 S.W. 854, 854 (Tex. Civ. App.—San Antonio 1925, writ dism'd w.o.j.).

120. *Id.* at 856.

121. *Id.*

> trespass in the drilling of an oil well would warrant injunctive relief. We can conceive of an oil well deviating slightly from the perpendicular, trespassing to a small extent upon the land of an adjoining owner and returning to oil-producing strata within the property of the owner of the well. In such case, the damage, if any, to the adjoining owner might be said to be wholly inconsequential and equitable relief might properly be withheld[.][122]

While this dictum suggests a minor and perhaps unintentional trespass,[123] it also suggests that the subsurface owner would have to suffer actual and substantial damages before relief— including equitable relief—will be granted, even though the wellbore would constitute a continuing trespass.[124]

In *Humble Oil & Refining Co. v. L. & G. Oil Co.*, the plaintiff, an oil and gas lessee, was not allowed to prevent another operator from using the surface of a one-acre leasehold as a well site to drill a slant well to access hydrocarbons from beneath a railroad right of way.[125] The operators had acquired fee title to the one-acre tract, subject to the plaintiff's oil and gas lease.[126] The court summarily affirmed the trial court's finding of fact that the well did not interfere with the plaintiff's leasehold rights.[127]

However, in *Mid-Texas Petroleum Co. v. Colcord* the court allowed the oil and gas lessees to enjoin the drilling of slant wells by another operator on two of their leased tracts.[128] The operator sought to access hydrocarbons beneath an adjacent riverbed. However, the court found that the whole surface was needed by the lessees under the particular circumstances.[129] At first blush, the finding that the whole surface was needed by the lessees seems questionable given that the area at issue

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122. Union Oil Co. of Cal. v. Domengeaux, 86 P.2d 127, 130 (Cal. Ct. App. 1939).

123. The Restatement carves exceptions for mistaken *unintentional* trespasses. However, most trespasses involving oil and gas drilling or subsurface injection or storage would not properly be considered unintentional. *See* Terre Aux Boeufs Land Co. v. J. R. Gray Barge Co., 803 So. 2d 86, 95–96 (La. Ct. App. 2001) (finding that subsurface drilling operations where operator's wellbore was inadvertently bottomed beneath neighboring property were still "**intentional** actions . . . despite the fact that the defendants did not **intend** to trespass when they took those actions").

124. *But see* Gliptis v. Fifteen Oil Co., 16 So. 2d 471, 474 (La. 1944) ("*Any* unlawful physical invasion of the property of another is a trespass[,]" regardless of whether a trespass is intentional.) (emphasis added); RESTATEMENT (SECOND) OF TORTS § 166 (1965) ("[A]n unintentional and non-negligent entry on land in the possession of another . . . does not subject the actor to liability to the possessor, *even though the entry causes harm*[.]") (emphasis added).

125. Humble Oil & Ref. Co. v. L. & G. Oil Co., 259 S.W.2d 933, 934 (Tex. Civ. App.—Austin 1953, writ ref'd n.r.e.).

126. *Id.*

127. *Id.* at 938.

128. Mid-Texas Petroleum Co. v. Colcord, 235 S.W. 710, 711 (Tex. Civ. App.—Fort Worth 1921, writ ref'd).

129. *Id.*

comprised two 20-acre tracts.[130] But the extent of surface use by the surface owners and the anticipated surface use by the slant-well operators was not fully explained. The tracts in question were long, narrow, and adjacent to the riverbed, and they apparently were underlain with three productive sands.[131] Thus, the shape of the tracts and the date of case, 1921, suggests that both the slant-well operators and the lessees might each have intended to use much of the surface of both tracts to drill multiple single completion wells and associated facilities. Moreover, the court reasoned that the plaintiff-lessees would need the surface because they would be obliged to offset each of the slant wells to prevent drainage from beneath their lease.[132] In this regard, the court did not seem troubled by the idea that the slant wells would drain the leasehold, but it did recognize that the lessees would need the entire surface to drill appropriate offsetting wells.[133] Today, given modern well spacing laws and multiple completion technologies, a court would likely not make the same findings of fact regarding the need for the lessees to use the entire surface of two 20-acre tracts.

Unfortunately, a more recent case, *Chevron Oil Co. v. Howell*, suggests a similar result. Here, the court appears to have assumed, without expressly deciding, that both a surface tenant and an oil and gas lessee could enjoin the slant-well operations of another party who was seeking to access hydrocarbons beneath an adjacent riverbed.[134] The slant-well operator claimed to have a license from the United States, as surface owner, to locate the slant well on the premises.[135] However, the court found that the operator's documentation did not grant such a license and therefore allowed both the surface tenant and the mineral lessee to enjoin the operation.[136] In so doing, the court found that "[t]he testimony of appellant's own witness, its superintendent, was to the effect that to drill the hole is to damage the formation—'any time you drill into something there is bound to be some damage.'"[137] The court then concluded that "continuous trespasses to mining property are irreparable and the legal remedy is inadequate, hence equity is quick to restrain the trespass. . . . [E]quity will intervene to avoid the necessity of the filing of a multiplicity of damage suits by the aggrieved party in cases involving continuing trespasses."[138] Because the operator did not have permission

130. *Id.*
131. *Id.* at 711, 714.
132. *Id.* at 714.
133. *Id.*
134. *See* Chevron Oil Co. v. Howell, 407 S.W.2d 525, 525 (Tex. Civ. App.—Dallas 1966, writ ref'd n.r.e.).
135. *Id.* at 527.
136. *Id.* at 528.
137. *Id.*
138. *Id.* (citation omitted).

to use the surface, the court properly enjoined the operation under these facts. However, the court's reasoning is troubling in that it appears to allow the mineral owner to enjoin any such use on the ground that "any time you drill into something there is bound to be some damage."[139]

Two California cases support the right of a mineral owner to enjoin use of the surface by another hydrocarbon operator on the grounds of trespass.[140] One case cites the drainage of a common pool as the primary basis for injunctive relief.[141] The other case relies on the language of the instrument giving "exclusive" rights to the hydrocarbon claimant.[142] However, in contrast to *Garza*, neither case addressed whether damages caused by drainage should be protected under the rule of capture.[143] Moreover, neither case considered whether its ruling could lead to economic or underground waste.

In *Phillips Petroleum Co. v. Cowden*, the court recognized that the surface owner and the mineral owner may concurrently hold the rights to use the surface of their property to conduct seismic surveying for the purpose of exploring nearby property.[144] The court reached this conclusion on the ground that any gathered information about nearby property is bound to be even more informative about the occupied property.[145] If the targeted area of the survey includes the land at issue, then one mineral interest owner of that property should have to grant permission.[146] However, the occupied land may not be the targeted area in the case of 3-D seismic. In a 3-D survey, data is gathered from above and around the targeted area.

As I have previously written, the rule of capture should protect the

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139. *Id.*

140. *See* New v. New, 306 P.2d 987, 996 (Cal. Ct. App. 1957); Hancock Oil Co. v. Meeker-Garner Oil Co., 257 P.2d 988, 992 (Cal. Ct. App. 1953) (mineral owner allowed to enjoin use of surface by mineral operator to develop adjoining land even though the operator had secured permission from the surface owner).

141. *Hancock*, 257 P.2d at 991–92.

142. *New*, 306 P.2d at 996 (stating that mineral claimants held an instrument giving them the "the exclusive right to enter upon said lands . . . for [drilling] purposes"). The court concluded, "Though the matter is not free from doubt, we think this instrument conferred upon the contractor exclusive use of the surface so far as producing oil from the premises was concerned." *Id.* Other cases have addressed the question of whether a lease confers "exclusive" rights to *explore* for minerals, and have often turned on the express language of the lease. Shell Petroleum Corp. v. Puckett, 29 S.W.2d 809, 810 (Tex. Civ. App.—Texarkana 1930, writ ref'd) (exploration rights were non-exclusive under the lease); Wilson v. Texas Co., 237 S.W.2d 649, 650 (Tex. Civ. App.—Fort Worth 1951, writ ref'd n.r.e.) (exploration rights were "exclusive" by express language in the lease).

143. *See* discussion *supra* Part IV(B).

144. Phillips Petroleum Co. v. Cowden, 241 F.2d 586, 590 (5th Cir. 1957) (construing Texas law).

145. *Id.* at 590–91.

146. I say "one" mineral owner because in *Enron Oil & Gas Co. v. Worth*, 947 P.2d 610, 613 (Okla. Civ. App. 1997), the court held that seismic operations could be conducted by the owner of a fractional mineral interest even though all mineral interest owners may be affected by the seismic operations.

gathering of seismic information from nearby lands so long as there is no surface trespass.[147] Applying the rule of capture will prevent the economic waste of having gathered information but not being able to use the information that directly relates to invaded land.

While the results of these cases are mixed, the better reasoned cases are those that support the use of the surface and subsurface of Tract A to gain access to Tract B without the need to secure permission from the Tract A mineral owner. In addressing subsurface use courts should go one step further: the drilling party should be permitted to use the subsurface of Tract C (a tract between Tract A and B) if necessary to gain access to Tract B's hydrocarbons without securing permission from either the surface or mineral owner so long as the well bore is not perforated to produce hydrocarbons directly from Tract B.

E. Subsurface Trespass Resulting From Waste Disposal Operations

A regulatory body, such as an oil and gas conservation agency, has no general authority to authorize trespasses or other torts.[148] Nevertheless, a trespasser in possession of a regulatory permit may have some insulation from trespass claims. The most obvious example is to assist in responding to an emergency by extinguishing a well blowout and fire.[149] Temporary invasions are also privileged if necessary to establish justice, such as performing a directional survey of a wellbore that may be encroaching on neighboring land.[150] The current text of the Restatement reflects similar notions, as it permits entry onto another's land in a variety of privileged circumstances.[151] The underlying rationale is that in certain circumstances, entry onto another's property is justified.[152] For "[i]t is a very ancient rule of the common law, that an entry upon land to save goods which are in jeopardy of being lost or destroyed . . . is not a trespass."[153] But questions arise concerning the appropriateness of privileged entries where an intrusion is not founded upon averting some imminent danger or threat to the public or upon a property owner's need to recover chattels. Particularly, what happens in instances where the state issues a regulatory permit and the permittee, in direct facilitation of its own commercial interests, then commits a subsurface trespass?

147. *See generally* Owen L. Anderson & John D. Pigott, *3-D Seismic Technology: Its Uses, Limits, & Legal Ramifications*, 42 ROCKY MTN. MIN. L. INST. 16-1, 16-111 to -117 (1996).

148. *See, e.g.*, Berkley v. R.R. Comm'n, 282 S.W.3d 240, 243 (Tex. App.—Amarillo 2009, no pet.).

149. *See, e.g.*, Corzelius v. R.R. Comm'n, 182 S.W.2d 412, 413–14 (Tex. Civ. App.—Austin 1944, no writ).

150. *See, e.g.*, Williams v. Cont'l Oil Co., 14 F.R.D. 58, 64 (W.D. Okla. 1953); Gliptis v. Fifteen Oil Co., 16 So. 2d 471, 482 (La. 1944).

151. *Cf.* RESTATEMENT (SECOND) OF TORTS §§ 191–211 (1965).

152. *See, e.g.*, Hanson v. Carroll, 52 A.2d 700, 701 (Conn. 1947).

153. Proctor v. Adams, 113 Mass. 376, 377–78 (1873).

The simplest form of such a subsurface trespass occurs in the context of waste disposal, including wastewater disposal, because the focus of the court is on the invading waste. Wastewater disposal cases indicate that courts are reluctant to allow a trespass claim absent actual damages—at least where, as is typically the case, the disposing party has a regulatory permit.

In *FPL Farming, Ltd. v. Texas Natural Resources Conservation Commission*, the state regulatory agency issued permits for disposal of non-hazardous waste at depths between 7,350 and 8,200 feet below the surface.[154] Before issuing the permit the agency required the applicant to project how far and in what directions the waste might migrate over a 30-year period.[155] When neighboring surface owners discovered that the injected waste was projected to reach their subsurface strata within ten years, they asserted that the agency was authorizing an impairment of their subsurface rights.[156] The court acknowledged a legal trend that "property owners do not have the right to exclude deep subsurface migration of fluids"[157] and rejected the argument that "migration alone will impair [their] existing rights."[158] The court concluded that "some measure of harm must accompany the migration."[159] "[B]ecause of [the agency's] . . . expertise in the geological effects of subsurface migration of injectates," the court deferred to the agency's finding that, in this case, no existing rights would be impaired by the injection operations.[160] Nevertheless, the court indicated that if the waste did migrate and cause some measure of harm, the surface owners could seek damages from the injector.[161]

Three years after the court of appeals handed down its decision, FPL filed a separate suit to enjoin EPS's operations and alleged claims for trespass, unjust enrichment, and negligence.[162] Not surprisingly, the trial court rejected each of FPL's contentions, as subsurface migration and actual harm are generally difficult to prove,[163] and FPL filed timely notice

154. FPL Farming, Ltd. v. Tex. Natural Res. Conservation Comm'n, No. 03-02-00477-CV, 2003 WL 247183 at *1 (Tex. App.—Austin 2003, pet. denied) (mem. op.).

155. *Id.*

156. *Id.* at *2.

157. *Id.* at *3 (citing United States v. Causby, 328 U.S. 256, 260–61 (1946); Raymond v. Union Tex. Petroleum Corp., 697 F. Supp. 270, 274–75 (E.D. La. 1988); Chance v. BP Chems., Inc., 670 N.E.2d 985, 991–92 (Ohio 1996); R.R. Comm'n v. Manziel, 361 S.W.2d 560, 568–69 (Tex. 1962)).

158. *Id.* at *4.

159. *Id.*

160. *Id.*

161. *Id.* at *5.

162. FPL Farming Ltd. v. Envtl. Processing Sys., L.C., 305 S.W.3d 739, 742 (Tex.App.—Beaumont 2009, pet. granted).

163. *Id. See also* Mongrue v. Monsanto Co., 249 F.3d 422, 433 (5th Cir. 2001) (construing Louisiana law); Chance v. BP Chems., Inc., 670 N.E.2d 985, 985 (Ohio 1996). *But see* Starrh & Starrh Cotton Growers v. Aera Energy LLC, 63 Cal. Rptr. 3d 165, 169–70 (Cal. Ct. App. 2007)

of its appeal.[164] As an initial matter, the court considered whether FPL had a trespass claim even though the agency had approved EPS's amended permit while fully knowing that the injected wastewater was expected to migrate into the deep subsurface beneath FPL's property.[165] The court found the Texas Supreme Court's prior decisions in *Garza* and *Manziel* controlling.[166] Specifically, the court noted that, like the agency-approved subsurface migration of injected saltwater in *Manziel*, which "did not cause a trespass when the water migrated across property lines," the state agency's authorization of EPS's amended permit presented the court with an analogous case.[167] While noting that "the rules of trespass were 'technical' and should not affect the validity of the Railroad Commission's orders," the court nonetheless recognized that *Manziel* "relied heavily on the fact that the [Railroad] Commission had approved the operation."[168] In the same vein, however, the court considered the policy and purposes of the Injection Well Act given that "the Commission in this case also was required to consider various interests."[169] The court ultimately held that "under the common law, when a state agency has authorized deep subsurface injections, no trespass occurs when fluids that were injected at deep levels are then alleged to have later migrated at those deep levels into the deep subsurface of nearby tracts."[170] As such, the court determined that "no actionable common law trespass [had] occurred . . . ."[171]

Likewise, in *Raymond v. Union Texas Petroleum Corp.* the plaintiffs claimed that saltwater injected under adjacent lands migrated to their subsurface property.[172] Noting that the state regulatory agency had issued a permit for the saltwater injection, the federal district court in Louisiana concluded that such migration "is not unlawful and does not constitute a legally actionable trespass."[173] In dictum, however, the court acknowledged that a permit does not preclude recovery for actual damages.[174]

(describing how wastewater from oil well percolated from a surface pit and migrated to neighboring land, causing degradation of water, which if returned to its natural state, had some potential value for irrigating certain salt-tolerant crops).

164. *FPL Farming Ltd.*, 305 S.W.3d at 741.

165. *Id.*

166. *Id.* at 742–45. *Garza* is discussed *supra* Section IV(B); *Manziel* is discussed *infra* Section IV(F).

167. *Id.* at 743.

168. *Id.* at 744 (citations omitted).

169. *Id.*

170. *Id.* at 744–45.

171. *Id.* at 745.

172. Raymond v. Union Tex. Petroleum Corp., 697 F. Supp. 270, 271 (E.D. La. 1988) (relying on Nunez v. Wainco Oil & Gas Co., 488 So. 2d 955 (La. 1986)).

173. *Id.* at 274.

174. *Id.*

Later, in *Mongrue v. Monsanto* the Fifth Circuit affirmed a finding that migrating wastewater that crosses property lines is not an unlawful taking.[175] Although not raised on appeal, the plaintiffs also asserted at trial that the injector had committed subsurface trespass.[176] Regarding this unraised issue, the Fifth Circuit seemed to accept the district court's conclusion that "upon a proper showing of damages [for migration], appellants may recover under a state unlawful trespass claim... regardless of the permit allowing for injection."[177] Still later, the Fifth Circuit affirmed the reasoning of *Raymond*, that migration of injected wastewater is not per se "unlawful" if a valid regulatory permit authorizes the action.[178]

One of the most important waste disposal cases is *Chance v. BP Chemicals, Inc.*, a class action suit against BP Chemicals, alleging *inter alia* subsurface trespass resulting from injecting waste fluids that migrated across property lines.[179] Relying on *Willoughby Hills v. Corrigan*,[180] the court observed that:

> [O]wnership rights in today's world are not as clear-cut as they were before the advent of airplanes and injection wells.
>
> Consequently, we do not accept appellants' assertion of absolute ownership of everything below the surface of their properties. Just as a property owner must accept some limitations on the ownership rights extending above the surface of the property, we find that there are also limitations on property owners' subsurface rights. We therefore extend the reasoning of *Willoughby Hills,* that absolute ownership of air rights is a doctrine which "has no place in the modern world," to apply as well to ownership of subsurface rights.[181]

The court concluded that the right to exclude others from the subsurface extends only to invasions that "actually interfere with the appellants' reasonable and foreseeable use of the subsurface."[182] Thus, landowners must suffer actual damages that affect their reasonable and foreseeable *use* of the subsurface, not mere interference with title or possession. The court expressly found that the trial court did not err in refusing to allow the class to present evidence that "environmental stigma associated with deep wells had a negative effect on appellants' property values due to public perception that there may have been injectate under

175. Mongrue v. Monsanto, 249 F.3d 422 (5th Cir. 2001).
176. *Id.* at 432 n.17.
177. *Id.*
178. Boudreaux v. Jefferson Island Storage & Hub, LLC, 255 F.3d 271, 274 (5th Cir. 2001) (construing Louisiana law).
179. Chance v. BP Chems., Inc., 670 N.E.2d 985, 986 (Ohio 1996).
180. 278 N.E.2d 658 (Ohio 1972).
181. *Chance*, 670 N.E.2d at 992.
182. *Id.*

appellants' property and that the injectate may be dangerous."[183] In other words, a landowner may not recover damages for mere loss of speculative value. Although the class claims were deemed too speculative, the court did acknowledge that one class member might have a valid claim because the subsurface migration of waste forced that class member to abandon plans to drill for natural gas.[184] Thus, a mineral owner may have a valid trespass claim when the injected waste migrates across property lines and unreasonably interferes with access to recoverable minerals, such as oil and gas—a showing of actual and substantial harm.

In *Snyder Ranches, Inc. v. Oil Conservation Commission*, the New Mexico Supreme Court affirmed a decision of the conservation agency that found a saltwater disposal operation would not result in saltwater migration to a nearby tract.[185] However, the court stated in dicta:

> The State of New Mexico may be said to have licensed the injection of saltwater into the disposal well; however, such license does not authorize trespass . . . or other tortious conduct by the licensee, nor does such license immunize the licensee from liability for negligence or nuisance which flows from the licensed activity. . . . In the event that an actual trespass occurs by Mobil in its injection operation, neither the Commission's decision, the district court's decision, nor this opinion would in any way prevent Snyder Ranches from seeking redress for such trespass.[186]

This dictum is disturbing in that it does not suggest that the plaintiff need suffer any actual damages to obtain relief for such a trespass.

A few jurisdictions take an even more limited view of subsurface trespass than the court in *Chance*, requiring that a subsurface trespasser must know with "substantial certainty" that pollutants would migrate to neighboring land. In *OBG Technical Services, Inc. v. Northrop Grumman Space & Mission Systems Corp.*,[187] the plaintiff suffered actual soil and groundwater contamination from the actions of a subsurface trespasser ironically named Best Friends.[188] The court denied relief on the ground that the plaintiff failed to prove Best Friends knew with "substantial certainty" that pollutants on Best Friends' property were migrating onto the plaintiff's property.[189] The court noted:

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183. *Id.* at 993.
184. *Id.* at 994 n.1.
185. 798 P.2d 587, 588 (N.M. 1990).
186. *Id.* at 590.
187. 503 F. Supp. 2d 490, 530 (D. Conn. 2007) (citing RESTATEMENT (SECOND) OF TORTS § 158 (1965)).
188. *Id.* at 496–97.
189. *Id.* at 530. *Cf.* Vill. of DePue, Ill. v. Viacom Int'l, Inc., 632 F. Supp. 2d 854, 865 (C.D. Ill. 2009) (holding that plaintiff must prove either negligent or intentional conduct resulting in an invasion).

> In Connecticut, "the requisite intent to enter another's land may be established if the act in question is done 'with knowledge that it will to a substantial certainty result in the entry of the foreign matter.'" "In order to be liable for trespass, one must *intentionally* cause some substance or thing to enter upon another's land." "Moreover, the intention required to make the actor liable for trespass is an intention to enter upon the particular piece of land in question. . . . An intrusion on the land of another as a result of negligence is not a trespass."[190]

F. Subsurface Trespass Resulting From Enhanced Recovery Operations

Trespass issues arise when an operator injects a substance into the subsurface of its own property for secondary or enhanced oil and gas recovery, and that injected substance then invades the subsurface of neighboring property. These cases are not as simple as waste disposal cases because the focus of the plaintiff and the court is on the plaintiff's loss of hydrocarbons through drainage resulting from the secondary or enhanced recovery operations. Damages can arise when oil reserves on the invaded property are displaced or when the invasion makes recovery of reserves from the invaded property more difficult and expensive. Cases addressing alleged subsurface trespass in the context of secondary and enhanced recovery operations are mixed, but several cases suggest that trespass claims are less likely to succeed if a regulatory agency has authorized the particular operations.

In *Railroad Commission of Texas v. Manziel*, neighboring landowners sought to set aside a conservation agency order approving a plan of voluntary unitization for secondary oil recovery.[191] The landowners were particularly concerned about an exception location well that was to be drilled near their tract.[192] As grounds for setting aside the order, the landowners claimed that injected water would inevitably invade their property and result in a trespass that would water-out one of their oil wells.[193]

Although the landowners sought to set aside a regulatory order, the court stated the issue as follows: "whether a trespass is committed when secondary recovery waters from an authorized secondary recovery project cross lease lines."[194] After discussing the value of secondary recovery operations, the court concluded:

> [I]f, in the valid exercise of its authority to prevent waste, protect

190. *OBG Technical Servs.*, 503 F. Supp. 2d at 530 (citations omitted).
191. R.R. Comm'n v. Manziel, 361 S.W.2d 560, 561 (Tex. 1962).
192. *Id.*
193. *Id.* at 566–67.
194. *Id.* at 567.

> correlative rights, or in the exercise of other powers within its jurisdiction, the Commission authorizes secondary recovery projects, a trespass does not occur when the injected, secondary recovery forces move across lease lines, and the operations are not subject to an injunction on that basis. *The technical rules of trespass have no place in the consideration of the validity of the orders of the Commission.*[195]

In support of its conclusion, the court quoted Professors Howard Williams and Charles Meyers:

> What may be called a 'negative rule of capture' appears to be developing. Just as under the rule of capture a landowner may capture such oil or gas as will migrate from adjoining premises to a well bottomed on his own land, so also may he inject into a formation substances which may migrate through the structure to the land of others, even if it thus results in the displacement under such land of more valuable with less valuable substances[.][196]

Although the court stated the issue as whether a trespass had occurred, the court also recognized that it was:

> [N]ot confronted with the tort aspects of such practices. Neither is the question raised as to whether the Commission's authorization of such operations throws a protective cloak around the injecting operator who might otherwise be subjected to the risks of liability for actual damages to the adjoining property[.][197]

The court, however, discussed trespass in some detail and was sympathetic to the view that traditional trespass rules may not be appropriate regarding subsurface invasions that relate to secondary recovery—an apparent important societal need.[198] But the court's discussion suggests that a regulatory order, issued in the public interest, is necessary if traditional trespass rules are to be avoided.[199] The *need* for a regulatory permit is now questionable in light of *Garza*, where the defendant had a drilling permit but not a permit to hydraulically fracture because the conservation agency did not require one.[200] Nevertheless, in circumstances regarding invasive subsurface injections of a continuing nature, in contrast with hydraulic fracturing, which is a short-term well completion technique, a regulatory permit would be helpful, perhaps even necessary, to the avoidance of an actionable subsurface trespass. As

195. *Id.* at 568–69 (emphasis added).
196. *Id.* at 568 (quoting HOWARD WILLIAMS & CHARLES MEYERS, OIL AND GAS LAW § 204.5 (1995)).
197. *Id.* at 566.
198. *Id.* at 568.
199. *See id.*
200. Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 15 (Tex. 2008).

a practical matter, the need for a permit to avoid a subsurface trespass action for continuing injections is not particularly troublesome as regulation of such an activity seems almost certain.

In *Crawford v. Hrabe*, the Kansas Supreme Court found no actionable trespass when a permittee injected water for secondary recovery.[201] Here, the lessee brought wastewater onto the leased premises and injected it into the lessors' subsurface.[202] The plaintiffs claimed that their interests would be injured by the migration of this water throughout their subsurface.[203] The court surveyed other jurisdictions' treatment of subsurface trespass of wastewater, finding that the orthodox rules applied to surface trespasses do not usually apply to subsurface trespass and that, when water is injected to increase production on the lessors' land, no actionable trespass occurs.[204] The court found that injecting wastewater for secondary recovery operations was a practical and efficient use of a potentially hazardous waste product.[205]

In *Tide Water Associated Oil Co. v. Stott*, lessors were denied damages for the displacement of wet gas with dry gas resulting from recycling operations in the field where the lessors refused the opportunity to include their leases in the operations.[206] In *Syverson v. North Dakota Industrial Commission*, the court upheld a regulatory order authorizing secondary recovery operations over the objection of a small number of lessors within the field where the record indicated that they were given a fair opportunity to join in operations but refused to do so.[207] The court noted that the unit operations were designed to increase ultimate recovery from the reservoir and that the lessors had not shown that they would suffer any actual harm as a result of such operations.[208]

On the other hand, in *Cassinos v. Union Oil Co. of California* a California appellate court found that wastewater injected into a petroleum reservoir did cause actual damage to production operations on neighboring land.[209] The court found this to be an actionable trespass against the neighboring mineral estate.[210] In reaching this decision, the

201. Crawford v. Hrabe, 44 P.3d 442, 443 (Kan. 2002).
202. *Id.* at 444.
203. *Id.* at 444, 447.
204. *Id.* at 448–50 (citing Holt v. Sw. Antioch Sand Unit, Fifth Enlarged, 292 P.2d 998 (Okla. 1955); R.R. Comm'n v. Manziel, 361 S.W.2d 560, 568 (Tex. 1962); Geo Viking, Inc. v. Tex-Lee Operating Co., 817 S.W.2d 357 (Tex. App.—Texarkana 1991, writ denied)).
205. *Id.* at 453.
206. *Tide Water Associated Oil Co. v. Stott*, 159 F.2d 174, 179 (5th Cir. 1947) (construing Texas law). *See also* Cal. Co. v. Britt, 154 So. 2d 144, 150–51 (Miss. 1963) (barring damages to unleased mineral owners who refused to join in a voluntary unitization operation on grounds that any drainage suffered was governed by the rule of capture).
207. Syverson v. N.D. Indus. Comm'n, 111 N.W.2d 128, 133–34 (N.D. 1961).
208. *Id.* at 132.
209. Cassinos v. Union Oil Co. of Cal., 18 Cal. Rptr. 2d 574, 579–80 (Cal. Ct. App. 1993).
210. *Id.* at 577.

court cited three Oklahoma cases, one of which was found to be analogous because saltwater injection operations had caused actual damages to nearby wells.[211] The court distinguished the other two cases because, in those cases, the courts found the injection operations caused no actual damages.[212]

Oklahoma recognizes a cause of action for private nuisance when injected water injures another's interest in a well or leasehold, even though the water was injected for enhanced oil recovery pursuant to a regulatory permit.[213] However, the requirement of showing actual injury or recoverable damages remains.[214] Regarding the disposal of saltwater produced from petroleum wells, the court recognized that "[i]f such disposal of saltwater is forbidden unless oil producers first obtain the consent of all persons under whose lands it may migrate or percolate, [then] underground disposal would be practically prohibited."[215]

In *Tidewater Oil Co. v. Jackson*, the court held that the injection of wastewater for secondary recovery constituted an actionable trespass where the injected water flooded the neighboring plaintiff's oil wellbores even though the operator held a regulatory permit authorizing the operations.[216] The court reasoned:

> [T]hough a water flood project in Kansas be carried on under color of public law, as a legalized nuisance or trespass, the water flooder may not conduct operations in a manner to cause substantial injury to the property of a non-assenting lessee-producer in the common reservoir, without incurring the risk of liability therefor.[217]

To establish liability, "[i]t is sufficient that the water flooding activities were intentional and the consequences foreseeable. They were actionable, even though lawfully carried on, if they caused substantial injury to the claimants."[218] Nevertheless, because the activity was lawful under a conservation agency order, the court reversed an award of

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211. *Id.* at 580. The analogous case is *West Edmond Lime Unit v. Lillard*, 265 P.2d 730, 731–32 (Okla. 1954).

212. *Cassinos*, 18 Cal. Rptr. 2d at 580 (distinguishing West Edmond Salt Water Disposal Ass'n v. Rosecrans, 226 P.2d 965, 968–69 (Okla. 1950) (finding no actual harm); Sunray Oil Co. v. Cortez Oil Co., 112 P.2d 792, 793–95 (Okla. 1941) (finding no probability of any actual harm)).

213. Greyhound Leasing & Fin. Corp. v. Joiner City Unit, 444 F.2d 439, 444–45 (10th Cir. 1971) (construing Oklahoma law); Boyce v. Dundee Healdton Sand Unit, 560 P.2d 234, 238 (Okla. Civ. App. 1975).

214. *See West Edmond Salt Water Disposal Ass'n*, 226 P.2d at 970 (Okla. 1950) (finding owner of adjacent tract had no cause of action for trespass where defendant injected saltwater into stratum already containing saltwater because no actual damages were suffered). *But see West Edmond Lime Unit*, 265 P.2d at 732 (Okla. 1954) (allowing cause of action where injected saltwater had migrated beneath neighboring land, harming ongoing petroleum operations).

215. *West Edmond Salt Water Disposal Ass'n*, 226 P.2d at 969.

216. Tidewater Oil Co. v. Jackson, 320 F.2d 157, 163–64 (10th Cir. 1963) (construing Kansas law).

217. *Id.* at 163.

218. *Id.* at 164.

punitive damages.[219] Similarly, in *Hartman v. Texaco Inc.* the New Mexico Court of Appeals held that an oil and gas operator who suffered actual damages from a waterflooding operation conducted on neighboring lands had a cause of action for trespass.[220]

Interestingly, the ALI actually cites *Hartman* in its Appendix to Restatement Section 159.[221] Because *Hartman* involved facts where the jury had already determined that actual damages could be attributed to the waterflooding operations, it supports the current trend that courts are taking regarding *harmful* subsurface trespasses. However, because the court rejected the plaintiff's claim for statutory recovery of double (punitive) damages, concluding that the statute did not apply in the case of a deep subsurface trespass,[222] *Hartman* also supports the notion that the Restatement and common law views were intended to protect against subsurface and aerial trespasses that occur within the useable reaches of the surface.[223] Accordingly, in the case of harmless deep subsurface trespasses, *Hartman* does not conflict with my proposed revisions to the Restatement.

Three cases arising in Arkansas have reached somewhat divergent views on waterflooding operations. In *Budd v. Ethyl Corp.*, the plaintiff sought damages for loss of brine resulting from waterflooding operations on two separate tracts of land.[224] The first tract was on the edge of the waterflooding operation.[225] The plaintiff held an oil and gas lease for a fractional interest in the second tract, which was within the circle of defendant's injection wells.[226] Regarding the edge tract, the court found that the defendant was protected by the rule of capture.[227] Regarding the second tract, the court found that, as an oil and gas lessee, the plaintiff held only an inchoate right to drill for minerals and no right to minerals in place.[228] Moreover, the court noted that the record failed to indicate whether the plaintiff had volunteered to participate in the waterflooding effort.[229] Accordingly, the court declined to award plaintiff damages for net profits.[230] Thus, the claim was not really grounded in trespass but was rather a claim by a co-tenant for net profits.

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219. *Id.* at 165.
220. Hartman v. Texaco Inc., 937 P.2d 979, 984 (N.M. Ct. App. 1997).
221. RESTATEMENT (SECOND) OF TORTS §159 (1965).
222. *Hartman*, 937 P.2d at 981–82 (construing N.M. STAT. ANN. § 30-14-1.1 (1994)).
223. *Id.* at 982 (discussing the legislative intent of the statute at issue to protect against more limited instances of trespass).
224. Budd v. Ethyl Corp., 474 S.W.2d 411, 412–13 (Ark. 1971).
225. *Id.* at 412.
226. *Id.* at 413.
227. *Id.* at 412–13.
228. *Id.* at 413.
229. *Id.* at 414.
230. *Id.*

In a later federal decision, *Young v. Ethyl Corp.*, the court found that a claim of trespass will lie when a mineral owner seeks damages in a circumstance where the subject tract is within the circle of injection wells.[231] This analysis was adopted by the Arkansas Supreme Court in *Jameson v. Ethyl Corp.* when the plaintiff was a fee mineral owner, but the court nevertheless allowed the waterflooding operations to continue on public policy grounds.[232] The court stated:

> [W]e are unwilling to extend the rule of capture further. By adopting an interpretation that the rule of capture should not be extended insofar as operations relate to lands lying within the peripheral area affected, we, however, are holding that reasonable and necessary secondary recovery processes of pools of transient materials should be permitted, when such operations are carried out in good faith for the purpose of maximizing recovery from a common pool. The permitting of this good faith recovery process is conditioned, however, by imposing an obligation on the extracting party to compensate the owner of the depleted lands for the minerals extracted in excess of natural depletion, if any, at the time of taking and for any special damages which may have been caused to the depleted property.[233]

This stated measure of damages is unclear, but it appears to require the waterflooding party to account for production drained from the plaintiff's property that is attributable to the enhanced recovery operations. Presumably this would be for net profits. The court did not elaborate on how such damages should be determined or which party should carry the burden of proof, but presumably such burden would rest with the plaintiff.

In *Baumgartner v. Gulf Oil Corp.*, the Nebraska Supreme Court held that when a regulatory agency approved a plan of unitization and when the plaintiff had rejected a fair and reasonable offer to participate in the plan, no trespass results from water-flooding.[234] However, the court did indicate that the plaintiff may be entitled to recover any profits that he could prove would have been realized through continued primary recovery operations unfettered by the neighboring unitized operations in which he had declined to participate.[235] Note the difference in the measure of damages in this case from the measure articulated by the Arkansas Supreme Court in *Jameson v. Ethyl Corp.*[236] In Nebraska, a plaintiff may recover damages for profits that would be derived from his

231. Young v. Ethyl Corp., 521 F.2d 771, 774 (8th Cir. 1975) (construing Arkansas law).
232. Jameson v. Ethyl Corp., 609 S.W.2d 346, 351 (Ark. 1980).
233. *Id.*
234. Baumgartner v. Gulf Oil Corp., 168 N.W.2d 510, 516 (Neb. 1969).
235. *Id.* at 519.
236. *Jameson*, 609 S.W.2d at 351 (Ark. 1980).

own primary recovery operations. In Arkansas, a plaintiff appears to be able to recover damages for the amount of production drained from her land by neighboring secondary or enhanced recovery operations in excess of what would have been drained by primary recovery operations. While allowing damages in situations where the plaintiff declines a fair opportunity to participate in unitized secondary or enhanced recovery operations is undesirable, the Nebraska approach is somewhat better because the plaintiff would seem to carry a difficult burden of proof—at least as a practical matter.

Of these cases, the ALI should be most persuaded by *Manziel*, which cites the rule of capture to deny liability, and *Crawford*, which recognized the importance of not allowing trespass law to inhibit the use of secondary and enhanced recovery operations. If a regulatory permit is issued, if a fair and reasonable offer is rejected, and if no actual damage other than drainage occurs, then the operator should be shielded from liability under the rule of capture. It is unnecessary to extend these prerequisites to hydraulic fracturing, however, because it is a well completion technique designed to facilitate and maximize primary recovery from a single well and unit, and the operation is neither ongoing nor a secondary or enhanced recovery technique.[237]

G. Subsurface Trespass Resulting From the Subsurface Storage of Natural Gas

Natural gas is frequently injected into the subsurface for temporary storage. If such gas migrates beneath neighboring lands, then trespass issues arise, but the focus of most cases is on the ownership of the migrated gas, not the trespass itself. Moreover, in most jurisdictions, pipeline companies and gas utilities have established and operated gas storage reservoirs, and they have and often exercise the right of eminent domain—usually acquiring rights to the entire reservoir.

One of the earliest cases to consider trespass in the context of underground natural gas storage was the Kentucky case, *Hammonds v. Central Kentucky Natural Gas Co.*[238] In its highly criticized ruling,[239] the court foolishly reasoned that natural gas injected for storage was really released back to nature—in essence, abandoned.[240] Because the gas was abandoned, it had no owner and was once again subject to the rule of

237. *Cf.* Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 14–17 (Tex. 2008).

238. *Hammonds v. Cent. Ky. Natural Gas Co.*, 75 S.W.2d 204 (Ky. Ct. App. 1934), *partially overruled by* Tex. Am. Energy Corp. v. Citizens Fidelity Bank & Trust, 736 S.W.2d 25, 28 (Ky. 1987).

239. William Jarrel Smith, *Rights and Liabilities on Subsurface Operations*, 8 INST. ON OIL & GAS L. & TAX'N 1, 25-6 (1957).

240. *Hammonds*, 75 S.W.2d at 205–06.

capture.[241] Comparing injected gas to the release of captured wild animals, the court found that no trespass occurred when the released gas migrated to neighboring property because the injecting party no longer held title to the gas.[242] In Kansas, the reasoning of *Hammonds* has been followed "where a natural gas utility was not involved, where no certificate authorizing an underground natural gas storage facility had been issued by the Kansas Corporation Commission, and where a landowner had used the property of an adjoining landowner for gas storage without authorization or consent."[243]

In *Oklahoma Natural Gas Co. v. Mahan & Rowsey, Inc.*, the court implicitly concluded that the injector retains title to injected gas that migrated to other lands.[244] However, evidence showed that the gas was confined to an identifiable and well-defined formation and that the gas was distinguishable, due to helium content and lack of certain organic compounds, from native gas in the area.[245] Under Oklahoma statutory law, a public utility may acquire underground gas storage rights by condemnation.[246]

Texas wisely rejected the reasoning of *Hammonds* in *Lone Star Gas Co. v. Murchison*, finding that injected natural gas is not abandoned but remains the personal property of the injecting party, and as such is no longer subject to capture by neighboring landowners even if the gas migrates beneath neighboring tracts.[247] Of course, since the injector still owns the injected gas, the question of trespass arises. In *Murchison*, the

241. *Id.*

242. *Id.* at 206.

243. Union Gas Sys., Inc. v. Carnahan, 774 P.2d 962, 967 (Kan. 1989). *See also* Anderson v. Beech Aircraft Corp., 699 P.2d 1023, 1032 (Kan. 1985). These cases were distinguished in *Reese Exploration, Inc. v. Williams Natural Gas Co.*, 983 F.2d 1514, 1523 (10th Cir. 1993) (construing Kansas law). Parties having the power of eminent domain may protect their rights by securing a state certificate and by condemning the reservoir, and such parties are further protected from the rule of capture if they can prove by a preponderance of the evidence that injected gas had migrated to adjoining property or to a stratum that has not been condemned. KAN. STAT. ANN. § 55-1210 (West 2007). *See also* Williams Natural Gas Co. v. Supra Energy, Inc., 931 P.2d 7 (Kan. 1997); *Union Gas*, 774 P.2d at 967. For the meaning of "adjoining," see N. Natural Gas Co. v. Nash Oil & Gas, Inc., 2005 U.S. Dist. LEXIS 10181, at *7 (D. Kan. May 16, 2005). If gas migrates into another stratum, further condemnation may be pursued, but landowners' damages for the pre-condemnation trespass and unjust enrichment are measured by the fair rental value of such stratum. *See, e.g.*, Beck v. N. Natural Gas Co., 170 F.3d 1018 (10th Cir. 1999) (construing Kansas law).

244. Oklahoma Natural Gas Co. v. Mahan & Rowsey, Inc., 786 F.2d 1004, 1006–07 (10th Cir. 1986) (construing Oklahoma law).

245. *Id.* at 1007.

246. OKLA. STAT. ANN. tit. 52, § 36.3 (West 2000). Under this statutory law, injected gas remains the property of the injector, even if the gas migrates beneath other lands, provided that the injector can prove migration and also that the injector compensates the owner of the invaded stratum. *Id.* § 36.6.

247. Lone Star Gas Co. v. Murchison, 353 S.W.2d 870, 879–80 (Tex. Civ. App.—Dallas 1962, writ ref'd n.r.e.). *See also*, Pac. Gas & Elec. Co. v. Zuckerman, 234 Cal. Rptr. 630, 633 (Cal. Ct. App. 1987); Humble Oil & Ref. v. West, 508 S.W.2d 812, 817 (Tex. 1974); White v. N.Y. State Nat. Gas Corp., 190 F. Supp. 342, 347–48 (W.D. Pa. 1960).

storage company had acquired the right to store natural gas in what was thought to be a well-defined subsurface reservoir, but the gas actually migrated beyond the assumed reservoir limits to a neighboring subsurface property.[248] Because the storage company retained title to migrated gas as personal property, the court concluded the gas was not subject to the rule of capture.[249] This ruling aligns with surface migration of oil that migrates to neighboring properties after spills or leaks.[250] Neither *Murchison* nor any other Texas case squarely addresses the trespass question, and no case addresses injunctive relief for what is a continuing trespass.[251] This dearth of authority implicitly supports my argument that the Restatement should require actual and substantial subsurface damages for a trespass action to lie in these circumstances. However, the dearth of case authority may also be due to the fact that gas storage reservoirs may be acquired by eminent domain,[252] and trespass allegations are often treated as an action in inverse condemnation.[253]

In *ANR Pipeline Co. v. 60 Acres of Land* a federal court in Michigan, in dicta, stated that "if injected gas moves across boundaries there may be a trespass."[254] However, the court held that migration of non-native gas to a neighboring property does not give rise to a claim of inverse condemnation.[255]

Few reported cases address actual damages resulting from stored gas that migrates to the subsurface of nearby property. The Kansas Supreme Court has rendered three decisions concerning personal injury and property damage arising when stored gas migrated from an underground storage reservoir and eventually vented at the surface in downtown Hutchinson, Kansas.[256] The leak culminated in a massive explosion of natural gas in the heart of the city, killing several people and destroying several businesses.[257] The first opinion dealt with an award of negligence

248. *Murchison*, 353 S.W.2d at 872–73.

249. *Id.* at 880.

250. *See, e.g.*, Champlin Exploration, Inc. v. W. Bridge & Steel Co., Inc., 597 P.2d 1215, 1218 (Okla. 1979).

251. In *Murchison*, the court observed:

Appellees expend a great deal of space in their brief to the argument that appellant has trespassed upon their property. The status of this record is such, however, that we must, as Ulysses 'lash ourselves to the mast and resist Siren's songs' of trespass, or similar contention. This, for the simple reason that no action seeking redress or claimed trespass is here presented. 353 S.W.2d at 875.

252. *See, e.g.*, TEX. NAT. RES. CODE ANN. § 91.181 (West 2001); *Zuckerman*, 234 Cal. Rptr. at 637; Iroquois Gas Corp. v. Gernatt, 281 N.Y.S.2d 896, 897 (N.Y. App. Div. 1967).

253. *See, e.g.*, Columbia Gas Transmission Corp. v. An Exclusive Nat. Gas Storage Easement, 747 F. Supp. 401, 403 (N.D. Ohio 1990).

254. ANR Pipeline Co. v. 60 Acres of Land, 418 F. Supp. 2d 933, 940 (W.D. Mich. 2006).

255. *Id.* at 941.

256. *See* Gilley v. Kan. Gas Serv. Co., 169 P.3d 1064, 1065 (Kan. 2007); Smith v. Kan. Gas Serv. Co., 169 P.3d 1052, 1054 (Kan. 2007); Hayes Sight & Sound, Inc. v. ONEOK, Inc., 136 P.3d 428, 433–34 (Kan. 2006).

257. *Hayes Sight & Sound, Inc.*, 136 P.3d at 433–34.

and punitive damages for losses suffered by a particular business.[258] The last two opinions dealt with unsuccessful class action suits.[259] Significantly, in one of these class actions, the court denied recovery of damages for "diminution in the property's market value caused by the stigma or market fear resulting from an accidental contamination where the property owner has not proved either a physical injury to the property or an interference with the owner's use and enjoyment."[260]

In one case involving the subsurface storage of freshwater, *Board of County Commissioners v. Park County Sportsmen's Ranch, LLP*, the Colorado Supreme Court held that storing freshwater in an aquifer does not constitute a trespass against neighboring landowners where there was no physical invasion of neighboring lands by directional drilling or occupancy by recharge structures or extraction wells.[261] In addition, the court concluded that this use of an aquifer does not require the user to acquire storage rights by eminent domain or require the payment of compensation.[262] Because this is a water case arising in Colorado, it does not directly support my suggested revisions to the Restatement regarding general subsurface use. As the court observed: "[B]y reason of Colorado's constitution, statutes, and case precedent, neither surface water, nor ground water, nor the use rights thereto, nor the water-bearing capacity of natural formations belong to a landowner as a stick in the property rights bundle."[263] Nevertheless, the holding is consistent with the underlying rationale of my suggested revisions.

V. CONCLUSION

The ALI's purpose in creating the Restatement was to guide lawyers and judges as to the present state of the law. However, the law has changed while the Restatement has not. If traditional surface trespass law is applied to the deep subsurface, numerous subsurface uses could be greatly hindered, if not rendered entirely impracticable. By adhering to its rigid formulation of the law of trespass, various uses are in limbo, if not in jeopardy: the injection of substances for enhanced recovery of oil, gas, brine, and other native fluids; the injection of fluids and proppants in the course of hydraulic fracturing of tight oil and gas reservoirs; the underground injection of natural gas for storage; the underground injection of wastes for disposal, including saltwater disposal relating to hydrocarbon exploitation; underground geologic carbon sequestration to

258. *Id.* at 433.
259. *Gilley*, 169 P.3d at 1065; *Smith*, 169 P.3d at 1054.
260. *Smith*, 169 P.3d at 1059.
261. Bd. of Cnty. Comm'rs v. Park Cnty. Sportsmen's Ranch, LLP, 45 P.3d 693, 710 (Colo. 2002).
262. *Id.* at 715.
263. *Id.* at 707.

decrease the emission of greenhouse gases into the atmosphere; and the gathering of subsurface information through various kinds of exploration activities, particularly conventional and 3-D seismic surveys and aerial magnetic surveys. Although each of these activities, excluding seismic and aerial surveys, can lead to the physical migration of substances beneath neighboring property, they should not give rise to actionable trespass without a showing of actual and substantial harm other than drainage. Considering deep subsurface invasions in a manner similar to aerial trespasses provides the ALI with the appropriate means to protect these productive uses of the subsurface estate without drastically revising its current text.

By considering my suggested revisions, the ALI could bring full circle the law of trespass that already recognizes the advent of the airplane but which fails to recognize the technologic advancement in the use of the deep subsurface. The subsurface invasions listed above meet important societal needs, which must be commercial (economically efficient) if they are to succeed. A strict application of trespass law to the subsurface, particularly the ability to enjoin a continuing trespass, could in some, perhaps many, instances make the difference between economic and uneconomic enterprises. But above all, applying surface trespass law to harmless deep subsurface invasions is outdated and inconsistent with jurisdictional trends.

With the exceptions already noted in this article, the Restatement no longer reflects the clear trend of case law, but lags behind it. Deep subsurface trespass claims, unless the plaintiff shows substantial and actual damage, are rarely considered actionable. In the wake of the jurisprudential trends, the ALI should consider whether its current formulation of the law of trespass accurately presents the current state of the law.