A Big Fracking Deal: Pennsylvania's Departure from Traditional Rule of Capture Interpretation Paves Way for Fracking Trespass Claims

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A BIG FRACKING DEAL: PENNSYLVANIA’S DEPARTURE FROM TRADITIONAL RULE OF CAPTURE INTERPRETATION PAVES WAY FOR FRACKING TRESPASS CLAIMS

Andrew Belack*

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ABSTRACT

This Comment explores the Pennsylvania Superior Court's rejection of the traditional rule of capture as it applies to oil extraction from adjacent land parcels using the hydraulic-fracturing method. At the time of writing, the Pennsylvania Superior Court's departure from the rule of capture has opened the door for trespass claims filed by an adjacent land owner, when oil under her property is extracted by a neighboring frack well. This Comment also examines the various health and environmental concerns that are consequent of the hydraulic-fracturing method of oil extraction.

*Andrew Belack graduated from Villanova University Charles Widger School of Law in 2020. He plans to pursue a career in environmental litigation.
On August 2, 2018, a hydraulic fracturing plant in Midland County, Texas experienced a series of three explosions, severely injuring seven people.\(^1\) In the two months before the explosion in Texas, three explosions at hydraulic fracturing plants in Oklahoma, Kansas, and West Virginia caused several workers and firefighters to be hospitalized.\(^2\) These explosions shot flames into the sky that “could be seen for miles.”\(^3\) Still, both the natural resource industry and politicians alike laud this process of oil extraction, claiming that fracking creates new jobs and restores American energy independence.\(^4\) Thus far, the hydraulic fracturing industry has created over 1.7 million jobs and is projected to raise another 1.3 million by 2020.\(^5\)


\(^2\) Jessica Corbett, *Reminder of ‘How Often Fracking Pipelines Blow Up’: 7 Hospitalized After Series of Explosions in Texas*, COMMON DREAMS (August 2, 2018), https://www.commondreams.org/news/2018/08/02/reminder-how-often-fracking-pipelines-blow-7-hospitalized-after-series-explosions (recounting specific details of fracking well explosions in Midland County, Texas). In Oklahoma, two Oklahoma Natural Gas workers and a firefighter were injured when a fracking site in Tulsa exploded. *Id.* In Hesston, Kansas, a fracking pipeline exploded causing a 100-foot fire to engulf the well site in flames. *Id.* Within a two-month span of the explosions in Oklahoma and Kansas, a West Virginia fracking site exploded, producing a fire with a height that was visible for several miles. *Id.*

\(^3\) *Id.* In fires and explosions that occur within the vicinity of fracking sites, scientists cite the high levels of methane contamination in local water supplies as providing the necessary fuel to create such large fires. See Lorraine Chow, *Scientists Link Fracking to Explosion That Severely Injured Texas Family*, ECOWATCH (Mar. 10, 2017, 4:33 PM), https://www.ecowatch.com/fracking-explosion-texas-2309352363.html.

\(^4\) See Elizabeth Pines, *The Business of Fracking and Corporate Power*, LEHIGH UNIVERSITY (2014) (last visited Mar. 1, 2019), http://marcellus.cas2.lehigh.edu/sites/marcellus.cas2.lehigh.edu/files/LizPines_0.pdf (explaining how both natural and conventional gas corporations ally themselves with trade associations that influence local, state, and federal legislators to continue operating sans regulation). For a list of trade groups that are associated and work closely with gas and oil companies, see *Who Supports Fracking?*, FOOD AND WATER WATCH (Nov. 21, 2014), https://www.foodandwaterwatch.org/insight/who-supports-fracking (listing several activist groups that support the fracking and unconventional natural gas industry and their influence on American politics).

\(^5\) Kari Lydersen, *U.S. Chamber’s fracking job boom: Behind the numbers*, GLOBAL ENERGY INST., U.S. CHAMBER OF COMMERCE (Jan. 10, 2013), https://www.globalenergyinstitute.org/us-chamber’s-fracking-job-boom-behind-numbers (describing results of study commissioned by U.S. Chamber of Commerce that indicated amount of jobs created by fracking industry, and amount of jobs that industry is expected
Both environmentalists and the general public, however, have expressed concerns about the impact that this relatively new method of fuel extraction has on the environment and on public health. In addition to the high volume of energy that is consumed through the process of extracting the fuel, hydraulic fracturing has been shown to cause large scale air and water pollution. Hazardous, unknown chemicals are being disposed of into bodies of freshwater and local drinking water reservoirs. Unable to remove the contaminants, many local water purification plants are forced to release the polluted water back into the oceans and rivers, or alternatively spill the contaminated water onto the grounds of local communities. Known carcinogens and gases that spur ozone degradation are released into the atmosphere during the process, reversing the previously declining air pollution levels nationwide.

Central to the hydraulic fracturing controversy is the dichotomy between the conclusions drawn by the Environmental Protection Agency (“EPA”) and those drawn by environmental groups. In 2016

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7 See generally Nunez, supra note 5 (outlining vast amount of known environmental and public health repercussions of fracturing process as method of extracting natural resources); see also Fracking’s Environmental Impacts: Water, GREENPEACE (last visited Oct. 19, 2019), https://www.greenpeace.org/usa/global-warming/issues/fracking/environmental-impacts-water/ (explaining effect that fracking has on public health and environment of local communities that exist near fracking wells).

8 Fracking’s Environmental Impacts: Water, supra note 7; see also Nunez, supra note 5.

9 See Fracking’s Environmental Impacts: Water, supra note 7 (implying that fracking companies often dispose of fracking wastewater into local bodies of water); Nunez, supra note 5 (explaining that local municipal water treatment plants are unable to identify contaminants present in fracking wastewater, and often unable to treat polluted water).

10 Gunnar W. Schade, How has the US fracking boom affected air pollution in shale areas?, THE CONVERSATION (Oct. 30, 2017), https://theconversation.com/how-has-the-us-fracking-boom-affected-air-pollution-in-shale-areas-66190 (concluding that recent increase in national air pollution levels in past decade is due to newfound popularity of fracking).

11 Justin Derry, Changes to EPA’s “Natural Gas Extraction – Hydraulic Fracturing” Webpage, ENVTL DATA & GOVERNANCE INITIATIVE 1 (Oct. 9, 2018), https://envirodatagov.org/changes-to-epas-natural-gas-extraction-hydraulic-fracturing-webpage/ (comparing modifications that Trump Administration made to EPA’s webpage on fracking to EPA’s previous webpage on fracking); see also Sarah Emerson, The EPA
publications, EPA scientists declared that hydraulic fracturing causes “water contamination and does pose a risk to drinking water resources.”12 In January of 2018, however, former head of EPA Scott Pruitt instructed the EPA to amend its website on hydraulic fracturing, truncating many of the environmental and health hazards published by the EPA.13 In spite of this, many recently published studies have emphasized the harmful effects of fracking, while top EPA officials continue to maintain the contrary.14 Citing a lack of need for environmentally conscious regulations and the EPA’s partially inconclusive results on the relationship between hydraulic fracturing, health, and the environment, the current administration has worked to deregulate the industry.15

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12 Id. (highlighting new results of EPA reports that vastly differ from prior reports); U.S. ENVTL PROTECTION AGENCY, HYDRAULIC FRACTURING FOR OIL AND GAS: IMPACTS FROM THE HYDRAULIC FRACTURING WATER CYCLE ON DRINKING WATER RESOURCES IN THE UNITED STATES (FINAL REPORT) at 1-3 (2016), https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990 (publishing EPA’s 2016 study on effects that fracking has on drinking water resources); Ori Gutin, EPA Releases Fracking Risk Assessment, ENVTL & ENERGY STUDY INST. (June 15, 2015), https://www.eesi.org/articles/view/epa-releases-fracking-risk-assessment.

13 Emerson, supra note 11. The webpage was modified to emphasize the economic benefits while minimizing known risks of fracking. Id. Also removed from the webpage was information regarding air pollution standards, which was replaced with statements that EPA scientists have not conclusively proven that fracking causes increased levels of air pollution. Id.

14 Devin Henry, EPA reverses course on fracking safety, THE HILL (Dec. 13, 2016, 11:43 AM), https://thehill.com/policy/energy-environment/310157-epa-reverses-conclusion-on-fracking-safety (reporting EPA’s more recent findings in 2016 indicate that fracking is conclusively detrimental to both environment and public health); Reid Frazier, EPA head says rollbacks will keep environment clean, economy up, WHYY.ORG (Oct. 25, 2018), https://whyy.org/articles/epa-head-says-rollbacks-will-keep-environment-clean-economy-up/ (reporting that Acting EPA Administrator Andrew Wheeler believes that a lack of fracking regulation will benefit environment). Following an “ethics scandal” in which several emails were uncovered between several oil companies, such as Devon Energy, and former EPA Administrator Scott Pruitt implicating Pruitt for accepting several monetary bribes from various oil corporations, Pruitt resigned from his position. See Jeremy Diamond & Rene Marsh, Emails reveal Pruitt’s behind-the-scenes collaboration with oil and natural gas giant, CNN (Feb. 23, 2017), https://www.cnn.com/2017/02/22/politics/scott-pruitt-epa-oklahoma/index.html. In exchange for maintaining loosened regulations on the fracking industry, Pruitt received payments from energy companies like Devon Energy. Id. These ties between Pruitt and the oil industry have been found to exist before Pruitt’s appointment under the Trump Administration, and emails indicate that the ties continued throughout Pruitt’s tenure as EPA Administrator. Id.

15 See Gutin, supra note 12 (explaining that although lead EPA researcher on fracking Thomas Burke reported that over 950 scientific sources indicate that fracking causes
While the EPA continues to minimize the harmful effects of fracking, independent environmental groups such as the Natural Resources Defense Council (“NRDC”) warn of the consequences that this unconventional method has on public health. Describing that pollutants emitted during the hydraulic fracturing process are known to cause respiratory problems, nervous system failure, birth defects, blood disorders, and cancer, the NRDC and similar organizations seek to caution lawmakers about this highly unregulated method of energy production. Organizations like Greenpeace alert lawmakers and the public that hydraulic fracturing routinely causes the widespread contamination of drinking water supplies in communities near wells. Relying on assessments published by the EPA as well as their own studies, environmentalist organizations alert that the wastewater produced by hydraulic fracturing contains a multitude of contaminants. Many contaminants found in local drinking water supplies in areas close to hydraulic fracturing wells are known carcinogens that contribute to numerous other health complications. Moreover, environmental scientists have been unable to identify a majority of the components of hydraulic fracturing wastewater, as oil development corporations like ExxonMobil are not required to disclose the frack fluid ingredients that are used in their extraction processes. In

water contamination, several politicians remain unconvinced). Namely, Chairman of the House Energy and Commerce Committee Fred Upton believes that these reports indicate that the EPA “should now reconsider the burdensome regulations it intends to place on hydraulic fracturing.”

16 See Kate Kiely, REPORT: Five Major Health Threats from Fracking-Related Air Pollution, NAT’L RESOURCES DEF. COUNCIL (Dec. 16, 2014), https://www.nrdc.org/media/2014/141216 (describing primary health impacts that air polluted from fracking has on American citizens).

17 See id.

18 See Fracking’s Environmental Impacts: Water, supra note 7 (recounting complaints of several families who live in areas surrounding fracking sites of contaminated drinking water supplies).

19 Id. (reporting that many of the contaminants that are identified in local drinking water supplies contaminated by fracking wastewater are known carcinogens). A carcinogen is any substance that is known to cause cancer in humans. See NCI Dictionary of Cancer Terms, NAT’L CANCER INST. (last visited October 19, 2019), https://www.cancer.gov/publications/dictionaries/cancer-terms/def/carcinogen (defining a carcinogen as any substance that is known to cause cancer in humans).

20 Fracking’s Environmental Impacts: Water, supra note 7 (describing health complications other than cancer that are caused by contaminants found in fracking wastewater).

21 Id. (presenting issue that plagues environmentalists and local water treatment plants: that oil companies are not required to disclose chemical identity of contaminants in their fracking wastewater, which prevents scientists from understanding full consequences of fracking wastewater contamination of drinking water supplies).
the few states that have attempted to require oil companies to disclose these chemicals, corporations engaged in fracking may withhold from disclosure the names of some of the chemicals used in the extraction process because they qualify as confidential business information.  

During 2012, the amount of wastewater emitted by hydraulic fracturing wells built in 2011 would have increased by up to a massive 1,440 percent. Because more than one in four Americans live within a mile of an oil or gas well, public concern about health and environmental consequences has spread. In spite of public pandemonium, this increasingly popular method of oil extraction is predicted to expand further under the current administration.  

I. WHAT THE FRACK IS GOING ON HERE?: A BACKGROUND ON THE PRACTICE OF HYDRAULIC FRACTURING

Over the past two decades, environmental scientists and public health officials have uncovered the harmful consequences associated with fracking. This Comment analyzes the problems with hydraulic fracturing and the measures taken to regulate it in the United States. First, this Comment explains hydraulic fracturing and the impact it has had on the environment and public health. Then, this Comment

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22 Id. (stating that in states that have implemented disclosure requirements of chemicals used in fracking process, oil companies are able to be exempted from this requirement through use of intellectual property rights).
27 For a discussion of what hydraulic fracturing is, see infra notes 34–40 and accompanying text.
28 For a discussion of what hydraulic fracturing is and the impact that it has on the environment and public health see infra notes 34–40 and accompanying text.
examines the current state of laws that pertain to the hydraulic fracturing industry, and their efficacy with respect to regulating it. Next, this Comment examines a recent departure from traditional property law notions surrounding hydraulic fracturing. Finally, this Comment will explain the effects that this departure has already had on Pennsylvania and the potential impacts on regulation of hydraulic fracturing throughout the nation.

A. What is fracking?

Hydraulic fracturing ("fracking") is one of the most commonly used forms of unconventional oil and gas extraction in modern-day America. Fracking extracts natural resources embedded within sedimentary shale rocks beneath the Earth’s surface by fracturing the surface of the rocks that contain the natural resources. To do so, wells are constructed on sites that are known to contain large masses of subterranean shale, primarily either in the southwest region of the United States or in western Pennsylvania and West Virginia. Once the wells are constructed, pipelines are drilled vertically under the Earth’s surface, and extended horizontally such that the pipelines cover the length of the rock formation. A combination of water, sand, and various chemical additives is then ejected from the pipelines at a high pressure to fracture the shale rock, and create access points through which the oil can be extracted. The various chemical additives in the water bind to the

29 For a discussion of the current laws and regulations that govern hydraulic fracturing, see infra notes 89-125 and accompanying text.
30 For a discussion of the rule of capture and Pennsylvania’s departure from traditional precedent, see infra notes 126-176 and accompanying text.
31 For a discussion of the impact that Pennsylvania’s interpretation will have on the fracking industry in Pennsylvania and in other jurisdictions, see infra notes 177-197 and accompanying text.
35 The Process of Unconventional Natural Gas Production, supra note 33 (describing initial drilling process required when establishing fracking well).
36 Id. (explaining how chemicals are added to water that is injected into pipelines and subsequently expelled from pipes to fracture rock).
surface of the rock, and the pressure in the drills is reversed. The drills then extract the oil from the shale, along with approximately 20 to 40 percent of the water/chemical mixture that was used to fracture the shale’s surface.

B. The Glass is Half Clean: Fracking’s Effects on Drinking Water Supplies

“Fracking is a water-intensive process” that requires millions of gallons of water in order to extract natural resources. Specifically, to create the necessary fractures in the surface of the shale, over 3.6 million gallons of water are used each time a site is fracked. Each well is fracked multiple times, depending on the size and depth of the shale rock. When the pressure in the well’s pipelines is reversed to extract the oil, between twenty and forty percent of the water/chemical mixture (“fracking wastewater”) is returned. While some wells in eastern Colorado are purposefully constructed deep enough under the earth’s surface to prohibit the remaining fracking wastewater from contaminating groundwater, many fracking wells exist closer to the earth’s surface. These superficially constructed wells consequently

37 Id. (describing why various chemicals are added to water that is used in fracturing process).
39 Fracking, supra note 26 (explaining that fracking consumes great deal of water resources that would otherwise have been used for drinking water).
40 Id. (detailing specific quantity of water that is used when rock is fracked). Throughout the fracturing process, an individual rock is often fracked multiple times. Id.
41 Id. (describing that a rock is fracked in accordance with size of rock, and with natural resources possessed within).
42 Abrahm Lustgarten, The Trillion-Gallon Loophole: Lax Rules for Drillers that Inject Pollutants Into the Earth, PROPUBLICA (Sept. 20, 2012, 11:12 AM), https://www.propublica.org/article/trillion-gallon-loophole-lax-rules-for-drillers-that-inject-pollutants (explaining that only approximately 40 percent of water used in fracking process is able to be extracted when oil is drawn out of rock); Wastewater: Fracking Wastewater, supra note 38.
43 Id. (comparing wells that are constructed in Colorado in accordance with environmental standards with those constructed elsewhere). Absent regulation, oil
contribute to the contamination of groundwater, as “huge volumes of wastewater laced with cancer-causing chemicals, salts and naturally-occurring radioactive material that can cause earthquakes and contaminate aquifers” is released into the ground as fracking wastewater. In a report published by the EPA’s Science Advisory Board, fracking further contaminates groundwater “in a number of ways,” as water routinely leaks “from liquid storage areas, […] injection wells, […] along faults or [from] abandoned wells,” and subsequently seeps into the groundwater.

For the 40 percent of fracking wastewater that is retrieved through the oil return, the absence of regulation has allowed many fracking companies to dispose of the contaminated water in the most cost-effective way. Many of these cost-efficient disposal methods are harmful to local communities and the environment. Traditionally, oil companies have disposed of fracking wastewater by dumping the wastewater into rivers and the Gulf of Mexico, allowing the wastewater to evaporate, or by transporting the wastewater to local municipal water treatment facilities. While the latter method may seem like a harmless companies often improperly construct fracking wells too close to the surface of the Earth, allowing fracking wastewater that remains under the surface to seep into local groundwater supplies. Id. Wastewater: Fracking Wastewater, supra note 38.

44 Id. (explaining the consequences of allowing wells to be constructed too close to the Earth’s surface); Kaufman, supra note 38.
45 Fracking’s Environmental Impacts: Water, supra note 7 (detailing various ways in which contaminated fracking wastewater leaks from fracking process and pollutes local drinking water supplies).
46 See Lustgarten, supra note 42. Describing the composition of the water routinely used in the fracking process, Ohio’s Department of National Resources geologist Tom Tomastik stated, “[t]he law allows it, [i]t does not matter what is in [the water] as long as it comes from the oil and gas field it can be injected.” Id.
47 See id. (implying that most oil development companies opt for most cost-efficient means of disposing their fracking wastewater, causing them to dispose of their water in ways that are environmentally harmful).
alternative to dumping the wastewater, most municipal water treatment plants are unable to purify the fracking wastewater.\textsuperscript{49} Citing their inability to remove the radioactive contaminants from the wastewater, treatment plants often discharge the fracking wastewater back into local bodies of water.\textsuperscript{50}

In Pennsylvania, several treatment plants were found to have discharged wastewater into the Monongahela river.\textsuperscript{51} Unfortunately, the Monongahela river is the primary source of drinking water for more than 800,000 people in western Pennsylvania and West Virginia.\textsuperscript{52} In addition to the health consequences associated with this water pollution, dumping fracking wastewater into natural water bodies could “permanently damage key freshwater reservoirs needed to deliver water to millions of Americans.”\textsuperscript{53} The contaminants in fracking wastewater contain high levels of total dissolved solids (“TDS”).\textsuperscript{54} When mixed with chlorine, which is naturally present in large bodies of freshwater, the TDS create Trihalomethanes (“THMs”).\textsuperscript{55} In addition to the carcinogens already present in fracking wastewater, the THMs are considered by many to be carcinogens.\textsuperscript{56} While fracking has undoubtedly allowed American oil companies to increase crude oil production by two-fold between 2003

\textsuperscript{49} Mikulka, \textit{supra} note 48 (explaining that most water treatment plants are unable to purify fracking wastewater because contaminants in wastewater are unable to be identified).

\textsuperscript{50} \textit{Documents: Natural Gas’s Toxic Waste}, N.Y. TIMES (last accessed Feb. 8, 2020), https://archive.nytimes.com/www.nytimes.com/interactive/2011/02/27/us/natural-gas-documents-1.html#document/p417/a9945 (reporting that water treatment facilities that are unable to purify contaminated fracking wastewater dump wastewater back into bodies of water). Two of the polluted bodies of freshwater in the mid-Atlantic region are the Monongahela River, which provides drinking water to more than 800,000 people, and the Susquehanna River, which provides drinking water to more than six million people. \textit{Wastewater: Fracking Wastewater, supra} note 38.

\textsuperscript{51} \textit{Id.} (reporting that when unable to purify contaminated fracking wastewater, treatment facilities dispose wastewater into local bodies of freshwater).

\textsuperscript{52} \textit{Id.} (explaining that Monongahela river is primary source of drinking water for western Pennsylvania and West Virginia).


\textsuperscript{54} \textit{Wastewater: Fracking Wastewater, supra} note 38 (explaining that high levels of TDS are present in fracking wastewater). TDS are compounds in fracking wastewater that are unable to be removed from the fracking wastewater via traditional means, forcing purification facilities to release the wastewater back into bodies of water without purifying. \textit{Id.}

\textsuperscript{55} \textit{Id.} (describing that TDS eventually creates carcinogen THMs in freshwater supplies).

\textsuperscript{56} \textit{Id.} (explaining although THMs are carcinogens, carcinogens are already present in fracking wastewater).
and 2018, the fracking process produces approximately 3,400 billion liters of wastewater per year, leaving citizens in local communities to face the consequences.57

In Pennsylvania, the radioactive levels of sampled surface water that has been contaminated by fracking pollution often measure at “hundreds or even thousands of times the maximum allowed by the standard for drinking waters.”58 While this level of radioactive exposure in drinking water is startling, public health officials argue that the more proximate concern resulting from fracking water pollution is the amount of unknown and hazardous chemicals such as benzene in wastewater.59 In groundwater analyzed by the Pennsylvania Department of Environmental Protection (“DEP”), the DEP identified 344 chemicals commonly used in the drilling process within fracking wastewater.60 Of these 344, over seventy-five percent are known to cause eye and skin irritation, while between twenty and thirty percent are known to cause reproductive and cancerous mutations in humans.61

C. Unnatural Gas: Fracking’s Emission of Air Pollutants

In addition to the extensive contamination of drinking water, fracking also generates a substantial amount of air pollution that threatens both the environment and public health.62 Following the air pollution crisis in the early 1960s and the remedial passage of the Clean Air Act (“CAA”), air pollution levels in the United States steadily

59 SWARTHMORE C., supra note 53 (concluding that unknown chemicals in fracking wastewater are direct causes of cancer in humans).
60 Id. (reporting analysis of chemicals done by Pennsylvania DEP).
61 Id. (detailing other, less serious risks that fracking wastewater poses to humans).
decreased since the passage of the CAA Amendments in 1970. In the past fifteen years, however, the increasing popularity of fracking has allowed the United States to increase its production of natural gas by over thirty-nine percent. Unfortunately, the increase in production of natural gas has been accompanied by a corresponding stimulation of air pollution, and air pollution levels in the United States have begun to once again increase. This rapid transition to the use of fracking as a primary source oil extraction has also been accompanied by the increase in pollutants like methane.

Methane, another greenhouse gas, has approximately thirty-four times more global warming potential than carbon dioxide over a twenty year period and largely contributes to global warming as it leaks from fracking sites. Recent studies have determined that the fracking process

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63 See Air Quality – National Summary, EPA.GOV, (last visited Oct. 19, 2019)


65 See Schade, supra note 10 (implying that fracking is to blame for increasing levels of air pollution in United States).

66 Jesse Coleman, Colorado fracking companies admit to major air pollution problem, emissions rules proposed, GREENPEACE (Nov. 19, 2013), https://www.greenpeace.org/usa/colorado-fracking-companies-admit-to-major-air-pollution-problem-emissions-rules-proposed/ (explaining that methane is most prevalent gaseous pollutant resulting from fracking process).

67 See MARK Z. JACOBSON, EVALUATION OF COAL AND NATURAL GAS WITH CARBON CAPTURE AS PROPOSED SOLUTIONS TO GLOBAL WARMING, AIR POLLUTION, AND ENERGY SECURITY (2020), https://web.stanford.edu/group/efmh/jacobson/Articles/I/NatGasVsWWS&coal.pdf (explaining potency of methane as greenhouse gas). In addition, current techniques used to “capture” or remove carbon dioxide pollution levels in atmosphere are unable to remove methane gas. Id. While many proponents of fracking conclude that fracking is the new modern form of energy production, the scientific community is in consensus that fracking is more destructive to the environment than traditional, conventional oil drilling. Id.
leaks “high rates of methane” during multiple points throughout the fracturing process, beginning with the emitting methane during the initial drilling of the well and ending with emitting fugitive gases when the oil is extracted.\textsuperscript{68} In addition, the fracturing process releases air toxins known as volatile organic compounds (“VOCs”).\textsuperscript{69} While VOCs are released in household items such as paints, aerosol cans, and vehicle exhaust, fracturing emits an extraordinarily high level of the pollutants.\textsuperscript{70} In 2013, fracturing in a single basin in Utah alone emitted a level of VOCs equivalent to that of one hundred million automobiles.\textsuperscript{71} These stark levels of methane and VOC emissions from fracturing moreover makes fracturing dangerously damaging to the environment than conventional oil drilling methods.\textsuperscript{72} Unsurprisingly, environmental scientists warn that this detriment to the environment, coupled with the nationwide shift from conventional oil drilling to fracturing, will negatively impact public health, both now and in the future.\textsuperscript{73}

\textsuperscript{68} See Physicians for Soc. Resp., \textit{Hydraulic Fracturing and Your Health: Air Contamination}, PSR.ORG (last visited Oct. 26, 2019), https://www.psr.org/wp-content/uploads/2018/05/fracking-and-air-pollution.pdf (compiling various studies conducted by environmental scientists and EPA to conclude levels of methane released during fracturing process). Much of the methane released during fracturing is released accidentally. \textit{Id.} Gases that are unintentionally released through leaks during the fracturing process are referred to as “fugitive gases,” and account for approximately fifty percent of methane emissions. \textit{Id.}

\textsuperscript{69} \textit{Id.} (explaining that VOCs are also released during the fracturing process). VOCs are “extremely toxic” fugitive gases that are a byproduct of fracturing, that are released at a frequency that is “cause for concern.” \textit{Id.}

\textsuperscript{70} See \textit{Volatile Organic Compounds (VOCs) Pollution}, ENVTL. POLLUTION CTR. (last visited Oct. 26, 2019), https://www.environmentalpollutioncenters.org/vocs/ (providing examples of VOCs routinely used in American households). Although VOCs are present in paint thinners, the concentration of the compounds is deemed safe, whereas the concentration of VOCs in the air surrounding fracturing sites is deemed unsafe. \textit{Id.} See also Physicians for Soc. Resp., supra note 68 (describing extreme levels of VOCs found in air supplies within ten miles of fracturing sites).

\textsuperscript{71} D. Helmig et. al., \textit{Highly Elevated Atmospheric Levels of Volatile Organic Compounds in the Uintah Basin, Utah}, 48 ENVTL. SCI. TECH. J. 4707 (2014), available at https://www.pubs.acs.org/doi/10/1021/es405046r (reporting extreme levels of VOCs detected that were emitted from fracturing plants in one Utah county alone).

\textsuperscript{72} Physicians for Soc. Resp., supra note 68 (explaining that levels of air pollutants emitted from fracturing causes fracturing to be more detrimental for environment than natural oil drilling).

\textsuperscript{73} See \textit{id.} (hypothesizing that harmful effects on environment and public health from extreme pollution levels from fracturing have yet to be seen). In order to address this dire problem, the activist group Physicians for Social Responsibility recommends that state governments wholly ban fracturing. \textit{Id.}
D. There’s No Such Thing as Safe Fracking: Fracking’s Impact on Air Supply and Human Health

Throughout the fracking process, chemicals such as benzene and ozone are emitted into the air. Due to their chemical weight relative to the chemical weight of oxygen, benzene and ozone often “sink into low-lying areas.” Because benzene and ozone often float at sea-level, the pollutants are introduced into the air supply humans breathe. When analyzed, fracking has been found to cause this air supply to contain benzene at “levels far exceeding federal standards.” According to the World Health Organization, benzene is a known carcinogen, and directly causes cancers such as acute lymphocytic leukemia. Exposure to benzene also lowers the body’s red and white blood cell counts and compromises the immune system. Pregnant women living within a ten-mile radius of fracking wells are thirty-four percent more likely to give birth to children with birth defects and forty percent more likely to give birth prematurely than women living further away from fracking sites. Other gaseous pollutants regularly emitted from fracking, such as toluene, xylene, and nitrogen oxides, are known to contribute to the

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74 Ctr. for Disease Control & Prevention, Outdoor Air, EPHTRACKING.CDC.GOV (last visited Oct. 26, 2019), https://ephtracking.cdc.gov/showAirContaminants.action (describing chemicals released into atmosphere consequent of fracking).
75 Id. (explaining gases like benzene are dense, and therefore float above surface of groundwater in areas surrounding fracking sites).
76 See id. (describing how pollutants like benzene enter air supply that humans breathe in gas form).
77 SWARTHMORE C., supra note 53 (stating that benzene levels measured near fracking sites in Pennsylvania and Colorado far exceed EPA limits). In these areas, it has also been found that VOCs caused ozone pollution levels to be over double the federal standard. Id.
79 Id. (linking exposure to benzene with decreased resistance to infection in clinical mice trials). When the immune system is compromised, humans are susceptible to a greater number of viruses, diseases, and illnesses in their environment. Id.
80 The link between fracking and health issues, MARKETPLACE.ORG (Nov. 15, 2017), https://www.marketplace.org/2017/11/15/sustainability/environmental-protection-agency-drilling-fracking-wells (presenting data found that pregnant women who live within ten miles of fracking sites are more likely to give birth to children with defects than women who live further than ten miles from fracking operations). These studies have also found that cows located at dairy farms within ten miles of fracking sites produced thirty percent less milk than cows that do not live close to fracking operations. Id. Additionally, male mice exposed to fracking wastewater produced significantly less sperm than the control mice population. Id.
onset of anemia, weakened immune systems, leukemia, reproductive disorders, asthma, nervous system failure, and even death.\textsuperscript{81}

In Pennsylvania alone, residents filed over 9,000 complaints between 2004 and 2016 relating to air pollution from fracking wells.\textsuperscript{82} Unfortunately, residents face difficulty in proving that the air and pollution they experience is caused by fracking.\textsuperscript{83} Several citizen groups whose health suffered from local fracking have succeeded in civil suits against fracking companies.\textsuperscript{84} The settlement expenses, however, have done little to effectuate change in the aggregate fracking industry.\textsuperscript{85} In response, many citizens have organized grassroots political groups that seek to ban fracking, or to change the current schema of laws with the objective of achieving fracking regulation.\textsuperscript{86}

II. THE CURRENT STATUS OF FRACKING REGULATION, OR FRACK THEREOF

The EPA’s wavering reluctance to categorically declare fracking harmful to health has expectedly resulted in a virtual absence of regulation at the federal level.\textsuperscript{87} In spite of federal legislation that reaches

\textsuperscript{81} Physicians for Soc. Resp., \textit{supra} note 68 (listing various air pollutants released during fracking process and respective diseases consequent).

\textsuperscript{82} \textit{The link between fracking and health issues, supra} note 80 (citing complaints filed by Pennsylvania residents against fracking companies).

\textsuperscript{83} \textit{Id.} (explaining majority of complaints filed by citizens in Pennsylvania against fracking and oil development companies are dismissed as citizens are unable to prove prima facie causation).

\textsuperscript{84} Devon DeKok, \textit{Cabot Oil & Gas settles fracking lawsuit with Pennsylvania families}, \textsc{REUTERS.COM} (Sept. 26, 2017, 10:14 AM), https://www.reuters.com/article/us-pennsylvania-fracking-cabot-oil-gas/cabot-oil-gas-settles-fracking-lawsuit-with-pennsylvania-families-idUSKCN1C12GO (exemplifying an instance in which a fracking company settled a lawsuit filed jointly by families in Pennsylvania). Two families in Dimock, Pennsylvania filed suit against Cabot Oil & Gas claiming their water was contaminated from methane due to the local fracking pollution after the families discovered that their tap water could be lit with a match. \textit{Id.} Although Cabot Oil & Gas argued that methane was always present in the local water supply, the families circulated a picture of their tap water lit aflame, causing Cabot to pay out $4.2 million in restitution. \textit{Id.}

\textsuperscript{85} See \textit{id.} (noting that although there are instances wherein oil companies have settled with plaintiff citizens, the fracking industry remains highly unregulated).

\textsuperscript{86} See Am. Against Fracking, \textit{supra} note 24 (organizing grassroots anti-fracking activist groups by geographical locations).

conventional oil production, large exemptions have been carved such that the federal government is effectively impotent to regulate fracking. These laws, which were designed to enforce environmentally cautious energy production by their very congressional intent, are riddled with loopholes that render them statutorily ineffective at controlling the fracking industry. While states with few shale resources like Vermont have categorically banned fracking within their jurisdictions, states with abundant shale resources and prevalent fracking operations have been hesitant to implement regulation minimum regulations. As such, very little regulation on fracking exists either at the federal or at the state level.

A. The Resource Conservation and Recovery Act (RCRA)

Congress passed the Resource Conservation and Recovery Act (“RCRA”) in 1976 with the intent to protect “communities and resource conservation” from “cradle to grave” by developing regulations and policies to ensure proper disposal of hazardous waste. Despite objections from EPA officials and 62 documented cases of damage caused by oil and gas wastes, Congress amended the RCRA in 1988 to provide an exemption for any “drilling fluids, produced water, and other wastes associated with the exploration, development, or production of crude oil or natural gas…” Congress penned a large loophole that

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88 Fracking: Regulatory Failures and Delays, GREENPEACE.ORG (last visited Oct. 26, 2019), https://www.greenpeace.org/usa/global-warming/issues/fracking/regulatory-failures-and-delays/. A statutory “loophole” is defined as any exemption that or exception that nullifies a statute’s effect on enforcing provisions of the statute. See generally id.
89 See id. (juxtaposing legislative intent of federal statutes surrounding natural gas development with loopholes that exempt fracking industry).
90 See Lee, supra note 87, (noting that states such as Vermont and Maryland that have banned fracking lack resources to make fracking within state profitable).
91 See Fracking: Regulatory Failures and Delays, supra note 88.
92 Resource Conservation and Recovery Act (RCRA) Overview, EPA.GOV, (last visited Oct. 26, 2019) https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview (explaining Congress’s intent in enacting the RCRA). The RCRA applies to the processes of extracting resources “from cradle to grave,” which is intended to govern the disposal of waste in an environmentally conscious manner from the inception of the resource well to the abandonment of the well. Id.
prohibits federal regulation of a major component of hazardous waste, citing that regulating the disposal of wastes produced by oil or gas development would result in a “severe economic impact on the industry and on oil and gas production in the U.S.” Further, Congress explained that requiring the federal government to regulate gas or oil waste would be unduly burdensome regulation that should be delegated to state governments. This broad exemption prohibiting any waste disposal regulation at the federal level extends to fracking waste and continues to exist in 2019.

B. The “Clean” Air Act Loophole

In 1970, Congress enacted the Clean Air Act (“CAA”) for the purpose of providing “comprehensive” regulation of air emissions, both from stationary and mobile sources. The CAA authorizes the EPA to establish rigorous federal regulations to “protect public health and public welfare and to regulate emissions of hazardous air pollutants.” To regulate industrial plants, coal-fired power plants, and vehicles alike, the CAA permits the EPA to require that plants install emissions-measuring devices and to submit to intermittent stack testing. The EPA requires both stationary and mobile sources to comply with specifically tailored
emissions limits regarding the amount of pollutants released into the atmosphere on a yearly basis.\textsuperscript{100} While the coal manufacturing industry is categorically regulated by the EPA under the CAA, the fracking and natural gas industry “is exempt from critical requirements to assess, monitor, and control hazardous air pollutants.”\textsuperscript{101}

In response to several studies concluding that fracking releases methane, the EPA adopted the New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants (“NSPS”) to control the emission of methane.\textsuperscript{102} Enacted in 2016, the NSPS attempts to regulate the high levels of benzene, VOCs, and methane pollution levels that are emitted both intentionally and accidentally during the fracking process.\textsuperscript{103} While the implementation of the NSPS demonstrated a monumental shift toward federal regulation of the fracking industry, these regulations only apply to new sources of fracking development and exploration.\textsuperscript{104} This leaves the over 500,000 fracking facilities unregulated, thus permitting these sites to continue to emit uncontrolled levels of methane, benzene, and VOCs.\textsuperscript{105} While the NSPS seeks to control methane emission from new plants that are being built, the plants already in operation are not required to amend their emission protocols.\textsuperscript{106}

\begin{itemize}
\item \textsuperscript{100} Id; See Air Enforcement, supra note 97 (requiring both mobile and stationary sources that emit air pollutants submit to testing in accordance with relevant standards under CAA); U.S. ENVTL. PROT. AGENCY, Issuance of the Clean Air Act Stationary Source Compliance Monitoring Strategy (Oct. 4, 2016), available at https://www.epa.gov/sites/production/files/2013-09/documents/cmspolicy.pdf.
\item \textsuperscript{102} Addressing Air Emissions from the Oil and Natural Gas Industry, U.S. ENVTL. PROT. AGENCY, (July 28, 2011), https://mde.state.md.us/programs/Land/mining/marcellus/Documents/EPA_presentation_on_proposed_rules.pdf (outlining the EPA’s attempts to regulate emissions through implementation of NSPS standards).
\item \textsuperscript{104} See Fracking: Regulatory Failures and Delays, supra note 88 (explaining that NSPS regulations only apply to fracking sites created after implementation of NSPS in 2016).
\item \textsuperscript{105} Id. (explaining that proposed NSPS regulations would “exempt nearly 500,000 wells already in operation.”).
\item \textsuperscript{106} Id. (concluding that previously constructed fracking sites are not required to adhere to emissions standards, and therefore would be permitted to release pollutants).
\end{itemize}
C. Safe Drinking Water Act’s Loophole: Only You Can Prevent Faucet Fires

Arguably, the most infamous federal exemption for the fracking industry is afforded by the Safe Water Drinking Act ("SWDA").\textsuperscript{107} Enacted to "protect our health from source to tap," Congress passed the SDWA in 1974 to protect public health by regulating the nation’s public drinking water supply.\textsuperscript{108} The SDWA applies to most sources of drinking water, including rivers, lakes, reservoirs, springs, and groundwater wells.\textsuperscript{109} To ensure that Americans are afforded access to uncontaminated drinking water, the SDWA authorizes the EPA to enforce standards that protect drinking water from contaminants such as "improperly disposed of chemicals[,] animal wastes[,] pesticides[,] human threats[,] wastes injected underground[,] and naturally-occurring substances."\textsuperscript{110} In 2005, however, Congress passed and President George W. Bush signed the Energy Policy Act of 2005 ("the Act") into law.\textsuperscript{111} While the Act was promulgated in order to achieve greater energy autonomy and decreasing pollution levels for the nation, it is most notable for its amendment to the SDWA.\textsuperscript{112}

The Act amends the SDWA by allowing oil companies to refuse to disclose the chemical identities of the contaminants in their fracking wastewater.\textsuperscript{113} Unable to identify these pollutants, water purification plants are often unable to purify local drinking water, and release


\textsuperscript{108} U.S. ENVTL. PROT. AGENCY, UNDERSTANDING THE SAFE DRINKING WATER ACT 1 (June 2004), https://www.epa.gov/sites/production/files/2015-04/documents/epa816f0404030.pdf (explaining that legislative intent in enacting SDWA was to protect all drinking water supplies consumed by American citizens).

\textsuperscript{109} Id. (listing bodies of water regulated by EPA under SDWA).

\textsuperscript{110} Id. (providing examples of contaminations EPA is authorized to regulated under SDWA).

\textsuperscript{111} Mike Soraghan, The fracking ‘loophole’ that just keeps growing, E&E NEWS (Aug. 18, 2015), https://www.eenews.net/stories/1060023558 (providing timeline of when Energy Policy Act was signed into law).


\textsuperscript{113} Soraghan, supra note 111 (explaining that Energy Policy Act allows oil companies to refuse to disclose chemical identity of contaminants used in fracking water).
contaminated fracking wastewater back into local water supplies. In doing so, the Act “stripped the Environmental Protection Agency of its authority to regulate […] hydraulic fracturing,” and its contamination of local water supplies. Without being able to identify contaminants and thus trace the contaminants to their sources, it is impossible for the EPA to enforce any water regulations upon the unidentifiable fracking companies. This exemption was pioneered by then Vice President Dick Cheney, who was previously the chief executive of Halliburton Company, a multinational oil field service company. The exemption, colloquially referred to as the “Halliburton Loophole,” has allowed fracking corporations to pollute the bodies of water that provide drinking water to hundreds of thousands of Americans each day.

While the Trump Administration boldly claims that states will be more apt than the federal government to regulate the fracking industry, state legislatures have neglected to do so. In Pennsylvania, the state legislature implemented a gag order, which requires physicians to sign confidentiality agreements preventing them from disclosing the chemical compounds of contaminants found in fracking water—the few that are published—in order to access information about the chemical compounds to treat patients suffering from exposure to the contaminants. Further, in passing Act 13, the Pennsylvania legislature reasoned that the federal

114 Id. (explaining why local water purification plants dispose of contaminated fracking wastewater in bodies of freshwater).
116 See Buzzi, supra note 112 (connecting local water treatment plants’ inability to identify fracking wastewater contaminants to Halliburton loophole).
117 The Halliburton Loophole, supra note 1155 (identifying Dick Cheney as a former CEO of Halliburton). As a large energy production conglomerate, Halliburton invented the fracking process in the 1940s. Id.
government routinely protects intellectual property, and the same should hold true for fracking companies within the jurisdiction.\(^ {121}\) Although the Supreme Court of Pennsylvania overturned the extension of the Halliburton loophole to prevent Pennsylvania physicians from accessing the identity of contaminants in 2013, the Pennsylvania Department of Environmental Protection and Pennsylvania water treatment plants alike remain unable to identify pollutants in fracking wastewater.\(^ {122}\) At the federal level, the Halliburton loophole has not been closed and has continued to provide immunity to fracking companies throughout the nation since its inception in 2005.\(^ {123}\)

### III. SOME FRACKING HOPE? PENNSYLVANIA’S DEPARTURE FROM THE RULE OF CAPTURE IN BRIGGS V. SOUTHWESTERN ENERGY PROD. CO.

At the heart of property law is the cause of action of trespass, defined as “the act of knowingly entering another person’s property without permission.”\(^ {124}\) A trespass cause of action can be committed in a variety of ways.\(^ {125}\) Generally, a trespass is committed when an individual knowingly takes possession or interferes with another’s lawful possession of land or chattel.\(^ {126}\) In *Pierson v. Post*,\(^ {127}\) however, the

\(^{121}\) See id. (reasoning that intellectual property rights should be protected within jurisdiction, including identities of fracking contaminants); 58 Pa. C. S. § 2301 et seq. (2012).


\(^{123}\) See Haurer, *supra* note 107 (reporting Halliburton loophole continues to provide exemption for fracking under SDWA in 2019).


Supreme Court of New York developed a corollary that has been accepted by all jurisdictions within the United States. The court developed the “rule of capture,” which describes that an individual who first gains control of a natural resource possesses title to that resource. Since 1805, the rule of capture has been extended to many natural resources other than wild animals, including the oil and gas that lie beneath the Earth’s surface.

The rule of capture intersects with property and energy law in that it determines who possesses lawful title to the natural resources under a given parcel of land. Without title to natural resources under a parcel of land, a land-owning plaintiff would per se have an invalid claim of trespass against the lawful owner of the natural resources. In Coastal Oil & Gas Corp. v. Garza Energy Trust, the Supreme Court of Texas distinctly articulated how the law of capture applies to trespass causes of action when the chattel in dispute is subterranean natural resources. In that case, the trial court found that Coastal Oil & Gas Corporation (“Coastal Oil”) had committed a trespass when the fracking well on the Coastal Oil’s land likely drained natural gas from under the surface of Garza Energy Trust (“Garza”)’s land. The trial court awarded damages

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129 Id. (explaining how rule of capture applies to modern property law).
131 See generally id. (detailing how rule of capture often determines whom possesses title to natural resources below parcels of land).
132 See id. (reporting viability of claim of trespass against fracking company resulting from court’s decision in Briggs).
133 See, e.g., Coastal Oil & Gas Corp. v. Garza Energy Trust, 268 S.W.3d 1, 4 (Tex. 2008) (providing an example of an alternative interpretation of the rule of capture as a bar to trespass claims against fracking companies). While a few jurisdictions have yet to extend the rule of capture to fracking, most jurisdictions have adopted the Supreme Court of Texas’s reasoning in Coastal Oil and have already done so. Id. See also Christopher A. Lewis & Stephen C. Zumbrun, Pennsylvania Superior Court Fractures Long-Standing Rule of Capture, BLANK ROME LLP (April 30, 2018), available at https://energytrendswatch.com/2018/04/30/pennsylvania-superior-court-fractures-long-standing-rule-of-capture/.
134 See id. (extending the rule of capture as bar to trespass claims arising from fracking activities).
to Garza as compensation for the value of the oil that Coastal Oil fracked from under Garza’s land.\textsuperscript{136}

Coastal Oil appealed, and the Supreme Court of Texas reversed and remanded the case to the trial level, to make a determination pursuant to the Court’s holding.\textsuperscript{137} The Supreme Court of Texas considered the primary issue, which was “whether subsurface hydraulic fracturing of a natural gas well that extends into another’s property is a trespass.”\textsuperscript{138} Holding that “the rule of capture bars recovery of such damages,” the Supreme Court of Texas held that Coastal Oil merely “made it possible for gas to flow from beneath [Garza’s land] to [Coastal Oil’s land].”\textsuperscript{139} The court’s application of the rule of capture in \textit{Coastal Oil} is consistent with the opinion that gave rise to the rule of capture—that a natural resource belongs to whomever pursues and captures the resource.\textsuperscript{140}

Whether the \textit{ferae naturae} be a wild fox or natural gas contained within a subterranean shale rock, lawful title lies with whomever “captures” the resource.\textsuperscript{141} In accordance with this rule of capture, the court held that “the gas [Garza] claims to have lost simply does not belong to him.”\textsuperscript{142} In its opinion, the Supreme Court of Texas explained that the rule of capture is “a cornerstone of the oil and gas industry and is fundamental both to property rights and to state regulation.”\textsuperscript{143} The court reasoned that if a landowner truly wishes to protect the natural resources under his parcel from drainage to under the land of another, the landowner may do so by “drilling his [or her] own well.”\textsuperscript{144} The court cited four policy

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  \item \textsuperscript{136} \textit{Id.} (entering judgment in favor of Garza in excess of four million dollars resulting from Coastal Oil’s trespass on Garza’s property).
  \item \textsuperscript{137} \textit{Coastal Oil}, 268 S.W.3d at 1 (reversing and remanding case consistent with findings of fact that rule of capture applies to fracking trespass claims).
  \item \textsuperscript{138} \textit{Id.} at 4 (considering whether or not rule of capture extends to unconventional means of oil drilling, particularly fracking). Finding no material differences in fact between conventional oil drilling methods and fracking, the Supreme Court of Texas extended the rule of capture as a bar to trespass claims arising from fracking. \textit{Id.}
  \item \textsuperscript{139} \textit{Id.} at 13 (holding Coastal Oil did not actively pursue natural resources under Garza’s land, but rather the capture of oil was merely made possible by drilling conducted on Coastal Oil’s own land).
  \item \textsuperscript{140} \textit{Id.} at 13-14 (applying rule of capture consistent with precedent, originating from \textit{Pierson} decision in 1805).
  \item \textsuperscript{141} \textit{Pierson}, 3 Cai. R. at 179 (developing the rule of capture). The rule of capture applies to \textit{ferae naturae}, or natural resources, to which no one holds lawful title. \textit{Id.} In \textit{Pierson}, the natural resource was a wild fox, whereas in \textit{Coastal Oil}, the natural resource is oil. \textit{Id.}
  \item \textsuperscript{142} \textit{Coastal Oil}, 268 S.W.3d at 13 (asserting Garza does not possess lawful title to natural resource in controversy, and thus is able to form prima facie case of trespass).
  \item \textsuperscript{143} \textit{Id.} (highlighting importance of rule of capture as it applies to natural gas industry).
  \item \textsuperscript{144} \textit{Id.} at 14 (reasoning that if Garza was concerned about depletion of natural gas under his property, he is within his rights to construct fracking drill to extract his resources). It
\end{itemize}
reasons for declining to amend the rule of capture in the context of fracking and mineral rights, one of which being that “no one in the industry appears to want or need the change.” Imaginably, the court was referring to the seventeen oil and natural gas groups that filed amicus curiae briefs in the case, including natural gas conglomerates like Halliburton Energy Services, Inc. and Devon Energy Corp. Citing the energy groups’ concerns that allowing standing for a trespass claim in this case would provide for regulation in a previously unregulated industry, the court held that a claim of trespass by hydraulic fracturing is “precluded by the rule of capture.”

The Supreme Court of Texas applied the rule of capture in accordance with precedence, as this rule guarantees that an owner gains lawful title to natural resources produced from a well on the owner’s property, even if it is proven that part of the natural resources “migrated from adjoining lands.” This historically accurate application of the rule of capture has been used to bar claims of trespass in the vast majority of oil and gas cases in the past century.

In 2018, however, the Superior Court of Pennsylvania declined to apply the rule of capture to fracking, providing citizens with a form of recourse against unconventional oil development corporations. In Briggs v. Southwestern Energy Prod. Co., Plaintiffs Adam, Paula, Joshua, and Sarah Briggs (“Plaintiffs”) brought suit against Southwestern

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145 Coastal Oil, 268 S.W.3d at 16 (holding that policy justification of fracking industry’s disapproval of trespass cause of action was persuasive).
146 Id. at 16-17 (listing the seventeen oil companies that filed amicus curiae briefs in Coastal Oil).
147 Id. at 13 (holding that rule of capture does extend to fracking activities, barring trespass claims against oil companies arising from fracking).
148 Id. at 14 (citing Hardwicke, The Rule of Capture and Its Implications as Applied to Oil and Gas, 13 Tex. L. Rev. 391, 393 (1935)) (holding that gas entity gains lawful title of natural resources when resources ‘naturally flow’ to gas entity’s well). In Coastal Oil, the court held that there is no material difference between the manner in which oil flows in conventional oil drilling and in fracking operations. See also Coastal Oil, 268 S.W.3d. at 16.
149 See Teel v. Chesapeake Appalachia LLC, 906 F.Supp.2d 519 (N.D.W.V. 2012) (holding that trespass claims are barred by rule of capture in most jurisdictions). In that case, the court resolved that if a landowner wishes to protect herself from losing fracking resources, she should construct her own fracking well on her property. Id.; See also Danielle Quinn, A Fracking Fragile Issue: Courts Continue to Tiptoe Around Subsurface Trespass Claims, Vill. Env. Law J. at 7 (2015).
151 Id. (stating case name).
Energy Production Company ("Defendant"), an oil development company that fracked lawfully on land adjoining Plaintiffs’ property.152 Plaintiffs alleged that from 2011 to 2015, Defendant fracked on the parcel of land adjoined to Plaintiffs’ parcel, resulting in the unlawful capture of natural resources located under Plaintiffs’ parcel.153 Plaintiffs alleged that by capturing the natural resources under their parcel of land, the Defendant committed both a trespass and a conversion, for which there is liability for punitive damages.154 In a case of first impression, the trial court found the reasoning in Coastal Oil “particularly instructive” and held that Plaintiffs’ trespass claim is precluded by the rule of capture.155 Further explaining that “[i]t is well established Pennsylvania law that the rule of capture applies to wells drilled for conventional gas exploration,” the trial court held that it is consistent with both Pennsylvania law and traditional notions of property law to extend the rule of capture to unconventional oil drilling methods like fracking.156

On appeal, however, the Superior Court of Pennsylvania reversed and remanded the case, consistent with its finding that “the rule of capture does not preclude liability for trespass due to hydraulic fracturing.”157 Representing an entirely original departure from traditional interpretations of the rule of capture, the Superior Court held that trespass is actionable due to fracking “where subsurface fractures […] cross boundary lines and extend into the subsurface estate of an adjoining property.”158 The Superior Court relied heavily upon Justice Johnson’s dissenting opinion in Coastal Oil, which reasoned that the unique nature of how natural resources are fracked renders the rule of capture inapplicable.159 In his opinion, Justice Johnson reasoned that “[t]he gas at issue […] did not migrate to Coastal’s well because of

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153 Id. (describing activity that Plaintiffs allege constitutes trespass under Pennsylvania law).
154 Id. (alleging Defendant committed trespass by fracking on Defendant’s land that drew from natural resources under Plaintiffs’ land).
155 See id. (citing reasoning used by dissenting opinion in Coastal Oil).
156 See id. (holding that to bar trespass claims is inconsistent with notions of property law).
157 Briggs, 184 A.3d at 163 (finding that rule of capture does not bar claims of trespass arising from fracking in case).
158 Id. (finding that in order for resources from Plaintiffs’ land to reach Defendant’s well, fracture must have extended under Plaintiffs’ land). This is the factual basis for which the Superior Court asserts that a trespass occurred. Id.
159 Coastal Oil, 268 S.W.3d at 42 (Johnson, J., dissenting) (distinguishing fracking from conventional oil drilling by explaining that while conventional oil may flow naturally to drill, fracture must be forcibly created during fracking expedition to extract oil).
naturally occurring pressure changes in the reservoir.”

Justice Johnson explained that in order for an oil company to attain the natural resources, the company would need to have created a fracture in the surface of the shale rock that extended into Garza’s property. As such, Justice Johnson concluded that a trespass must have occurred when Coastal Oil created a fracture line on shale rock underneath Garza’s property.

Adopting the dissenting opinion in Coastal Oil, the Superior Court in Briggs held that the rule of capture does not bar a trespass cause of action in suits arising from fracking because unlike conventional oil drilling, fracking requires that the flow of gas be forcibly stimulated from the rock. The Pennsylvania court held that while the rule of capture bars trespass claims arising from conventional oil drilling, oil fracked from shale formations “is non-migratory in nature,” “does not merely ‘escape’ to adjoining land absent the application of an external force.”

Rather, fracking requires the forcible retrieval of natural gas from rock formations under the Earth’s surface, requiring an oil company to actively frack in any location from which oil is to be extracted. The Superior Court was not persuaded by the majority opinion in Coastal Oil that a landowner can protect himself from fracking trespass by creating his own fracking operation. Citing the costly and laborious nature of developing a fracking operation, the Pennsylvania court rejected the Texas court’s policy rationale for applying the rule of capture to fracking trespass cases.

In a case of first impression, the Superior Court of Pennsylvania declined to extend the rule of capture to trespass claims arising from

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160 Id. (explaining that oil in fracking process must have been forcibly drawn from Plaintiffs’ land, inconsistent with natural flow).
161 See id. (explaining that to retrieve oil from under Plaintiffs’ land, Defendant must have fractured rock belonging to Plaintiffs).
162 Id. (concluding that a trespass did occur in Coastal Oil).
163 See Briggs, 184 A.3d at 162 (adopting Justice Johnson’s dissenting opinion in Coastal Oil that fracture occurred under Plaintiffs’ land).
164 Id. (citing Butler v. Charles Powers ex rel. Warren, 65 A.3d 885, 894) (describing oil held within shale rock is ‘non-migratory’ in nature, and thus is unable to naturally flow onto another’s property).
165 Id. at 159 (stating any oil derived from fracking must be intentionally removed by force).
166 Id. at 163; See also Coastal Oil, 268 S.W.3d at 14 (rejecting categorically the argument that a concerned landowner can protect herself from depletion of her fracking resources by creating her own frack well on the property).
167 Briggs, 184 A.3d at 163 (holding cost and labor requirements are prohibitively high, such that suggestion for landowner to construct her own well is moot).
fracking in Briggs.\textsuperscript{168} This interpretation of the rule of capture is most consistent with the black-letter law definition of trespass, which is defined as “the act of knowingly entering another person’s property without permission.”\textsuperscript{169} In cases where oil companies frack underneath adjacent parcels of land, the oil companies enter another’s property without permission to do so.\textsuperscript{170} Often, the oil companies commit trespass to chattel and conversion by extracting the natural resources that are within the possession of the adjoining landowner.\textsuperscript{171} Without the financial or physical capacity to establish fracking drills on her own land, the adjoining landowners are left without remedy in the vast majority of jurisdictions.\textsuperscript{172} Moreover, the adjoining landowner is subject to a variety of environmental consequences that result from fracking to which she did not consent.\textsuperscript{173} By correctly concluding that the rule of capture is inapplicable to fracking, the Superior Court of Pennsylvania created the opportunity for fracking companies to be liable for trespass across the jurisdiction.\textsuperscript{174}

IV. THE BIG FRACKING DEAL: PENNSYLVANIA’S INTERPRETATION ALLOWS FOR FRACKING TRESPASS CLAIMS AND OIL COMPANY RESPONSIBILITY

Promising to “unleash massive wealth for America” by further deregulating the oil and gas industry, it is clear that President Trump intends to push forward with the extraction of natural gas by fracking.\textsuperscript{175}

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{168} See id. (holding rule of capture does not bar trespass causes of action that result from oil company’s intrusion on another’s land and chattel).
\item \textsuperscript{169} Trespass, supra note 125 (defining trespass as a cause of action under property law).
\item \textsuperscript{170} See Briggs, 184 A.3d at 162 (implying that oil companies generally lack permission to frack under adjoining landowner’s land).
\item \textsuperscript{171} See id. at 159 (describing the specific nature of trespass and conversion committed by fracking companies).
\item \textsuperscript{172} See Coastal Oil, 268 S.W.3d at 14 (implying that a majority of jurisdictions throughout United States conform to interpretation that rule of capture bars trespass claims resulting from fracking).
\item \textsuperscript{173} See Lustgarten, supra note 42; see also Am. Against Fracking, supra note 24 (discussing the environmental and health impacts of fracking).
\item \textsuperscript{175} See Coral Davenport, Reversing Course, E.P.A. Says Fracking Can Contaminate Drinking Water, N.Y. TIMES (Dec. 13, 2016), https://www.nytimes.com/2016/12/13/us/reversing-course-epa-says-fracking-can-contaminate-drinking-water.html (discussing President Trump’s attitude toward
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This pro-fracking attitude has already been demonstrated as President Trump auctioned off more than 150,000 acres of public lands including two national parks in Utah in December of 2018.\textsuperscript{176} Compounded by the apparent agenda of former coal lobbyist and now acting EPA administrator Andrew Wheeler, fracking is expected to expand unsupervised even further.\textsuperscript{177} In spite of wide public protest and general disapproval from residents in fracking towns, it is apparent that the federal government will continue to allow oil companies to frack on historical and local lands.\textsuperscript{178} While citizens may feel helpless against the fracking trend, Pennsylvania’s refusal to apply the rule of capture as a bar to trespass claims arising from fracking has “pave[d] the way for a wave of trespass claims based on fracking.”\textsuperscript{179}

fracking); See Olivia Rosane, Trump Moves to Open 1.6 Million Acres of California Public Lands to Fracking, ECO\textsc{WATCH} (Aug. 9, 2018), https://www.ecowatch.com/fracking-california-public-lands-2594203156.html (suggesting that President Trump’s actions toward fracking can be seen through his administration’s attempts to sell more than 1.6 million acres of land in California to the oil industry for fracking purposes).

\textsuperscript{176} See, e.g., Center for Biological Diversity, Trump Auctions Off 150,000 Acres of Public Lands for Fracking Near Utah National Parks, ECO\textsc{WATCH} (Dec. 12, 2018), https://www.ecowatch.com/fracking-utah-national-parks-2623200218.html (demonstrating successful attempt by President Trump to sell public land, including national parks, to fracking and oil industry).


\textsuperscript{178} See e.g., Jackie Filson, We Say No To Fracking in Illinois, FOOD \& WATER\textsc{WATCH} (July 7, 2017), https://www.foodandwaterwatch.org/news/we-say-no-fracking-illinois (providing an example of a local grassroots movement to ban fracking in Illinois). See also Center for Biological Diversity, supra note 176 (providing an example of President Trump proceeding with fracking agenda in spite of wide public disapproval).

Although the Supreme Court of Pennsylvania has agreed to hear the defendant oil company’s appeal of the decision in *Briggs*, the changes from the Superior Court’s holding “will impact nearly every landowner” throughout the jurisdiction.\(^{180}\) Condemning the Superior Court’s decision, oil corporation Marcellus Shale Coalition critiqued that if the *Briggs* decision stands as it stands, the holding “opens the door to a myriad of frivolous lawsuits.”\(^{181}\) Concerned for the future of fracking in Pennsylvania, the oil company continued, claiming that the *Briggs* decision “would literally shut down any new drilling. A total disaster.”\(^{182}\) As of publication, the rule of capture as defined in *Briggs* stands as law in Pennsylvania.\(^{183}\) Fracking companies can be held liable for trespass if they frack the natural resources from underneath an adjoining landowner’s property.\(^{184}\) Claims of trespass, however, may not be limited to this specific context.\(^{185}\)

It is not inconsistent with the opinion in *Briggs* that a trespass cause of action arising from fracking’s pollution of another’s drinking water supply could stand.\(^{186}\) Fearing “a myriad of frivolous lawsuits” from so-called “ambulance-chasing attorneys,” fracking companies like the Marcellus Shale Coalition may amend their fracking practices, such that


\(^{181}\) *Unease Over PA Rule of Capture Case Spreads Nationwide*, MARCELLUS DRILLING NEWS (May 9, 2018), https://marcellusdrilling.com/2018/05/unease-over-pa-rule-of-capture-case-spreads-nationwide/ (condemning Superior Court of Pennsylvania’s decision to allow Plaintiffs opportunity to prove trespass claim).

\(^{182}\) *Id.* (explaining that Pennsylvania’s interpretation will lead to greater fracking regulation, and simultaneously less fracking within the jurisdiction).


\(^{185}\) See Pappas, *supra* note 183 (predicting that plaintiffs will be able to claim trespass against fracking companies for trespass resulting from activities other than fracturing rock under plaintiffs’ property). It is hoped that when the Supreme Court of Pennsylvania examines *Briggs*, the court will consider viability of claims of trespass resulting from fugitive gases or fracking wastewater entering another’s property. Laura Legere, *Pa. court redefines some fracking as trespassing*, PITTSBURGH POST-GAZETTE (Apr. 5, 2018), https://www.post-gazette.com/business/powersource/2018/04/05/fracking-trespassing-rule-of-capture-briggs-southwestern-energy/stories/201804040139.

\(^{186}\) See generally *Briggs*, 184 A.3d 153 at 163 (holding that fracking company can be liable for trespass under current schema of property law in Pennsylvania).
fracking sites are constructed further from private property.\textsuperscript{187} If oil companies do not geographically distance fracking operations from local communities, the companies can likely expect to face “hundreds of potential similar trespass lawsuits filed all across Pennsylvania.”\textsuperscript{188} While Pennsylvania’s current interpretation to the rule of capture exists as the only departure from the historical use as a bar to fracking trespass claims thus far, states “that don’t have a well-developed body of case law governing oil and gas” may be persuaded by Pennsylvania’s interpretation.\textsuperscript{189} In states like “Oklahoma, Louisiana, West Virginia, Colorado, Wyoming, and North Dakota,” the questions addressed in Briggs have not yet been decided, indicating that the undecided jurisdictions may agree that a fracking trespass claim is ripe for consideration.\textsuperscript{190}

Much to the chagrin of the “half-dozen” of oil and gas interest groups that have already filed amicus curiae briefs in Briggs and the like, Pennsylvania’s bold refusal to limit fracking companies’ responsibility represents the first of potentially many liabilities imposed on the fracking industry.\textsuperscript{191} In states where there is a less-favorable view towards fracking among legislators and regulators, the decision in Briggs could influence lawmakers to follow suit and implement regulations on the fracking industry.\textsuperscript{192} Even if the Supreme Court of Pennsylvania reverses the appellate level decision, legislators and regulators “might then think that they need to do more to protect owners of land near fracking

\begin{footnotes}
\item[188] Kristina Marusic, Pennsylvania Superior Court rules that fracking natural gas from a neighboring property is trespassing, ENVTL. HEALTH NEWS (April 5, 2018), https://www.ehn.org/pennsylvania-fracking-trespassing-2555983611.html (warning fracking companies that if regulations are not adhered to, fracking companies will likely face numerous trespass suits in the near future).
\item[189] Pappas, supra note 183 (predicting that few other jurisdictions that have not adopted Texas’s traditional interpretation to rule of capture in Coastal Oil will adopt Pennsylvania’s interpretation in Briggs).
\item[190] Id. (listing the few jurisdictions that have not yet considered whether or not rule of capture applies to trespass claims arising from fracking).
\item[191] See id. (hypothesizing that future lawsuits arising against fracking companies for trespass will arise in near future).
\item[192] Id. (positing that absent judicial refusal to extend rule of capture as a trespass bar, state legislatures and regulators can implement fracking regulation).
\end{footnotes}
activities,” and implement legislative, rather than judicial, limitations on fracking operations. Undoubtedly, the current federal and state legislative efforts to regulate the fracking industry leaves much to be desired. By holding fracking companies liable for trespass, however, Pennsylvania will likely pave the road for the inception of fracking regulation across the nation: either judicially or legislatively.

193 Id. (explaining that even in event that state judiciaries extend rule of capture as bar to fracking trespass claims, legislators and policymakers may enact regulations, wary of fracking effects on public health and environment).