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

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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.

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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

¹ Karen Graham, *Seven sent to hospitals after pipeline explosions in Texas*, DIGITAL JOURNAL (Aug. 2, 2018), <http://www.digitaljournal.com/news/environment/seven-sent-to-hospitals-after-pipeline-explosions-in-texas/article/528582>. The explosion was caused when the pressure in the pipeline caused three pipes to burst, hospitalizing five fracking employees and two firefighters. Lorraine Chow, *7 Hospitalized After Pipeline Explosions in Texas*, ECOWATCH (Aug. 2, 2018, 9:45 AM), <https://www.ecowatch.com/pipeline-explosions-in-texas-2592070518.html>.

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.⁶ 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.⁷ Hazardous, unknown chemicals are being disposed of into bodies of freshwater and local drinking water reservoirs.⁸ 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.⁹ Known carcinogens and gases that spur ozone degradation are released into the atmosphere during the process, reversing the previously declining air pollution levels nationwide.¹⁰

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.¹¹ In 2016

to create by year 2035); Christina Nunez, *How Has Fracking Changed Our Future?*, NAT’L GEOGRAPHIC (last visited Oct. 19, 2019), <https://www.nationalgeographic.com/environment/energy/great-energy-challenge/big-energy-question/how-has-fracking-changed-our-future/> (projecting impact that fracking will have on natural gas production and job creation in United States until 2040).

⁶ See generally U.S. GOV’T ACCOUNTABILITY OFFICE, OIL AND GAS: INFORMATION ON SHALE RESOURCES, DEVELOPMENT, AND ENVIRONMENTAL AND PUBLIC HEALTH RISKS (Sept. 2012), <https://www.gao.gov/assets/650/647791.pdf> (providing information of shale oil and gas and their known risks to public health and environment to constituents).

⁷ See generally Nunez, *supra* note 5 (outlining vast amount of known environmental and public health repercussions of fracking 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

Gave Its Website a Pro-Fracking Makeover, VICE (Nov. 16, 2018, 12:30 PM), https://motherboard.vice.com/en_us/article/qvqkd3/the-epa-gave-its-website-a-pro-fracking-makeover.

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*, WHY.Y.ORG (Oct. 25, 2018), <https://why.y.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.¹⁶ 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.¹⁷ Organizations like Greenpeace alert lawmakers and the public that hydraulic fracturing routinely causes the widespread contamination of drinking water supplies in communities near wells.¹⁸ 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.¹⁹ 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.²⁰

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.²¹ 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.” *Id.*

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.²²

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.²³ 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.²⁴ In spite of public pandemonium, this increasingly popular method of oil extraction is predicted to expand further under the current administration.²⁵

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.²⁶ This Comment analyzes the problems with hydraulic fracturing and the measures taken to regulate it in the United States.²⁷ First, this Comment explains hydraulic fracturing and the impact it has had on the environment and public health.²⁸ Then, this Comment

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).

²³ Duke U. *Water use for fracking has risen by up to 770 percent since 2011*, PHYS.ORG (Aug. 15, 2018), <https://phys.org/news/2018-08-fracking-risen-percent.html> (reporting the volume of water used per well for fracking in United States from 2011 to 2016).

²⁴ See Am. Against Fracking, *A Nat'l Coalition to Ban Fracking*, AMERICANSAGAINSTFRACKING.ORG (last visited Oct. 19, 2019), <https://www.americansagainstfracking.org/about-the-coalition/members/> (listing a collaboration of coalitions and organizations that take grassroots action against fracking industry). Russell Gold & Tom McGinty, *Energy Boom Puts Wells in America's Backyards*, WALL ST. J. (Oct. 25, 2013), <https://www.wsj.com/articles/energy-boom-puts-wells-in-america8217s-backyards-1382756256>.

²⁵ Eric Lipton & Hiroko Tabuchi, *Driven by Trump Policy Changes, Fracking Booms on Public Lands*, N.Y. TIMES (Oct. 27, 2018), <https://www.nytimes.com/2018/10/27/climate/trump-fracking-drilling-oil-gas.html> (predicting that Trump Administration will increase fracking levels nationwide, as well as decrease regulations on unconventional gas industry).

²⁶ See Greenpeace, *Fracking*, GREENPEACE.ORG (last visited Oct. 19, 2019), <https://www.greenpeace.org/usa/global-warming/issues/fracking/> (outlining fundamental public health and environmental concerns associated with fracking in United States).

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.²⁹ Next, this Comment examines a recent departure from traditional property law notions surrounding hydraulic fracturing.³⁰ 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.³¹

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.³² 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.³³ 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.³⁴ 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.³⁵ 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.³⁶ 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.

³² See Indep. Petroleum Ass’n of Am., *Hydraulic Fracturing*, IPAA.ORG (last visited Oct. 19, 2019), <https://www.ipaa.org/fracking/> (describing popularity of fracking as a means of unconventional natural gas extraction in last decade).

³³ U.S. ENVTL. PROT. AGENCY, *The Process of Unconventional Natural Gas Production*, EPA.GOV (last visited Oct. 19, 2019), <https://www.epa.gov/uog/process-unconventional-natural-gas-production> (detailing how fracking is used to extract natural oil resources that lie under the Earth’s surface).

³⁴ Brad Plumer, *Fracking, explained*, VOX.COM (July 30, 2015, 10:53 PM), <https://www.vox.com/2014/4/14/18076690/fracking> (mapping various shale rock resources and their locations across United States).

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.³⁷ 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.³⁸

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.³⁹ 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.⁴⁰ Each well is fracked multiple times, depending on the size and depth of the shale rock.⁴¹ 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.⁴² 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.⁴³ These superficially constructed wells consequently

³⁷ *Id.* (describing why various chemicals are added to water that is used in fracking process).

³⁸ U.S. ENVTL. PROT. AGENCY, ASSESSMENT OF THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING FOR OIL AND GAS ON DRINKING WATER RESOURCES, EXECUTIVE SUMMARY (June 2015), https://www.epa.gov/sites/production/files/2015-07/documents/hf_es_erd_jun2015.pdf; See Alexander C. Kaufman, *The Amount of Toxic Wastewater Produced by Fracking is Unbelievable*, MOTHER JONES (Aug. 17, 2018), <https://www.motherjones.com/environment/2018/08/the-amount-of-toxic-wastewater-produced-by-fracking-is-unbelievable/>; *Wastewater: Fracking Wastewater*, CATSKILLMOUNTAINKEEPER.COM (last visited Oct. 19, 2019), <https://www.catskillmountainkeeper.org/our-programs/fracking/whats-wrong-with-fracking-2/wastewater>.

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 fracking 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.⁴⁴ 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.⁴⁵

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.⁴⁶ Many of these cost-efficient disposal methods are harmful to local communities and the environment.⁴⁷ 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.⁴⁸ 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).

⁴⁸ Josh Mikulka, *The Fracking Industry’s Water Nightmare*, DESMOG (Sept. 18, 2018), <https://www.desmogblog.com/2018/09/18/fracking-industry-waste-water-nightmare> (describing that oil companies already dispose of contaminated fracking wastewater by pouring wastewater into local freshwater bodies). *See, e.g.*, David Hasemyer, *Illegal Dumping of Texas Frack Waste Caught on Video*, INSIDECLIMATE NEWS (May 19, 2014), <https://insideclimatenews.org/news/20140519/illegal-dumping-texas-frack-waste-caught-video> (reporting illegal dumping in Eagle Ford Shale region of Texas when tanker truck was caught on surveillance camera dumping between 840-1,260 gallons of contaminated fracking wastewater); Nicholas Kusnetz, *North Dakota Turns Blind Eye to Dumping of Fracking Waste in Waterways and Farmland*, INSIDECLIMATE NEWS (June 8, 2012), <https://insideclimatenews.org/news/20120608/oil-companies-north-dakota-boom-gas-drilling-fracking-wastewater-waterways-pollution-dumping-grounds> (demonstrating that similar practices exist in other states).

alternative to dumping the wastewater, most municipal water treatment plants are unable to purify the fracking wastewater.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.⁵⁰

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

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

⁵⁰ *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 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. *Wastewater: Fracking Wastewater*, *supra* note 38.

⁵¹ *Id.* (reporting that when unable to purify contaminated fracking wastewater, treatment facilities dispose wastewater into local bodies of freshwater).

⁵² *Id.* (explaining that Monongahela river is primary source of drinking water for western Pennsylvania and West Virginia).

⁵³ ENVTL. STUD. CAPSTONE, SWARTHMORE C., *Human Health Risks*, (last visited Oct. 19, 2019) <https://www.swarthmore.edu/environmental-studies-capstone/human-health-risks> (publishing studies that conclude fracking wastewater is harmful to ecosystems of bodies of freshwater).

⁵⁴ *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. *Id.*

⁵⁵ *Id.* (describing that TDS eventually creates carcinogen THMs in freshwater supplies).

⁵⁶ *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

⁵⁷ See *id.* (asserting that local communities are at risk of exposure to contaminated fracking wastewater that pollutes drinking water). Britt E. Erickson, *Wastewater from fracking: Growing disposal challenge or untapped resource?*, CHEM. & ENG’G NEWS (Nov. 17, 2019), <https://cen.acs.org/environment/water/Wastewater-fracking-Growing-disposal-challenge/97/i45>; Manuel Frondel, Marco Horvath, & Colin Vance, *The U.S. Fracking Boom: Impacts on Global Oil Prices and OPEC*, INT’L ASS’N FOR ENERGY ECON. (2018).

⁵⁸ Ian Urbina, *Regulation Lax as Gas Wells’ Tainted Water Hits Rivers*, N.Y. TIMES (Feb. 26, 2011), <https://www.nytimes.com/2011/02/27/us/27gas.html?pagewanted=all> (reporting radioactive levels of contaminated drinking water supplies in Pennsylvania well exceed national standards).

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).

⁶² Tanja Srebotnjak & Miriam Rotkin-Ellman, *Fracking Fumes: Air Pollution from Hydraulic Fracturing Threatens Public Health and Communities*, NAT. RESOURCES DEF. COUNCIL, ISSUE BRIEF, 1-2 (Dec. 2014), <https://www.nrdc.org/sites/default/files/fracking-air-pollution-IB.pdf> (summarizing the impact that fracking has on air quality in communities surrounding fracking sites).

decreased since the passage of the CAA Amendments in 1970.⁶³ 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.⁶⁴ 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.⁶⁵ 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.⁶⁶

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.⁶⁷ Recent studies have determined that the fracking process

⁶³ See *Air Quality – National Summary*, EPA.GOV, (last visited Oct. 19, 2019) <https://www.epa.gov/air-trends/air-quality-national-summary> (reviewing declining trend in air pollution levels in United States since 1960). Since the rise in fracking popularity in the early twenty first century, the previously declining air pollution trend has reversed. See *id.*; ENVTL. PROTECTION AGENCY, *Progress Cleaning the Air and Improving People's Health*, (last accessed Feb. 11, 2020), <https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health#pollution>.

⁶⁴ Tim Benson, *Research & Commentary: Fracking Has Turned United States Into World's Leading Oil Producer*, THE HEARTLAND INST. (Sept. 19, 2018), <https://www.heartland.org/publications-resources/publications/research--commentary-fracking-has-turned-united-states-into-worlds-leading-oil-producer> (comparing production levels of natural gas between United States and other developed countries). By the year 2021, the U.S. is predicted to produce 4.8 million barrels of natural gas per day, representing a 51% increase from 2012, through unregulated fracking. See INST. FOR ENERGY RESEARCH, *U.S. OIL & GAS PRODUCTION ON THE RISE THANKS TO FRACKING*, (Sept. 19, 2014), <https://www.instituteforenergyresearch.org/fossil-fuels/gas-and-oil/u-s-oil-gas-production-continues-increase-due-hydraulic-fracturing/>.

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 fracking process, beginning with the emitting methane during the initial drilling of the well and ending with emitting fugitive gases when the oil is extracted.⁶⁸ In addition, the fracking process releases air toxins known as volatile organic compounds (“VOCs”).⁶⁹ While VOCs are released in household items such as paints, aerosol cans, and vehicle exhaust, fracking emits an extraordinarily high level of the pollutants.⁷⁰ In 2013, fracking in a single basin in Utah alone emitted a level of VOCs equivalent to that of one hundred million automobiles.⁷¹ These stark levels of methane and VOC emissions from fracking moreover makes fracking dangerously damaging to the environment than conventional oil drilling methods.⁷² Unsurprisingly, environmental scientists warn that this detriment to the environment, coupled with the nationwide shift from conventional oil drilling to fracking, will negatively impact public health, both now and in the future.⁷³

⁶⁸ See Physicians for Soc. Resp., *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 fracking process). Much of the methane released during fracking is released accidentally. *Id.* Gases that are unintentionally released through leaks during the fracking process are referred to as “fugitive gases,” and account for approximately fifty percent of methane emissions. *Id.*

⁶⁹ *Id.* (explaining that VOCs are also released during the fracking process). VOCs are “extremely toxic” fugitive gases that are a byproduct of fracking, that are released at a frequency that is “cause for concern.” *Id.*

⁷⁰ See *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 fracking sites is deemed unsafe. *Id.* See also Physicians for Soc. Resp., *supra* note 68 (describing extreme levels of VOCs found in air supplies within ten miles of fracking sites).

⁷¹ D. Helmig et. al., *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 fracking plants in one Utah county alone).

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

⁷³ See *id.* (hypothesizing that harmful effects on environment and public health from extreme pollution levels from fracking 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 fracking. *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.⁷⁴ Due to their chemical weight relative to the chemical weight of oxygen, benzene and ozone often “sink into low-lying areas.”⁷⁵ Because benzene and ozone often float at sea-level, the pollutants are introduced into the air supply humans breathe.⁷⁶ When analyzed, fracking has been found to cause this air supply to contain benzene at “levels far exceeding federal standards.”⁷⁷ According to the World Health Organization, benzene is a known carcinogen, and directly causes cancers such as acute lymphocytic leukemia.⁷⁸ Exposure to benzene also lowers the body's red and white blood cell counts and compromises the immune system.⁷⁹ 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.⁸⁰ Other gaseous pollutants regularly emitted from fracking, such as toluene, xylenes, and nitrogen oxides, are known to contribute to the

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.*

⁷⁸ World Health Org., *Exposure to Benzene: A Major Public Health Concern*, WHO.INT (last visited Oct. 26, 2019), <https://www.who.int/ipcs/features/benzene.pdf> (classifying benzene as known carcinogen based on several international studies).

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.⁸¹

In Pennsylvania alone, residents filed over 9,000 complaints between 2004 and 2016 relating to air pollution from fracking wells.⁸² Unfortunately, residents face difficulty in proving that the air and pollution they experience is caused by fracking.⁸³ Several citizen groups whose health suffered from local fracking have succeeded in civil suits against fracking companies.⁸⁴ The settlement expenses, however, have done little to effectuate change in the aggregate fracking industry.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.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.⁸⁷ In spite of federal legislation that reaches

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

⁸² *The link between fracking and health issues*, *supra* note 80 (citing complaints filed by Pennsylvania residents against fracking companies).

⁸³ *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).

⁸⁴ Devon DeKok, *Cabot Oil & Gas settles fracking lawsuit with Pennsylvania families*, 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. *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. *Id.*

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

⁸⁶ *See Am. Against Fracking*, *supra* note 24 (organizing grassroots anti-fracking activist groups by geographical locations).

⁸⁷ *See Somin Lee, Hydraulic Fracturing: Regulation by State vs. Federal Government?*, GEO. ENVTL. L. REV. (Dec. 27, 2016), available at <https://gelr.org/2016/12/27/hydraulic-fracturing-regulation-by-state-vs-federal-government/> (summarizing the lack of federal or state regulation of fracking in United States); Thomas Ditges, *The Trump Administration's Deregulation of Hydraulic Fracturing*, MEDIUM.COM (April 9, 2019),

conventional oil production, large exemptions have been carved such that the federal government is effectively impotent to regulate fracking.⁸⁸ 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.⁸⁹ 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.⁹⁰ As such, very little regulation on fracking exists either at the federal or at the state level.⁹¹

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.⁹² 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...”⁹³ Congress penned a large loophole that

available at <https://medium.com/@thomasnditges/the-trump-administrations-deregulation-of-hydraulic-fracturing-48b27684f56>.

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 enact 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.*

⁹³ U.S. ENVTL. PROT. AGENCY, EXEMPTION OF OIL AND GAS EXPLORATION AND PRODUCTION WASTES FROM FEDERAL HAZARDOUS WASTE REGULATIONS 6 (2002), available at

[https://yosemite.epa.gov/oa/eab_web_docket.nsf/Attachments%20By%20ParentFilingId/945EF425FA4A9B4F85257E2800480C65/\\$FILE/28%20-](https://yosemite.epa.gov/oa/eab_web_docket.nsf/Attachments%20By%20ParentFilingId/945EF425FA4A9B4F85257E2800480C65/$FILE/28%20-)

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.”⁹⁴ 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.⁹⁵ This broad exemption prohibiting any waste disposal regulation at the federal level extends to fracking waste and continues to exist in 2019.⁹⁶

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.⁹⁷ 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.”⁹⁸ 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.⁹⁹ The EPA requires both stationary and mobile sources to comply with specifically tailored

[%20RCRA%20E%26P%20Exemption.pdf](#) (quoting exemption of unconventional oil development from RCRA regulation).

⁹⁴ See U.S. ENVTL. PROT. AGENCY, REGULATORY DETERMINATION FOR OIL AND GAS AND GEOTHERMAL EXPLORATION, DEVELOPMENT AND PRODUCTION WASTES (July 6, 1988), available at

<https://archive.epa.gov/epawaste/nonhaz/industrial/special/web/pdf/og88wp.pdf> (describing that unconventional oil development’s exemption from regulation under RCRA was to alleviate economic burdens on fracking industry).

⁹⁵ See *id.* (delegating regulation of fracking industry to state governments).

⁹⁶ See *Fracking: Regulatory Failures and Delays*, *supra* note 88 (describing that loophole exempting fracking industry continues to exist in 2019).

⁹⁷ *Summary of the Clean Air Act*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/laws-regulations/summary-clean-air-act> (last visited Mar. 1, 2019) (summarizing purposes of the Clean Air Act). The EPA defines stationary sources as “facilities such as factories and chemical plants, which must install pollution control equipment and meet specific emission limits under the CAA.” *Air Enforcement*, EPA.GOV, <https://www.epa.gov/enforcement/air-enforcement> (last visited Mar. 1, 2019). Similarly, mobile sources are defined as “[m]otor vehicle engines [in] cars, trucks, buses, recreational vehicles [...] generators, farm and construction machines, lawn and garden equipment, marine engines and locomotives.” *Id.*

⁹⁸ *Id.* (describing reach of EPA’s authority under CAA).

⁹⁹ *Id.*; U.S. ENVTL. PROT. AGENCY, *Issuance of the Clean Air Act National Stack Testing* (April 27, 2009), available at https://www.epa.gov/sites/production/files/2013-09/documents/stacktesting_1.pdf.

emissions limits regarding the amount of pollutants released into the atmosphere on a yearly basis.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.”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.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.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.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.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.

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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/cmsspolicy.pdf>.

¹⁰¹ *National Policy Basics: Fracking*, NAT'L RES. DEF. COUNCIL, FRACKING 1 (Feb. 2013), <https://www.nrdc.org/sites/default/files/policy-basics-fracking-FS.pdf>.

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).

¹⁰³ U.S. ENVTL. PROT. AGENCY, NEW SOURCE PERFORMANCE STANDARDS AND PERMITTING REQUIREMENTS (last visited Mar. 1, 2019), <https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/new-source-performance-standards-and> (stating that the EPA attempted to regulate methane, benzene, and VOCs emissions by implementing NSPS in 2016).

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).

¹⁰⁵ *Id.* (explaining that proposed NSPS regulations would “exempt nearly 500,000 wells already in operation.”).

¹⁰⁶ *Id.* (concluding that previously constructed fracking sites are not required to adhere to emissions standards, and therefore would be permitted to release pollutants).

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”).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.¹⁰⁸ The SDWA applies to most sources of drinking water, including rivers, lakes, reservoirs, springs, and groundwater wells.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.”¹¹⁰ In 2005, however, Congress passed and President George W. Bush signed the Energy Policy Act of 2005 (“the Act”) into law.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.¹¹²

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

¹⁰⁷ Wenonah Hauter, *Ten Years Later, the ‘Halliburton Loophole’ and America’s Dirty Fracking Boom*, FOOD & WATER WATCH (Aug. 10, 2015), <https://www.foodandwaterwatch.org/news/ten-years-later-halliburton-loophole-and-americas-dirty-fracking-boom> (classifying Halliburton Loophole as most infamous loophole in American environmental legislation).

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/epa816f04030.pdf> (explaining that legislative intent in enacting SDWA was to protect all drinking water supplies consumed by American citizens).

¹⁰⁹ *Id.* (listing bodies of water regulated by EPA under SDWA).

¹¹⁰ *Id.* (providing examples of contaminations EPA is authorized to regulated under SDWA).

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).

¹¹² *See id.* (highlighting that Energy Policy Act is well-known for impact on SDWA); *see also* Francesca Buzzi, *Halliburton Acquires Baker Hughes and Its ‘Trade Secrets’*, FOOD & WATER WATCH (Nov. 11, 2014), <https://www.foodandwaterwatch.org/news/halliburton-acquires-baker-hughes-and-its-trade-secrets>.

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.¹¹⁴ In doing so, the Act “stripped the Environmental Protection Agency of its authority to regulate [...] hydraulic fracturing,” and its contamination of local water supplies.¹¹⁵ 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.¹¹⁶ 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.¹¹⁷ 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.¹¹⁸

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.¹¹⁹ 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.¹²⁰ 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).

¹¹⁵ *The Halliburton Loophole*, N.Y. TIMES (Nov. 2, 2009), <https://www.nytimes.com/2009/11/03/opinion/03tue3.html> (recounting how the Energy Policy Act usurped EPA’s authority to regulate the fracking industry under SDWA).

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.*

¹¹⁸ See Wenonah Hauter, *How Dick Cheney Kicked Off an Era of Cancer Clusters and Eco-Disasters from Fracking*, ALTERNET (Aug. 13, 2015), <https://www.alternet.org/2015/08/10-years-later-fracking-and-halliburton-loophole/> (claiming that the Halliburton loophole contributed to the past decade of environmental pollution and degradation of public health).

¹¹⁹ See Judy Stone, *Fracking And What New EPA Means For Your Health*, FORBES (Feb. 17, 2017), <https://www.forbes.com/sites/judystone/2017/02/17/fracking-and-what-new-epa-means-for-your-health/#3d59c85338e1> (reporting that in absence of federal regulation, state legislatures have neglected to implement necessary standards to protect environment and public health).

¹²⁰ Susan Phillips, *Pennsylvania Doctors Worry Over Fracking ‘Gag Rule’*, NPR.ORG: WHYY (May 17, 2012, 5:30 PM), <https://www.npr.org/2012/05/17/152268501/pennsylvania-doctors-worry-over-fracking-gag-rule> (reporting that the “gag rule” in Pennsylvania prevented physicians from gaining information that would identify contaminants present in fracking wastewater).

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).

¹²² See Wendy Glauser, *New Legitimacy to Concerns About Fracking and Health*, 186(8) CAN. MED. ASS’N J. E245, E245-46 (May 13, 2014), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4016083/> (explaining the difficulty in determining precise health implications of fracking, resulting in reluctance from state legislature).

¹²³ See Hauter, *supra* note 107 (reporting Halliburton loophole continues to provide exemption for fracking under SDWA in 2019).

¹²⁴ WEX: CORNELL LAW’S DICTIONARY, 5th ed. 2017, <https://law.cornell.edu/wex/trespass> (defining trespass cause of action).

¹²⁵ See *Trespass to Chattels vs. Conversion*, FIND LAW ONLINE (last visited Mar. 01, 2019), <https://injury.findlaw.com/torts-and-personal-injuries/trespass-to-chattels-vs-conversion.html> (explaining trespass to property, trespass to chattels, and conversion causes of action in civil suit).

¹²⁶ RESTATEMENT (SECOND) OF TORTS § 217-218 cmt. b (AM. LAW INST. 1965) (explaining liability for trespass cause of action).

¹²⁷ See *Pierson v. Post*, 3 Cai. R. 175, 179 (N.Y. 1805) (providing the “rule of capture,” as related to the pursuit of natural resources). The infamous *Pierson v. Post* case that many disgruntled first-year law students belabor upon sets the precedent for the rule of capture. Andrea McDowell, *Legal Fictions in Pierson v. Post*, 105 MICH. L. REV. 4 (2007). Although obscure and comical, *Pierson* provides a fundamental rule of law regarding the rule of capture that exists as “good law” in all United States jurisdictions today. See *id.*

Supreme Court of New York developed a corollary that has been accepted by all jurisdictions within the United States.¹²⁸ 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.¹²⁹ 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.¹³⁰

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.¹³¹ 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.¹³² In *Coastal Oil & Gas Corp. v. Garza Energy Trust*,¹³³ 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.¹³⁴ 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.¹³⁵ The trial court awarded damages

¹²⁸ See *Rule of Capture*, PETROPEDIA (last visited Mar. 02, 2019), <https://www.petropedia.com/definition/8869/rule-of-capture> (defining rule of capture in a modern context).

¹²⁹ *Id.* (explaining how rule of capture applies to modern property law).

¹³⁰ *PA Briggs “Rule of Capture” Case Turns on Concept of Drainage*, MARCELLUS DRILLING NEWS (July 31, 2018), <https://marcellusdrilling.com/2018/07/pa-briggs-rule-of-capture-case-turns-on-concept-of-drainage/> (explaining rule of capture as applied to drilling of natural resources below Earth’s surface).

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. Zumbun, *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).

¹³⁵ *Garza Energy Trust v. Coastal Oil & Gas Corp.*, No. C-1313-97-F, 2001 WL 35832908 (Tex. Dist. Dec. 17, 2001) (finding Coastal Oil liable for trespass by fracking resources from under Garza’s property).

to Garza as compensation for the value of the oil that Coastal Oil fracked from under Garza's land.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.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."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]."¹³⁹ The court's application of the rule of capture in *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.¹⁴⁰ Whether the *ferae naturae* be a wild fox or natural gas contained within a subterranean shale rock, lawful title lies with whomever "captures" the resource.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."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."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."¹⁴⁴ The court cited four policy

¹³⁶ *Id.* (entering judgment in favor of Garza in excess of four million dollars resulting from Coastal Oil's trespass on Garza's property).

¹³⁷ 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).

¹³⁸ *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. *Id.*

¹³⁹ *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).

¹⁴⁰ *Id.* at 13-14 (applying rule of capture consistent with precedent, originating from *Pierson* decision in 1805).

¹⁴¹ *Pierson*, 3 Cai. R. at 179 (developing the rule of capture). The rule of capture applies to *ferae naturae*, or natural resources, to which no one holds lawful title. *Id.* In *Pierson*, the natural resource was a wild fox, whereas in *Coastal Oil*, the natural resource is oil. *Id.*

¹⁴² 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).

¹⁴³ *Id.* (highlighting importance of rule of capture as it applies to natural gas industry).

¹⁴⁴ *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

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.”¹⁴⁵ 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.¹⁴⁶ 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.”¹⁴⁷ 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.”¹⁴⁸ 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.¹⁴⁹

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.¹⁵⁰ In *Briggs v. Southwestern Energy Prod. Co.*,¹⁵¹ Plaintiffs Adam, Paula, Joshua, and Sarah Briggs (“Plaintiffs”) brought suit against Southwestern

is this justification that the Superior Court of Pennsylvania raises issue with. *See also* *Briggs v. Southwestern Energy Prod. Co.*, 184 A.3d 153.

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).

¹⁵⁰ *See generally* *Briggs v. Southwestern Energy Prod. Co.*, 184 A.3d 153 (Pa. Super. Ct. 2018) (declining to extend rule of capture as bar to trespass claims arising from fracking operations).

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 adjoining 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

¹⁵² *Briggs v. Southwestern Energy Prod. Co.*, 2017 WL 10605836 (Pa.Com.Pl.Civil Div. 2017) (listing names of plaintiffs who filed suit against fracking company).

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.”¹⁶⁰ 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.¹⁶¹ 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.¹⁶²

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.¹⁶³ 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,” and “does not merely ‘escape’ to adjoining land absent the application of an external force.”¹⁶⁴ 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.¹⁶⁵ 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.¹⁶⁶ 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.¹⁶⁷

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

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*.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.”¹⁶⁹ In cases where oil companies frack underneath adjacent parcels of land, the oil companies enter another’s property without permission to do so.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.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.¹⁷² Moreover, the adjoining landowner is subject to a variety of environmental consequences that result from fracking to which she did not consent.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.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.¹⁷⁵

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).

¹⁶⁹ *Trespass*, *supra* note 125 (defining trespass as a cause of action under property law).

¹⁷⁰ See *Briggs*, 184 A.3d at 162 (implying that oil companies generally lack permission to frack under adjoining landowner’s land).

¹⁷¹ See *id.* at 159 (describing the specific nature of trespass and conversion committed by fracking companies).

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).

¹⁷³ See *Lustgarten*, *supra* note 42; see also *Am. Against Fracking*, *supra* note 24 (discussing the environmental and health impacts of fracking).

¹⁷⁴ See Justin G. Weber & G. Richard Murphy, *Trespass by Fracturing? A Theory Alive in Pennsylvania*, PEPPER HAMILTON LLP (Apr. 5, 2018), <https://www.pepperlaw.com/publications/trespass-by-fracturing-a-theory-alive-in-pennsylvania-2018-04-05/> (reporting that Pennsylvania Superior Court decision in *Briggs* created an avenue for private citizens to sue fracking corporations for trespass).

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

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 2018.¹⁷⁶ Compounded by the apparent agenda of former coal lobbyist and now acting EPA administrator Andrew Wheeler, fracking is expected to expand unsupervised even further.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.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."¹⁷⁹

fracking); See Olivia Rosane, *Trump Moves to Open 1.6 Million Acres of California Public Lands to Fracking*, ECOWATCH (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).

¹⁷⁶ See, e.g., Center for Biological Diversity, *Trump Auctions Off 150,000 Acres of Public Lands for Fracking Near Utah National Parks*, ECOWATCH (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).

¹⁷⁷ Coral Davenport, *How Andrew Wheeler, the New Acting E.P.A. Chief, Differs From Scott Pruitt*, N.Y. TIMES (July 5, 2018), <https://www.nytimes.com/2018/07/05/climate/wheeler-epa-pruitt.html> (describing new acting EPA Chief Andrew Wheeler's attitude toward fracking). As a former lobbyist for the coal industry, many political scientists predict that Wheeler will seek more deregulation for oil drilling than his successor. *Id.* More overtly, the White House announced that Andrew Wheeler was nominated in January of 2019 "to carry out the [deregulatory] agenda." See also Alex Guillén, *Trump formally nominates Wheeler to deregulate at EPA*, POLITICO (Jan. 9, 2019), <https://www.politico.com/story/2019/01/09/trump-nominates-andrew-wheeler-epa-1092233>; See also Allison Grass, *I Got A Seat At The Fracking Conference Where Andrew Wheeler Spoke*, FOOD & WATER WATCH (Oct. 30, 2018), <https://www.foodandwaterwatch.org/insight/i-got-seat-fracking-conference-where-andrew-wheeler-spoke>.

¹⁷⁸ See e.g., Jackie Filson, *We Say No To Fracking in Illinois*, FOOD & WATER 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).

¹⁷⁹ Steven B. Silverman, *Pennsylvania Court Opens Door to Claims of Trespass by Fracking*, AM. BAR ASS' (Sept. 10, 2018), https://www.americanbar.org/groups/environment_energy_resources/publications/trends/2018-2019/september-october-2018/pennsylvania-court-opens-door (explaining broad implication that Pennsylvania's departure from rule of capture bar will have on future fracking trespasses).

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

¹⁸⁰ *PA Supreme Court Agrees to Hear Briggs "Rule of Capture" Case*, MARCELLUS DRILLING NEWS (Nov. 21, 2018), <https://marcellusdrilling.com/2018/11/pa-supreme-court-agrees-to-hear-briggs-rule-of-capture-case/> (providing explanation of *Briggs* litigation procedural background).

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).

¹⁸³ See Leslie A. Pappas, *Frackers Feeling Shaken Up by Pennsylvania Court Decision*, BLOOMBERG LAW (May 7, 2018), <https://news.bloombergenvironment.com/environment-and-energy/frackers-feeling-shaken-up-by-pennsylvania-court-decision> (reporting that as of date of publication, rule of capture does not bar trespass claims against fracking companies).

¹⁸⁴ See *Briggs*, 184 A.3d at 163 (Pa. Super. Ct. 2018).

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.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.”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.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.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.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.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

¹⁸⁷ *Another Look at “Rule of Capture” Case that Threatens PA Marcellus*, MARCELLUS DRILLING NEWS (May 4, 2018), <https://marcellusdrilling.com/2018/05/another-look-at-rule-of-capture-case-that-threatens-pa-marcellus/> (theorizing that Pennsylvania’s interpretation of rule of capture will allow for additional trespass lawsuits to arise against oil companies); see also EID Marcellus, *Marcellus Shale Ambulance Chasers on the Loose in Pennsylvania*, ENERGY IN DEPTH (April 19, 2012), <https://www.energyindepth.org/marcellus-shale-ambulance-chasers-on-the-loose-in-pennsylvania/>.

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).

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*).

¹⁹⁰ *Id.* (listing the few jurisdictions that have not yet considered whether or not rule of capture applies to trespass claims arising from fracking).

¹⁹¹ See *id.* (hypothesizing that future lawsuits arising against fracking companies for trespass will arise in near future).

¹⁹² *Id.* (positing that absent judicial refusal to extend rule of capture as a trespass bar, state legislatures and regulators can implement fracking regulation).

activities,” and implement legislative, rather than judicial, limitations on fracking operations.¹⁹³ Undoubtedly, the current federal and state legislative efforts to regulate the fracking industry leaves much to be desired.¹⁹⁴ 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.¹⁹⁵

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).

¹⁹⁴ See *Hydraulic Fracturing – Unsafe, Unregulated*, PUBLIC CITIZEN (last visited Mar. 1, 2019), https://www.citizen.org/sites/default/files/hydraulicfracturing_fs.pdf (describing virtual lack of either federal or state regulation on fracking activity).

¹⁹⁵ Siarra Rogers, *The Influence of Property in the Law of Energy Development: How the United States as a Landowner Can Limit Environmental Degradation on Federal Lands*, 36 VA. ENVTL. L.J. 386, 393 (2018) (anticipating other jurisdictions to adopt Pennsylvania’s interpretation to rule of capture, providing means for the public to bring trespass suit against fracking corporations).