COMMONWEALTH OF PENNSYLVANIA ENVIRONMENTAL QUALITY BOARD

PETITION FORM

I.	PETITIONER INFORMATION
	Name: Sierra Club, Clean Air Council, Earthworks, PennFuture, Protect Penn-Trafford, Mountain
	Watershed Association
	Mailing Address: 50 F Street NW, Eighth Floor
	Washington, DC 20001
	Telephone Number: (202) 495-3023
	Date: <u>9/14/2021</u>
II.	PETITION INFORMATION
	A. The petitioner requests the Environmental Quality Board to (check one of the following):

Adopt a regulation

\boxtimes	Amend a regulation	(Citation <u>25 Pa. Code § 78.302</u>)
_			

 Repeal a regulation
 (Citation _____)

Please attach suggested regulatory language if request is to adopt or amend a regulation.

B. Why is the petitioner requesting this action from the Board? (Describe problems encountered under current regulations and the changes being recommended to address the problems. State factual and legal contentions and include supporting documentation that establishes a clear justification for the requested action.)

This petition requests the Environmental Quality Board to raise bond amounts for conventional wells. Please

see Attachment A for full details of the request.

C. Describe the types of persons, businesses and organizations likely to be impacted by this proposal.

Please see Attachment A.

D. Does the action requested in the petition concern a matter currently in litigation? If yes, please explain.

There are no matters in litigation that concern the action requested in this petition.

- E. For stream redesignation petitions, the following information must be included for the petition to be considered complete. Attach supporting material as necessary.
 - 1. A clear delineation of the watershed or stream segment to be redesignated, both in narrative form and on a map.
 - 2. The current designated use(s) of the watershed or segment.
 - 3. The requested designated use(s) of the watershed or segment.
 - 4. Available technical data on instream conditions for the following: water chemistry, the aquatic community (benthic macroinvertebrates and/or fishes), or instream habitat. If such data are not included, provide a description of the data sources investigated.
 - 5. A description of existing and proposed point and nonpoint source discharges and their impact on water quality and/or the aquatic community. The names, locations, and permit numbers of point source discharges and a description of the types and locations of nonpoint source discharges should be listed.
 - 6. Information regarding any of the qualifiers for designation as high quality waters (HQ) or exceptional value waters (EV) in §93.4b (relating to qualifying as High Quality or Exceptional Value waters) used as a basis for the requested designation.
 - 7. A general description of land use and development patterns in the watershed. Examples include the amount or percentage of public lands (including ownership) and the amount or percentage of various land use types (such as residential, commercial, industrial, agricultural and the like).
 - 8. The names of all municipalities through which the watershed or segment flows, including an official contact name and address.
 - 9. Locational information relevant to items 4-8 (except for contact names and addresses) displayed on a map or maps, if possible.

All petitions should be submitted to the Secretary of the Department of Environmental Protection P.O. Box 2063 Harrisburg, PA 17105-2063

TABLE OF CONTENTS

Environmental Quality Board Petition Form

Attachment A	Conventional Well Bonding Petition
Attachment B	Proposed Regulatory Language
Attachment C	Dr. Jeremy Weber Report: Bonding Requirements for Oil and Gas Wells
Attachment D	Well Bond Amounts by State
Attachment E	Affidavit of Gillian Graber
Attachment F	Affidavit of Ann Lecuyer
Attachment G	Legacy Well Issues, Office of Oil and Gas Management, Pennsylvania Department of Environmental Protection
Attachment H	Abandoned and Orphan Oil and Gas Wells in Pennsylvania, Office of Oil and Gas Management, Pennsylvania Department of Environmental Protection
Attachment I	Amendments to House Bill No. 1144

Attachment A

Conventional Well Bonding Petition

BEFORE THE PENNSYLVANIA ENVIRONMENTAL QUALITY BOARD

PETITION PURSUANT TO 25 PA. CODE §§ 23.1-23.5, 58 CONS. STAT. § 3225(a)(1), AND ARTICLE I, § 27 OF THE PENNSYLVANIA CONSTITUTION TO ADOPT FULL-COST BONDING FOR CONVENTIONAL OIL AND GAS WELLS TO CONSERVE AND MAINTAIN PUBLIC RESOURCES FOR WHICH THE COMMONWEALTH IS A TRUSTEE

Submitted on behalf of the Sierra Club, Clean Air Council, Earthworks, Mountain Watershed Association, PennFuture, and Protect Penn-Trafford

Ankit Jain DC Bar #1672002 50 F Street NW, Eighth Floor Washington, DC 20001 Telephone: (202) 495-3023 ankit.jain@sierraclub.org Kelsey Krepps P.O. Box 606 Harrisburg, PA 17108 Telephone: (717) 232-0101 kelsey.krepps@sierraclub.org

Elizabeth Benson CA Bar #268851 2101 Webster Street, Suite 1300 Oakland, CA 94612 Telephone: (415) 977-5723 elly.benson@sierraclub.org

Dated: September 14, 2021

SUMMARY

Abandoned oil and gas wells are a menace to Pennsylvanians across the Commonwealth. They pollute the air and water, exacerbate climate change, mar the neighborhoods they are in, reduce property values, and eventually have to be plugged using taxpayer money. They have caused and will continue to cause acute health consequences for Pennsylvanians, including members of the organizations filing this petition ("Petitioners"), and have increased their risk for serious long-term consequences like cancer. Requiring full-cost bonding would address the risk of well abandonment by providing operators with a financial reason to plug their wells, and providing the Commonwealth with the money to do so itself if an operator will not or cannot plug its wells. The current bond amount of \$2,500 per conventional well, with the option to post a \$25,000 blanket bond, does not come close to full-cost bonding.

This petition asks the Environmental Quality Board ("EQB") to adopt full-cost bonding for conventional oil and gas wells. Specifically, the EQB should issue a rule that:

- 1. Increases bond amounts to \$38,000 per conventional well;
- 2. Makes blanket bonds equal to the sum of the individual bond amounts that an operator would otherwise have to post;
- 3. Applies these new bond amounts to existing wells drilled after April 17, 1985; and
- 4. Requires the Department of Environmental Protection ("DEP") to issue a report to the EQB every two years that recommends whether the EQB should further adjust bond amounts.

The bond amounts requested in this petition are based on an expert report the Sierra Club commissioned from Dr. Jeremy Weber, a professor at the University of Pittsburgh, the Chief Energy Economist for President Trump's Council of Economic Advisers, and an established expert in the economics of oil and gas production. Dr. Weber's report uses historical plugging data within Pennsylvania to estimate the cost of plugging the average conventional well in 2021. The report finds that under the assumption that the average well will be plugged in a fourteenwell plugging contract, as has been the case over the past decade, the cost of plugging the average conventional well will be \$38,000. This is in line with DEP's own estimates of plugging costs.

This petition requests that the EQB set blanket bond amounts equal to the sum of these per-well bond amounts, rather than a set amount as exists under the current system. The current

system does not work. It is based on an assumption that large operators have minimal risk of defaulting, which evidence indicates is not the case. It also ignores the fact that large operators to the extent they actually are more financially secure—already get a discount on bonding fees if they use a surety to make their bond payments.

The petition further requests that the updated bond amounts apply to both existing wells drilled after April 17, 1985 and new wells. If the increased bond amounts were only applied to new wells, there would be no reduction in the massive financial and environmental risk the Commonwealth already faces from existing wells that are severely under-bonded. One estimate finds that for existing wells, the deficit between the amount that operators have paid in bonds and the amount it will actually cost to plug these wells is \$12.15 billion.

Finally, this petition asks that DEP be required to examine every two years whether bond amounts should be updated because, as the Weber Report explains, plugging costs have risen every year, even adjusting for inflation, and DEP and the EQB have an obligation under the law to make sure bond amounts reflect these changes. If the agencies determine rulemaking will take longer than two years, this petition suggests that DEP undertake this analysis every four years as a secondary option.

The Weber Report's financial and historical analysis of increased well bonds for conventional wells shows that adopting the proposed regulations in this petition will not have a large impact on most conventional well operators. Other studies indicate that the proposed regulations will create thousands of jobs in well plugging for Pennsylvania workers.

The EQB has the statutory authority to adopt these proposed rules. Indeed, failing to act on this petition would constitute a capricious disregard of material evidence indicating that bond amounts must be increased. The EQB also must act on this petition to meet its obligations under the Environmental Rights Amendment ("Section 27" or "the ERA"), which requires the Commonwealth to act as a trustee and manage the state's environment for the benefit of all Pennsylvanians. Failing to set bond amounts equal to the cost of plugging wells results in the state allowing the environment to be degraded without ensuring that wells are plugged and land is remediated after drilling ceases. This the Commonwealth cannot do under the ERA.

The Environmental Rights Amendment was passed to prevent future fossil fuel booms from ending in the same way the coal boom did—with thousands of acres scarred by acid mine drainage and abandoned mines pockmarking the state. The EQB was given authority to adjust

ii

bond amounts to ensure the same. The EQB must use its delegated power to prevent this looming environmental and financial catastrophe.

SUM	/MAI	RYi
TAE	BLE C	DF CONTENTSiv
DIS	CUSS	10N
I.	Fa Fii	ilure to Plug Abandoned Wells Has Serious Public Health, Environmental, and nancial Consequences
II. The EQB Should Increase Bond Amounts to \$38,000 for Conventional Wa and Set Blanket Bonds to the Sum of an Operator's Individual Bond Liabi		e EQB Should Increase Bond Amounts to \$38,000 for Conventional Wells d Set Blanket Bonds to the Sum of an Operator's Individual Bond Liability5
	A.	Full-cost bonding is necessary to ensure operators plug abandoned wells
	1.	Pennsylvania currently does not have full-cost bonding
	2.	Lack of full-cost bonding has resulted in the abandonment of thousands of wells
	3.	Lack of full-cost bonding exposes taxpayers to further liability if the health of the oil and gas industry continues to decline
	B.	Bond amounts should be increased to \$38,000 per conventional well 10
	C.	Blanket bonds should be set to the sum of total per-well bond amounts 12
III	I. Th W	e EQB Should Apply the Increased Bond Amounts to Existing Bonded ells
	A.	Applying the increased bond amounts to existing wells is necessary to address a major part of the abandoned well problem
	B.	The EQB has the authority to apply increased bond amounts to existing conventional wells
IV	7. Ind Ou	creasing Well Bond Amounts Will Create Jobs, and Will Not Have an utsized Effect on the Oil and Gas Industry15
V.	. Th	e EQB Has the Authority to Act on This Petition17
	A.	The EQB has authority to adjust individual well bond amounts for conventional wells
	B.	The EQB has the authority to adjust the blanket bond amount for conventional wells

TABLE OF CONTENTS

VI. Th Th	he Environmental Rights Amendment Requires the EQB To Act on his Petition and Raise Bond Amounts	
А.	Supreme Court Precedent Interpreting the Environmental Rights Amendment	
В.	Legislative History of the Environmental Rights Amendment	
C.	If Section 1606-E is interpreted to prohibit the EQB from acting on this petition, the law violates the Environmental Rights Amendment	24
CONCLU	JSION	
CERTIFICATE OF SERVICE		

DISCUSSION

Pennsylvania's current bond amounts for conventional oil and gas wells are much too low to cover the cost of plugging a well. This encourages the abandonment and orphaning of wells. The Pennsylvania Department of Environmental Protection lists 5,415 wells in the state as "active" that have not produced any oil or gas for more than four years, and 8,848 wells as abandoned or orphaned but unplugged. *See infra* Section II.A.2. There are tens of thousands of additional orphaned wells that DEP has not yet identified. *Id*. These abandoned wells pollute surrounding communities and put the state on the hook to cover hundreds of millions to billions of dollars in cleanup costs.¹ To avert this catastrophe, and to fulfill the Commonwealth's obligations under the Environmental Rights Amendment, this petition asks the EQB to increase well bond amounts to \$38,000 for conventional wells, to make blanket bonds equal to the sum of individual bond amounts, to apply these changes to existing wells, and to revisit bond amounts every two years.

I. Failure to Plug Abandoned Wells Has Serious Public Health, Environmental, and Financial Consequences

Failing to require full-cost bonding results in the abandonment and orphaning of large numbers of oil and gas wells, which pose significant public health, safety, and environmental risks. Abandoned wells leak methane and other pollutants into the air and water, harming public health and exacerbating climate change. They mar communities, reducing property values and depressing the local tax base. Under the current system, abandoned wells ultimately must be plugged and remediated by the state, costing taxpayers hundreds of millions of dollars.

Numerous studies have shown that abandoned wells leak methane and other pollutants into groundwater and surface water. The Sierra Club commissioned an expert report from Dr. Jeremy Weber, a professor at the University of Pittsburgh's Graduate School of Public and International Affairs, the Chief Energy Economist for the Trump Administration's Council of Economic Advisors, and an established expert in the economics of oil and gas production to examine the negative consequences of abandoned wells and determine an appropriate bond

¹ See Off. of Oil and Gas Mgmt., Pa. Dep't of Envtl. Protection, *Legacy Well Issues* 13 (2019) (DEP presentation stating that the Commonwealth has a potential cleanup liability of \$6.6 billion), included as Attachment G.

amount to ensure abandoned wells are plugged.² The expert report ("Weber Report") summarized several of the studies on methane leakage. *See* Weber Report 5-6. Potential pollutants from abandoned wells that can infiltrate water supplies include barium, chloride, arsenic, and methane. As the report explains, "[a]rsenic is a carcinogen and even short-term exposure can harm health. Further, methane leaking into groundwater can create foul-smelling and toxic hydrogen sulfide when it oxidizes." *Id.* at 5. Abandoned wells also leak methane and other chemicals into the atmosphere, further harming the health of nearby communities. Specifically, the methane leaked into the atmosphere can turn into ozone, which is extremely harmful to human health. Inhaling ozone can cause "damage to the heart and lungs and worsen[] chronic conditions such as asthma." *Id.* Methane can also explode if leaked in enclosed spaces. *Id.*

This pollution has real consequences for the people of Pennsylvania. Gillian Graber lives or works within two miles of at least six abandoned conventional wells and within five miles of at least 51 abandoned conventional wells. See Gillian Graber Aff. ¶¶ 6-7.³ There are likely scores of additional abandoned wells near her that were never permitted and thus have not been identified by DEP. Id. Ms. Graber also lives near several active conventional wells. When she participated in a medical study on the effects of oil and gas development, she and her family were found to have levels of mandelic acid in their body that exceeded the 95th percentile for the general U.S. population. Id. ¶ 10. Mandelic acid is a metabolite of ethylbenzene and styrene, which can cause liver, kidney, and circulatory system problems and increase cancer risk. Ms. Graber's family exceeded the U.S. median, and often the 95th percentile, for numerous other biomarkers of dangerous pollutants, such as 2-methylhippuric acid (a metabolite of xylene) and trans-muconic acid (a metabolite of benzene). Id. They also wore portable air monitors that indicated that they were exposed to levels of benzene, ethylbenzene, and naphthalene above the risk limit set by the California Office of Environmental Health Hazard Assessment, which indicates an increased cancer risk. Id. ¶ 11. Ms. Graber is extremely worried about the increased risk of cancer and other diseases from being exposed to this pollution from both abandoned and active wells:

² The Weber Report is included as Attachment C.

³ Included as Attachment E.

It is hard to overstate the fear you are forced to live with when you and your family are exposed to these kinds of chemicals every day that you know are incredibly dangerous, and that you see are already sickening your friends and neighbors. . . . No mother should have to go through this, but so many are and no one is doing anything about it.

Id. ¶ 17.

Ann Lecuyer lives in the same neighborhood as Ms. Graber. There are 14 abandoned wells within a three-mile radius of Ms. Lecuyer's home and 38 abandoned wells within five miles. Ann Lecuyer Aff. ¶ $7.^4$ There are likely dozens to hundreds more abandoned wells near her home that have not been identified by DEP, and she lives near numerous active conventional wells as well. *Id.* Ms. Lecuyer's asthma has gotten worse since moving to the area five years ago. In November 2018, for the first time in her life she had to be taken to the emergency room via ambulance due to an asthma attack, and she has since been prescribed additional medication for her asthma. *Id.* ¶ 11. "Having to go to the emergency room because of difficulty breathing was very scary, and it is frustrating to have to deal with additional difficulties with my asthma on a regular basis," she says. *Id.*

Ms. Lecuyer believes her worsened asthma is at least partially caused by the large number of abandoned and active wells in her neighborhood: "We live in a valley between two hills, and I believe that this traps air pollution in and makes it worse. I am concerned that whatever pollutants are coming up from these wells are sitting in the air and we are breathing it in \dots ." *Id.* ¶ 12. Ms. Lecuyer and her family participated in the same medical study as Ms. Graber, and the study showed that she and her family also had much higher levels of dangerous, cancer-causing pollutants in their bodies than the vast majority of Americans. *Id.* ¶ 8. There are numerous Pennsylvanians who are dealing with similar negative consequences as Ms. Graber and Ms. Lecuyer because they live near abandoned wells. If these wells were plugged, much of the pollution these communities are exposed to would dissipate. As Ms. Lecuyer says, "It is known that unplugged abandoned wells leak, and plugging them would stop this leakage. This should lower the health risks my family and I face living next to these abandoned wells." *Id.* ¶ 15.

⁴ Included as Attachment F.

In addition to causing serious health impacts, the large amounts of methane emitted by abandoned wells also exacerbate climate change. Methane leaks from abandoned wells "account for as much as seven percent of the annual anthropogenic methane emissions in the Commonwealth." Weber Report 5. This is "equivalent to the annual greenhouse gas emissions from 200,000 to 250,000 passenger cars." *Id.* Thus, simply by ensuring that abandoned wells are plugged, as is already required under the law, the Commonwealth could eliminate a substantial portion of its greenhouse gas ("GHG") emissions.⁵ There are few other policies that could have such a significant impact on reducing GHG emissions simply by ensuring existing law is followed.

Abandoned wells also have significant quality-of-life consequences for the communities they are scattered throughout. Abandoned wells are an eyesore, "appearing as uncultivated or unmowed islands in fields or backyards. Wellheads, which are made up of pipes and valves, often extend about six feet into the air and can be accompanied by metal tanks, pipes, and pumps, all of which are removed as part of plugging." Weber Report 5. These wells take away the peace of mind that comes from spending time in the beautiful environments in which they are often located. Ms. Graber explains: "I cannot walk in the woods near my home without seeing a gas well. I often wonder, 'Am I being exposed just by walking along this path?' I get out in nature to avoid pollution, but that's where many of these wells are." Graber Aff. ¶ 18.

These quality-of-life concerns have real economic consequences. Abandoned wells depress nearby property values. A recent study concluded that from 1970 to 2017, the two acres surrounding plugged wells had an approximately 50 percent increase in building activity as compared to the two acres surrounding unplugged wells, resulting in an average reduction in the market value of property surrounding an unplugged well of 12 percent, or \$22,000.⁶ This harms

⁵ See Pa. Dep't of Envtl. Prot., *Pennsylvania Climate Action Plan 2018* 80 (2019) (listing the plugging of abandoned wells as a cost-effective mitigation strategy that the state could take to meet its climate goals), available at

http://www.depgreenport.state.pa.us/elibrary/PDFProvider.ashx?action=PDFStream&docID=145 4161&chksum=&revision=0&docName=2018+PA+CLIMATE+ACTION+PLAN&nativeExt=p df&PromptToSave=False&Size=4617270&ViewerMode=2&overlay=0.

⁶ Max Harleman, Jeremy Weber, & Daniel Berkowitz, *Environmental Hazards and Local Investment: A Half-Century of Evidence from Abandoned Oil and Gas Wells* 3, 21 (2020), available at

https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID3692098_code920036.pdf?abstractid=36920 98&mirid=1.

the local economy and suppresses the local tax base. The Weber Report examined the impact of depressed property values on the region of Pennsylvania with the most unplugged wells— McGuffey School District in Washington County—and found that abandoned wells caused the district to lose \$112 per student every year, and cost Washington County as a whole over \$500,000 annually. Weber Report 5-6.

Further, wells that are abandoned by an operator that goes bankrupt or refuses to plug the wells must eventually be plugged by the Commonwealth. Because current bond amounts are much too low and do not cover the actual cost of plugging, the Commonwealth must use significant taxpayer funding to close these wells. Indeed, taxpayers could be forced to pay as much as \$12.15 billion just to plug the wells that have been drilled to date. *See infra* Section II.A.1. If bond amounts are increased, operators will be properly incentivized to close abandoned wells themselves. Even if an operator goes bankrupt, the state will have enough money via bonds to plug the wells without having to use taxpayer money. Thus, taxpayers will not be forced to pay for plugging costs that should be borne by the private operators that drilled and profited from the wells. In sum, the harmful consequences of abandoned wells are numerous and severe, while plugging those wells would yield significant environmental, public health and safety, and financial benefits.

II. The EQB Should Increase Bond Amounts to \$38,000 for Conventional Wells and Set Blanket Bonds to the Sum of an Operator's Individual Bond Liability

To prevent these serious public health, environmental, and fiscal consequences from abandoned wells, the EQB must set bond amounts at a level that reflects the actual cost of plugging wells (*i.e.*, full-cost bonding). Unfortunately, the current bond amounts are much too low—covering as little as 0.4 percent of the actual cost of plugging. *See infra* Section II.A.1. To determine an appropriate amount, the Sierra Club commissioned the aforementioned expert report from Dr. Weber. Based on the data in that report, Petitioners request that the EQB raise the bond amounts to \$38,000 for each conventional well, and to reconsider bond amounts every two years (or every four years if the agencies determine rulemaking will take longer than two years). Petitioners also request that the EQB set blanket bonds equal to the sum of the individual bonds that an operator would otherwise have to pay. Failing to act on this petition and to raise the currently inadequate bond amounts would constitute a capricious disregard of material, competent evidence.

5

A. Full-cost bonding is necessary to ensure operators plug abandoned wells

Requiring full-cost bonding is necessary to ensure that abandoned wells are plugged. The current system, in which the state fines operators that do not plug abandoned wells in an attempt to force compliance with well closure requirements, has failed to prevent thousands of wells from being abandoned by operators. Further, this system, as well as other alternatives to full-cost bonding, puts the state at risk of seeing a massive surge of orphaned wells if, or when, oil and gas prices no longer support the operations of both large- and small-scale operators, and operators are forced into bankruptcy.

1. Pennsylvania currently does not have full-cost bonding

The current bond amounts do not come close to reflecting the actual cost of well plugging. For conventional wells, the Commonwealth currently requires bonds of \$2,500 per well, or a blanket bond of \$25,000 per company. 72 Pa. Stat. and Cons. Stat. Ann. § 1606-E (West). An analysis by Carbon Tracker shows just how woefully inadequate the state's current bond amounts are. Carbon Tracker has a portal that tracks every identified unplugged oil and gas well in the state, the bond amounts posted by the operators, and the total cost of actually plugging all of the identified unplugged wells in the state.⁷ Carbon Tracker almost certainly undercounted the number of unplugged oil and gas wells in the state—it is impossible to track all of the orphaned wells since so many were drilled before a full permitting scheme was in place and thus are not on any lists.⁸ The portal uses a formula for calculating the cost of plugging each well based on a dataset of wells plugged in Australia.⁹ Under that formula, the plugging cost per well changes as the "true vertical depth" of a well increases. *Id.* This formula likely overestimates the cost of plugging wells in Pennsylvania because it relies on data from operators that plugged wells as they stopped producing, such that wells were plugged one at a time or in batches of just a few wells. *Id.* When the Commonwealth plugs wells, it usually plugs multiple

⁷ Asset Retirement Obligations (ARO) Portal, Carbon Tracker, <u>https://carbontracker.org/tools-and-insights/aro-portal/</u> (last visited Sept. 8, 2021).

⁸ Off. of Oil and Gas Mgmt., *supra* note 1, at 13 (presentation by DEP stating that "between 100,000 to 560,000 legacy wells . . . have not yet been accounted for").

⁹ ARO Portal User Manual, Carbon Tracker, <u>https://carbontracker.org/aro-portal-user-manual/</u> (last visited Sept. 8, 2021).

wells at one time per contract, which reduces the cost of plugging each individual well. *Id.*; *see also infra* Section II.B.

Even with these uncertainties in mind, Carbon Tracker's estimates demonstrate the extreme financial liability that orphaned wells pose for taxpayers. The portal estimates that it would cost \$12.2 billion to plug all identified wells in Pennsylvania, and that the state has \$47.2 million in bonding available to plug these wells.¹⁰ That is a bonding ratio of *0.4 percent*. In other words, 99.6 percent of the total cost of plugging these wells, or \$12.15 billion, is unaccounted for. Even if the plugging costs estimated by Carbon Tracker are ten times higher than the actual costs—which is unlikely—Pennsylvania's currently available bond amounts would still cover only 3.8 percent of the total cost to plug all existing unplugged wells in the state identified by Carbon Tracker, and there would be a bonding shortfall of \$1.22 billion. Further, as mentioned earlier, it is likely that Carbon Tracker's estimate does not account for a large number of unidentified wells, meaning that the actual cost to plug all unplugged wells in the state may even be higher than Carbon Tracker's estimate. This analysis makes it clear that the state does not currently have a full-cost bonding system in place.

2. Lack of full-cost bonding has resulted in the abandonment of thousands of wells

In the absence of full-cost bonding, operators are not incentivized to plug abandoned wells. DEP lacks the resources to force operators to comply with plugging requirements through enforcement actions. Further, if an operator has been allowed to drill wells that it does not have the money to plug, no enforcement action can make the operator plug the well.

The failure of the current non-full-cost bonding system is evidenced by the enormous number of wells across Pennsylvania that have been abandoned for years, but which DEP has not ensured are plugged (under Pennsylvania law, any well that has not produced oil or gas for at least a year is legally abandoned, 58 Pa. Cons. Stat. § 3203). DEP lists 8,848 conventional wells as abandoned or orphaned but not plugged.¹¹ DEP has acknowledged that there are up to an additional 560,000 orphaned wells that have not been accounted for and thus are not on any

¹⁰ Carbon Tracker, *supra* note 7.

¹¹ Orphan & Abandoned Wells, Pa. Dep't of Envtl. Protection Off. of Oil and Gas Mgmt., <u>http://cedatareporting.pa.gov/Reportserver/Pages/ReportViewer.aspx?/Public/DEP/OG/SSRS/Ab</u> <u>andoned_Orphan_Web</u> (last visited Sept. 10, 2021).

list.¹² In addition, there are 5,415 conventional wells that did not produce oil or gas in any year between 2017 and 2020 (inclusive), but that were still categorized as "active" by DEP, comprising more than seven percent of all "active" conventional wells in the Commonwealth.¹³ Finally, there were over 2,000 wells listed as active in every year from 2013 to 2020 that failed to produce over that eight-year period, comprising nearly three percent of all active conventional wells in the state. In other words, approximately one of every 14 conventional wells listed as operational in Pennsylvania has been violating the state's plugging requirements for at least three years. Yet DEP appears not to have taken enforcement action against many of these "active" wells. This level of enforcement is likely why Pennsylvania's non-full-cost bonding system has led to thousands of wells abandoned over the past two decades remaining unplugged for years—not to mention the hundreds of thousands of wells that were abandoned or orphaned previously that remain unplugged.

Ann Lecuyer experienced the issues with Pennsylvania's current system for plugging abandoned wells first-hand. After receiving the results of the study showing she had elevated rates of several cancer-causing chemicals in her body, she looked up the records for all oil and gas wells within a few miles of her home. She found numerous wells that had no production reports associated with them for several years but were still listed as active, and alerted DEP to this discrepancy. Lecuyer Aff. ¶ 14. DEP did not take any enforcement action against any of the wells Ms. Lecuyer sent them. *Id*.

In sum, if Pennsylvania's current non-full-cost bonding system worked to plug wells after production ceased, and the Commonwealth could rely on the threat of fines to compel operators to plug their abandoned wells, the system would not have left the state with over 14,000 confirmed unplugged wells (and likely hundreds of thousands of unconfirmed unplugged wells) that have been abandoned for years. 5,415 of these wells have been abandoned within

¹³ Unclosed Conventional Wells, PA, Sierra Club,

¹² Off. of Oil and Gas Mgmt., *supra* note 1, at 13.

https://www.google.com/maps/d/u/0/viewer?mid=1RbWAxS5TU6IDcQpq6agoHxL31xTk7uOP (report generated July 23, 2021); *see also Oil and Gas Production Reports*, Pa. Dep't of Envtl. Protection Off. of Oil and Gas Mgmt.,

http://cedatareporting.pa.gov/Reportserver/Pages/ReportViewer.aspx?/Public/DEP/OG/SSRS/O <u>G_Well_Prod_Status</u>. Wells in the survey are restricted to conventional wells listed as active in both 2013 and 2020, and identified as oil, gas, condensate, or coalbed methane wells.

approximately the last decade, under the current bonding system. These wells pollute the Commonwealth and threaten the health and safety of its citizens.

3. Lack of full-cost bonding exposes taxpayers to further liability if the health of the oil and gas industry continues to decline

The gap between the level of financial assurance provided to the Commonwealth by oil and gas operators and the cost of the Commonwealth's ultimate financial obligation threatens to transfer substantial liability to the Commonwealth (and thus taxpayers) if, or when, the oil and gas industry faces additional financial pressure.

The U.S. Government Accountability Office explained in a report on a self-bonding program restricted to the most financially stable coal mine operators that because of the decline of the coal industry, even the largest operators are now financially unstable.¹⁴ That has resulted in more and more bankruptcies by self-bonded coal mine operators, which pushes remediation costs onto the states. The oil and gas industry now faces a similar decline, increasing the likelihood that operators will go bankrupt and making the failure to require full-cost bonding even more problematic.

This wave of bankruptcies will not spare large operators. As evidenced by the bankruptcy of Chesapeake Energy in June 2020, oil and gas financial risk is less dependent on the productivity of any given well, and far more dependent on national or global movements: a sustained downturn in oil or gas prices impacts large operators just as it does small operators. Like the subprime mortgage crisis of 2008, an assumption that the diversity of the underlying assets protects creditors, when in fact the entire underlying asset class is at risk, poses a serious risk to the last entity holding the bag (in this case, the Commonwealth and its taxpayers). When companies do go bankrupt, their closure obligations should be characterized as non-dischargeable administrative obligations, but in many cases bankruptcy proceedings either do not explicitly seek to protect that state interest or to guarantee a cashflow sufficient to meet closure obligations, or simply are not able to generate enough cash to discharge those obligations.

¹⁴ Gov't Accountability Office, *Coal Mine Reclamation: Federal and State Agencies Face Challenges in Managing Billions in Financial Assurances* 22-23 (2018), available at <u>https://www.gao.gov/assets/gao-18-305.pdf</u>.

B. Bond amounts should be increased to \$38,000 per conventional well

The expert report by Dr. Weber analyzes what full-cost bonding would require. The report first estimates plugging costs for the average well plugged by DEP from 1989 to 2020. Weber Report 7-8. It finds that the average well was plugged in 2005 and cost \$15,118 to plug. *Id.* at 10. The report then adjusts this average number to reflect a growth in well plugging costs over time, and estimates that plugging a conventional well will cost, on average, \$25,164 at the end of 2021 if the Commonwealth employs larger plugging contracts (an average of 55 wells per contract). *Id.* at 12. With plugging contracts akin to those that the Commonwealth has employed since 2011 (an average of 14 wells per contract), the report estimates the cost of closing a conventional well will be, on average, \$38,000 at the end of 2021. *Id.* at 15.

The report finds that since 2011 the average well that DEP plugged was in a contract with 14 wells, while from 2000 to 2011 the average well that DEP plugged was in a much larger contract. *Id.* at 14-15. The larger contract size from 2000 to 2011 was likely due to the Growing Greener program, which was established in 1999 and provided \$650 million over five years for environmental conservation.¹⁵ This funding allowed DEP to plug more wells, resulting in larger contract sizes. Weber Report 15. Because larger contract sizes generate economies of scale, the report provides two estimates of average plugging costs for a conventional well depending on different assumptions regarding the contract size that the average well will be plugged in. The report first estimates an average plugging cost of \$25,000 for a conventional well, calculated using the contract size in which the average well was plugged from 1989 through 2020 (i.e., 55 wells per contract). *Id.* at 12. The report then estimates a more recent average plugging cost of \$38,000 for a conventional well, calculated using the average contract size for wells plugged from 2011 through 2020 (i.e., 14 wells per contract). *Id.* at 15.

Petitioners request that the EQB adopt bond amounts for conventional wells of \$38,000 per well. While the size of future plugging contracts is unknown, setting the bond rate at a lower value on the assumption that future plugging contracts will be large carries a far higher risk to the Commonwealth than the imposition of marginally higher bonding rates based on recent plugging contracts. As the Weber Report explains, the economies of scale effect is diminished for contracts with more than 15 wells; while plugging costs decline dramatically as contract size

¹⁵*Revenue & Legislative History*, Envtl. Stewardship Fund, <u>https://esfund.info/how-growing-greener-works/enabling-legislation/</u> (last visited Aug. 12, 2021).

increases from one to 15 wells, the rate of decline slows greatly after that. *Id.* at 15-16. Therefore, if the state sets bonding costs at the higher value (i.e., \$38,000) and future plugging contracts are large, the state will have required bonds only marginally in excess of plugging costs. But if the state sets bonding costs at the lower value (i.e., \$25,000) and future plugging contracts are smaller than 14 wells, the state will have set bond amounts at a level much lower than the actual cost of plugging, a condition which prevails today. In other words, it is much more likely that a bond amount of \$25,000 will greatly underestimate the actual cost of plugging than it is that a bond amount of \$38,000 will greatly overestimate the cost of plugging.

DEP has already indicated support for increased bond amounts similar to those proposed in this petition. In a January 19, 2021 meeting, the agency acknowledged that "[b]onding levels do not equate to actual costs. . . . A conservative estimate of \$33,000 per well has been derived from reviewing contract costs."¹⁶ In May 2021, DEP worked with Representative Greg Vitali to develop a proposed amendment to House Bill No. 1144 that would have required a *minimum* bond amount for conventional wells of \$30,000, with actual bond amounts for each well determined on an individualized basis by DEP based on the estimated cost of closure.¹⁷ In other words, DEP estimated that the least expensive well plugging operation would cost \$30,000, with plugging costs for the average well exceeding that amount. A \$38,000 bond amount for conventional wells is in line with these estimates.

Petitioners request that in addition to increasing the bond amounts this year, the EQB reconsider bond amounts every two years, as envisioned by the legislature. *See* 58 Pa. Cons. Stat. § 3225(a) (giving the EQB authority to adjust a well's bond amount "every two years to reflect the projected costs to the Commonwealth of plugging the well"). The Weber Report calculated projected costs to plug a well in 2021 but explained that "plugging costs rose over the three-decade period even after adjusting for inflation." Weber Report 10-11. The Weber Report recommends updating bond amounts every two years to account for steadily rising costs. *Id.* at 12. This petition urges the EQB to act on that proposal by requiring DEP to prepare a report every two years (starting in 2025) that examines plugging costs and recommends to the EQB

¹⁶ Off. of Oil and Gas Mgmt., Pa. Dep't of Envtl. Protection, *Citizens Advisory Council: Abandoned and Orphan Oil and Gas Wells in Pennsylvania* 14, 16 (2021), included as Attachment H.

¹⁷ Rep. Greg Vitali, Amendment A00943 to HB 1144, H.R. 205-A00943, 1st Sess., at 30 (2021), included as Attachment I.

whether it should adjust bond amounts. However, if DEP and the EQB believe that the agencies cannot issue regulations updating bond amounts within a two-year time period, Petitioners suggest that the agencies modify the proposed regulatory language to require DEP to prepare a report every four years. If DEP does recommend a change in bond amounts, the proposed regulatory language requires DEP to draft a proposed rule within six months of filing its report.

C. Blanket bonds should be set to the sum of total per-well bond amounts

In addition to requesting that the EQB raise bond amounts for individual wells, Petitioners request that the EQB revise the blanket bond amount to make it equal to the sum of per-well bonding amounts that an operator would otherwise have to pay (referred to herein as "full-coverage blanket bonds"). Under a full-coverage blanket bond, an operator that owns ten conventional wells could choose to provide a single bond of \$380,000 rather than ten individual bonds of \$38,000 each. This would provide operators the ease of administrability that the legislature intended while ensuring that operators furnish resources sufficient to cover the actual cost of closing all their wells.

Full-coverage blanket bonds are much better supported by the data than blanket bonds of a set value for which the per-well bond amount shrinks as the number of wells covered by the blanket bond increases (referred to herein as "diminishing-coverage blanket bonds"). The main argument in favor of diminishing-coverage blanket bonds appears to be that large operators carry a more diverse array of wells, and thus spread their risk over a wider pool of wells and experience lower volatility. However, large operators that do appear to be financially stable already have the option of obtaining discounted bond premiums. Many operators choose to meet their bonding obligations by paying for surety bonds, where a third-party surety guarantees to the state that it will pay the required bond if it is forfeited to the state, and the operator pays the surety a small percentage of the bond amount every year. Weber Report 16-18. As the Weber Report explains, more stable operators pay less to sureties "because sureties base their rates on an operator's finances and the risk that it defaults on its plugging obligations." Id. at 16. Therefore, even without blanket bonds, a larger operator that actually is more financially secure can obtain lower rates. Further, as explained in Section II.A.3, large operators are not all financially secure and do in fact go bankrupt; accordingly, a blanket bond system based on the unsupported assumption that they will not is inherently unstable.

12

This petition and the accompanying Weber Report, at Attachment C, lay out clearly, through a data-based analysis, the average plugging cost for conventional wells. The current bond amounts fall well below that mark. This failure to require full-cost bonding ensures that wells will be abandoned and orphaned in violation of the law. *See* 58 Pa. Cons. Stat. § 3220 (describing plugging requirements). If the EQB nonetheless fails to act on this petition, it would be capriciously disregarding substantial, material evidence that well bond amounts must be increased. *See Leon E. Wintermyer, Inc. v. Workers' Comp. Appeal Bd. (Marlowe)*, 812 A.2d 478, 487 (Pa. 2002).

III. The EQB Should Apply the Increased Bond Amounts to Existing Bonded Wells

The EQB should apply the increased bond amounts to both new wells and existing wells that were drilled after April 17, 1985.¹⁸ Applying the adjusted amounts to existing wells is necessary to ensure the bonding program serves its intended purpose and is consistent with the statutory language and Commonwealth precedent.

A. Applying the increased bond amounts to existing wells is necessary to address a major part of the abandoned well problem

As discussed above, an appropriate bonding level removes an operator's incentive to retain, rather than plug, unproductive wells. The EQB must raise bonding amounts for existing wells, in addition to new wells, in order to incentivize operators to plug not only newly drilled wells, but also the thousands of wells that have already been drilled. The website FracTracker examined DEP data and found that as of March 2021, DEP listed 95,905 conventional wells as active and had historical records of another 30,527 older conventional wells whose production status was unknown.¹⁹ If increased bond amounts are not applied to these existing wells, their operators will continue to lack the incentives to close them when production ceases. Closing unproductive existing wells, as incentivized through appropriate bonding amounts, will result in avoiding the serious environmental harms described above in Section I. It will also result in new

¹⁸ Wells drilled on April 17, 1985 or earlier have been exempted from bonding requirements by the legislature. 71 Pa. Stat. and Cons. Stat. Ann. § 510-34 (West).

¹⁹ Conventional & Historical Wells in PA, FracTracker Alliance,

https://maps.fractracker.org/latest/?appid=a041070718384872b09ec5a995bc1ded (last visited Sept. 8, 2021).

well-plugging jobs, as discussed in *infra* Section IV, because operators will be immediately incentivized to plug wells that are already unproductive.

Further, if the EQB failed to increase bond amounts for existing wells, then taxpayers would still be on the hook for all existing wells that cannot or will not be plugged by their owners. As discussed in Section II.A.1, Carbon Tracker estimates that Pennsylvania currently has a bonding shortfall of \$12.15 billion. If bond amounts are not adjusted for existing wells, taxpayers would still be liable for this enormous closure obligation. Failing to apply adjusted bond amounts to existing wells would thus be contrary to the purpose of the bonding program and would constitute a capricious disregard of material evidence.

B. The EQB has the authority to apply increased bond amounts to existing conventional wells

The plain text of 58 Pa. Cons. Stat. § 3225 ("Section 3225") authorizes the EQB to apply adjusted bond amounts to existing wells. Section 3225 was passed as a part of Act 13, the main law governing oil and gas drilling. It requires bonds for both new and existing wells,²⁰ and states: "The amount of the bond required . . . may be adjusted by the Environmental Quality Board every two years to reflect the projected costs to the Commonwealth of *plugging the well*" 58 Pa. Cons. Stat. § 3225(a)(1) (emphasis added). In other words, the language sets out a required bond amount for new and existing wells, and states that the bond amount for each individual well can be adjusted by the EQB to reflect the projected cost of plugging it. This is made clear by the reference to "the well," which indicates that each well that requires a bond can have its bond amount changed. The EQB thus has the authority to adjust bond amounts for existing wells. As discussed in Section V, this language from Section 3225 applies to both unconventional and conventional wells.

Even if Section 3225 did not explicitly allow the EQB to adjust bond amounts for existing wells, which it does, there would still be no legal barrier to the EQB doing so. Section 3225 does not restrict the EQB from adjusting bond amounts for existing wells. Because the EQB is given plenary authority to adjust bond amounts, it has the authority to adjust bond

²⁰ See 58 Pa. Cons. Stat. § 3225(a)(1) ("[U]pon filing an application for a well permit *and before continuing to operate an oil or gas well*, the owner or operator of the well shall file with the department a bond covering the well and well site on a form to be prescribed and furnished by the department.") (emphasis added).

amounts for existing wells. This is not a "retroactive" change, which would have special restrictions placed on it, because it does not "affect[] acts or facts that existed before the act came into effect." *Retroactive Law*, Black's Law Dictionary (11th ed. 2019). Rather, the adjusted bond amounts apply only due to the continued existence of the well and thus are forward-looking. Regardless, an agency granted the authority to issue regulations inherently has the power to give them retroactive effect. *See. e.g., Jenkins v. Unemployment Comp. Bd. of Rev.*, 56 A.2d 686, 687 (Pa. Super. Ct. 1948) ("[I]t is clear that the power to adopt administrative regulations includes power to give them retroactive effect, provided of course that they do not conflict with restrictions upon legislative power relating to retroactive laws"). Accordingly, the EQB has authority to adjust bond amounts for existing wells.

IV. Increasing Well Bond Amounts Will Create Jobs, and Will Not Have an Outsized Effect on the Oil and Gas Industry

As described in Sections I-III, increasing well bond amounts to reflect actual plugging costs will protect the environment, public health, and the taxpayers of Pennsylvania. In addition, increasing bond amounts will have limited negative financial impacts on conventional well operators and positive effects on job creation. The Weber Report finds that increasing bond amounts to \$25,000 per well (the report's first estimate of plugging costs) would increase the actual amount that the average operator pays annually in premiums to a surety by only \$1,200, a negligible amount for most operators. Weber Report 18. A bond amount of \$38,000 will increase that average annual premium payment, but likely not by much. The Weber Report points out that imposing a higher bond amount on conventional wells in Texas caused only five percent of operators to exit the market, and that those operators "were small on average and had poor environmental records." *Id.* at 19. Even there, most of the wells owned by those operators were bought up by other conventional well operators that were more financially stable. *Id.* The report further explains that as a result of this shift, "the number of unplugged and abandoned wells decreased by 70 percent and violation of water regulations fell by a quarter." *Id.* A similar result is likely if the EQB adopts this petition's recommendations.

Any operators that may leave the market due to higher bond amounts would already be in the precarious and problematic position of being unable to cover the cost of plugging the wells for which they are responsible. The inability of this smaller cohort of operators to cover bonding requirements puts the state at risk today. Operators with demonstrably economically productive

15

wells, but insufficient funds to meet their bonding obligations, will be able to secure appropriate surety bonds or loans to meet their obligations. Operators who are unable to meet bonding obligations and hold unproductive wells are unlikely to ever have the resources to meet their closure obligations—if they did, they would be able to secure sureties or loans to cover their new bonding obligations. These operators are thus implicitly counting on taxpayers to cover their eventual cost of closure. Transferring these wells' closure obligations to the state today ensures that these wells do not become more complicated to close in the future and reduces environmental harms by speeding their closure.

In addition, ensuring that abandoned wells are plugged by increasing bond amounts will create jobs in the Commonwealth. The Ohio River Valley Institute ("ORVI") found that plugging every known abandoned well in Pennsylvania would create 3,960 jobs over 20 years.²¹ These would be good-paying jobs, with an average annual salary of \$58,024. *Id.* at 32. Moreover, a report by Resources for the Future and Columbia University's School of International and Public Affairs found that "there is a clear match between the skills of unemployed oil and gas workers and the requirements needed to plug orphaned and other abandoned wells properly."²² ORVI found that the number of jobs created by plugging all abandoned wells in the Ohio River region would be more than the 12,770 oil and gas jobs lost in the region over the past five years.²³ While under the existing system some percentage of abandoned wells are plugged by operators and some percentage of orphaned wells are plugged by obth operators and the state. Expanding job opportunities in well plugging is exactly the kind of just transition that many communities have been demanding for years. As President

https://www.energypolicy.columbia.edu/sites/default/files/file-uploads/OrphanWells_CGEP-Report_071620.pdf.

²¹ Ted Boettner, Ohio River Valley Inst., *Repairing the Damage from Hazardous Abandoned Oil & Gas Wells: A Federal Plan to Grow Jobs in the Ohio River Valley and Beyond* 32-33 (2021), available at <u>https://ohiorivervalleyinstitute.org/wp-content/uploads/2021/04/Repairing-the-Damage-from-Hazardous-AOG-Wells-Report-1.pdf</u>.

²² Daniel Raimi et al., Res. for Our Future & Columbia SIPA Ctr. on Glob. Energy Policy, *Green Stimulus for Oil and Gas Workers: Considering a Major Federal Effort to Plug Orphaned and Abandoned Wells* 16 (2020), available at

²³ Ohio River Valley Inst., *supra* note 21, at 32-33.

Biden stated in describing his proposal for a \$16 billion fund to plug orphaned wells and mines across the country:²⁴

My American Jobs Plan will put hundreds of thousands of people to work . . . capping hundreds of thousands of, literally, orphan oil and gas wells that need to be cleaned up because they're abandoned—paying the same exact rate that a union man or woman would get having dug that well in the first place.²⁵

The economic impact of acting on this petition would thus be generally positive.

V. The EQB Has the Authority to Act on This Petition

The EQB has the authority to act on this petition and should use its lawful authority to do so. Sections II and III of this petition set forth a clear description of the action requested, and suggested regulatory language is set forth in Attachment B. 25 Pa. Code § 23.1(a)(2)(i). Sections I-IV of this petition, along with the Weber Report at Attachment C, set forth the facts that mandate the EQB's action adopting the proposed regulation and describe the impacts of the proposed regulation, including the types of persons, businesses, and organizations likely to be impacted. *Id.* § 23.1(a)(3)-(a)(4). Sections V and VI will now set forth both the legal authority to adopt the proposed regulation and the constitutional mandate requiring its adoption. *Id.* § 23.1(a)(3). Finally, Attachment D lists well bond amounts in other states and at the federal level for the EQB's use during the Independent Regulatory Review process.

A. The EQB has authority to adjust individual well bond amounts for conventional wells

Act 13 is the main law governing well bonding. It sets specific bond amounts, but authorizes the EQB to adjust the bond amounts initially established by statute:

The amount of the bond required shall be in the following amounts and may be adjusted by the Environmental Quality Board every two years to reflect the projected costs to the Commonwealth of plugging the well:

²⁴ Biden Infrastructure Plan Would Spend \$16 Billion To Clean Up Old Mines, Oil Wells, PBS NewsHour (Apr. 1, 2021), <u>https://www.pbs.org/newshour/nation/biden-infrastructure-plan-would-spend-16-billion-to-clean-up-old-mines-oil-wells.</u>

²⁵ Remarks by President Biden on the American Jobs Plan (Mar. 31, 2021), available at <u>https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/03/31/remarks-by-president-biden-on-the-american-jobs-plan/</u>.

(i) For wells with a total well bore length less than 6,000 feet:

(A) For operating up to 50 wells, \$4,000 per well but no bond may be required under this clause in excess of \$35,000.

(B) For operating 51 to 150 wells, \$35,000 plus \$4,000 per well for each well in excess of 50 wells but no bond may be required under this clause in excess of \$60,000.

(C) For operating 151 to 250 wells, \$60,000 plus \$4,000 per well for each well in excess of 150 wells but no bond may be required under this clause in excess of \$100,000.

(D) For operating more than 250 wells, \$100,000 plus \$4,000 per well for each well in excess of 250 wells but no bond may be required under this clause in excess of \$250,000.

58 Pa. Cons. Stat. § 3225(a)(1). The statute also states: "In lieu of individual bonds for each well, an owner or operator may file a blanket bond for the applicable amount under paragraph (1), on a form prepared by the department, covering all of its wells in this Commonwealth, as enumerated on the bond form." *Id.* § 3225(a)(2).

Section 3225 was meant to apply to both unconventional and conventional wells, and to increase bond amounts for both types of wells. However, after the law was passed, the legislature acquiesced to conventional well operators' demands to revert the bond amounts for conventional wells to the previously required amounts. Consequently, a separate law, 72 Pa. Stat. and Cons. Stat. Ann. § 1606-E (West) ("Section 1606-E"), which was passed as part of the 2012 Fiscal Code, sets the bond amounts for conventional wells. That law states: "Notwithstanding 58 Pa.C.S. § 3225(a)(1) (relating to bonding), the bond amount for conventional oil or gas wells shall be \$2,500 per well or a blanket bond of \$25,000. The Environmental Quality Board shall undertake a review of the existing bond requirements for conventional oil and gas wells." 72 Pa. Stat. and Cons. Stat. Ann. § 1606-E(a) (West).

Section 1606-E set new bond amounts for conventional wells, but it did not affect the EQB's authority to increase the initial bond amounts set by the legislature. Both Section 3225 and the law that it replaced, 58 Pa. Stat. and Cons. Stat. Ann. § 601.215(a)(1) (West) (repealed 2012), authorized the EQB to adjust bond amounts for conventional wells. Section 3225, for example, states that it applies to wells with a well bore length of less than 6,000 feet, and almost all such wells are conventional wells; there is further no language restricting the type of wells to which the EQB's adjustment authority applies. Section 1606-E does not contain any language

18

indicating that it repeals the EQB's longstanding authority to adjust bond amounts for conventional wells. Indeed, in addition to setting the initial bond amounts, Section 1606-E states that the EQB must review the bond requirements for conventional wells—a directive that invites the EQB to exercise its established authority to adjust bond amounts if its review finds them inadequate.

Section 1606-E cannot logically be interpreted to repeal all of 58 Pa. Cons. Stat. § 3225(a)(1) with regard to conventional wells. Section 3225(a)(1) lays out the basic requirement that an operator must secure a bond before receiving a permit to drill a well or continuing to operate a well, and that repayment of the bond is conditioned on the operator plugging the well. Section 1606-E does not alter these requirements; it is more narrowly focused on revising the bond amounts for conventional wells by replacing the language in Section 3225(a)(1)(i), which sets the initial bond amounts for conventional wells. Thus, while Section 1606-E revises these initial bond amounts for conventional wells, the other parts of section 3225(a)(1) setting the requirement to obtain a bond and giving the EQB authority to adjust the initial, legislatively determined bond amounts still apply.

In addition, if the legislature was revoking authority that the EQB has possessed since 1984 (when the previous bonding statute was passed), it would have made that dramatic policy shift explicit. As the U.S. Supreme Court has explained, the legislature "does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions—it does not, one might say, hide elephants in mouseholes." *Whitman v. Am. Trucking Associations*, 531 U.S. 457, 468 (2001). To abolish the EQB's longstanding authority to adjust bond amounts in a fiscal code provision drafted to set initial bond amounts required for conventional wells would be a quintessential example of hiding an elephant in a mousehole.

Finally, the legislative history of Section 1606-E makes clear that the statute did not alter the EQB's authority to adjust bond amounts for conventional wells. During debate over the bill, one of its main supporters stated that Section 1606-E "restores certain well bonding requirements." Pa. H. Journal, 2012 Reg. Sess. No. 53 (statement of Rep. Adolph). Specifically, Section 1606-E restored well bonding amounts from what was required under Act 13, 58 Cons. Stat. § 3225(a)(1)(i), back to the law that Act 13 replaced. Like Section 3225, that previous law gave the EQB full authority to adjust bond amounts for conventional wells. *See* 58 Pa. Stat. and Cons. Stat. Ann. § 601.215(a)(1) (West) (repealed 2012) (stating that "the bond amount may be adjusted by the Environmental Quality Board every two years to reflect the projected costs to the Commonwealth of performing well plugging").²⁶ Section 1606-E restored the bonding amounts required under the earlier law, but did nothing to alter the EQB's longstanding authority to adjust bond amounts for conventional wells.

B. The EQB has the authority to adjust the blanket bond amount for conventional wells

The language of Section 3225(a)(2), which allows operators to file "a blanket bond for the applicable amount under paragraph [3225(a)](1)" instead of individual bond amounts, *id*. § (a)(2), does not restrict the EQB's authority to adjust the initial blanket bond amounts that the legislature wrote into Section 1606-E. This clause refers to the "applicable" blanket bond amount under paragraph (a)(1) (which was later modified by Section 1606-E), and paragraph (a)(1) gives the EQB authority to adjust bond amounts. Accordingly, the EQB can use its authority under section (a)(1) to adjust the blanket bond amounts, and section (a)(2) allows the operator to post that applicable blanket bond amount rather than individual bonds. For these reasons, the EQB has the authority to act on this petition.

VI. The Environmental Rights Amendment Requires the EQB To Act on This Petition and Raise Bond Amounts

The EQB has a constitutional obligation to act on this petition and increase well bond amounts. Article I, Section 27 of the Pennsylvania Constitution states:

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.

Pa. Const. art. I, § 27. This amendment creates a right of citizens to a clean environment, *Pa. Envtl. Def. Found. v. Commonwealth*, 161 A.3d 911, 931 (Pa. 2017) ("*PEDF*"), which the state is violating by not setting bond amounts high enough to ensure operators remediate abandoned wells.

Section 27 also creates an "environmental trust," with the state's natural environment as the corpus of the trust, the state as the trustee, and the people of Pennsylvania as the beneficiaries

²⁶ Unconventional wells were not at issue when this previous law was passed.

of the trust. *PEDF*, 161 A.3d at 932-33. In interpreting whether the environmental trust aspect of Section 27 has been violated, the Supreme Court has stated that the Commonwealth must act as a fiduciary, with the obligation to conserve and maintain the natural environment of the state for the benefit of the citizens of the state. *Id.* The current bond amounts violate the state's fiduciary duties under Section 27. The EQB's failure to require adequate bond amounts has caused the state to be dotted with unplugged abandoned wells that spew pollution into the air and water. This degrades the state's natural resources in violation of Section 27.

A. Supreme Court Precedent Interpreting the Environmental Rights Amendment

The Pennsylvania Supreme Court issued its most definitive decision interpreting the environmental trust aspect of Section 27 in *Pennsylvania Environmental Defense Foundation v. Commonwealth.* In that case, the Supreme Court held that the state legislature violated the ERA when it took the royalties that oil and gas operators paid to the state (for permission to drill) from a fund used to pay for environmental restoration and moved much of it to the general fund to pay for priorities unrelated to the environment. The Supreme Court held that "[o]il and gas leases may not be drafted in ways that remove assets from the corpus of the trust or otherwise deprive the trust beneficiaries (the people, including future generations) of the funds necessary to conserve and maintain the public natural resources." *PEDF*, 161 A.3d at 936. In other words, the state cannot allow for the degradation of the natural environment without ensuring that proper funding is being devoted to rectify this degradation in the future—doing so would violate the state's trustee duties.

This precedent applies to the extremely low well bond amounts set by the state, which are not sufficient to pay for the actual cost of plugging wells. Here, unlike in *PEDF*, Pennsylvania is not taking the bonds that well operators post and spending them in areas unrelated to the environment. Rather, it is allowing operators to degrade the natural environment by drilling for oil and gas, while not requiring them to post bond amounts at the level necessary to restore the environment and prevent ongoing impacts once that drilling is complete. In other words, Pennsylvania is not requiring drillers to put up the funding "necessary to conserve and maintain the public natural resources" and thus is degrading the corpus of the trust.

The Supreme Court's decision in *Robinson Township, Washington County* v. *Commonwealth* (*"Robinson Township"*) further demonstrates how Pennsylvania's insufficient

21

bonding amounts violate Section 27. The plurality opinion in that case held that "[t]he explicit terms of the trust require the government to 'conserve and maintain' the corpus of the trust. The plain meaning of the terms conserve and maintain implicates a duty to prevent and remedy the degradation, diminution, or depletion of our public natural resources." *Robinson Twp., Washington Cty. v. Commonwealth*, 83 A.3d 901, 957 (Pa. 2013) (internal citation omitted).²⁷ The court concluded that the parts of Act 13 that preempted localities from regulating oil and gas activities violated Section 27:

[W]e do not quarrel with the fact that competing constitutional commands may exist, that sustainable development may require some degradation of the corpus of the trust But, Act 13's blunt approach fails to account for this constitutional command at all and, indeed, exacerbates the problem by offering minimal statewide protections while disabling local government from mitigating the impact of oil and gas development at a local level.

Id. at 980. The court overturned this aspect of Act 13 because it did not allow localities to properly mitigate environmental harm from oil and gas drilling, which had the effect of degrading the corpus of the trust. Similarly, here, the EQB's failure to increase the current low bond amounts results in thousands of unplugged abandoned and orphaned wells across the state by both incentivizing operators to leave abandoned wells unplugged and by not providing the state with the funding to plug orphaned wells itself. This harms the Commonwealth's environment and degrades the corpus of the trust in violation of Section 27.

Both *PEDF* and *Robinson Township* indicate that if the Commonwealth allows for the degradation of its natural resources through oil and gas drilling, it must ensure the proper funding and authority to remediate that harm to satisfy its trustee obligations under the Environmental Rights Amendment. But the current bond amounts set by the state are inadequate to ensure preservation of the natural environment. As discussed in Section II.B, *supra*, the current bonding amounts for conventional wells are more than 15 times lower than the actual cost of plugging (\$2,500 versus \$38,000), and that is without accounting for blanket bonds that dramatically reduce the required bond amount per well. As explained in Section II.A.1, *supra*, the state has covered only a small fraction of total well closure costs through its bonding program—one

²⁷ While *Robinson Township* was a plurality opinion that did not have direct precedential effect, the majority in *PEDF* stated that it relied on "the statement of basic principles thoughtfully developed in that [*Robinson Township*] plurality opinion." *PEDF*, 161 A.3d at 930.

analysis pegs the amount covered at 0.4 percent. And as explained in Section II.A.2, *supra*, allowing non-full cost bonding has and will continue to result in large numbers of abandoned wells remaining unplugged, and the environment around those wells remaining degraded. Thus, the EQB's failure to impose full-cost bonding violates the Environmental Rights Amendment.

B. Legislative History of the Environmental Rights Amendment

In addition to case law, the legislative history of the Environmental Rights Amendment and the context in which it was adopted also show how the state's current actions violate the ERA. Through the nineteenth and much of the twentieth centuries, the Pennsylvania government facilitated a boom in coal mining, originally with no obligation to clean up the mines after production ceased and no bonds required, and later with limited but still weak clean-up obligations and low bond amounts.²⁸ This resulted in a large number of abandoned mines polluting the state's natural resources. *Id.* at 909-10. These abandoned coal mines created massive environmental problems that persist to this day, which the Supreme Court recounted in *PEDF.* 161 A.3d at 917 (explaining that the state had to deal with "over 250,000 acres of abandoned surface mines and about 2,400 miles of streams contaminated with acid mine drainage, which did not meet water quality standards") (quoting *Robinson Twp.*, 83 A.3d at 961).

The Supreme Court explained in *PEDF* that Section 27 was passed in large part to deal with this problem of abandoned coal mines:

The drafters and the citizens of the Commonwealth who ratified the Environmental Rights Amendment, aware of this history, articulated the people's rights and the government's duties to the people in broad and flexible terms that would permit not only reactive but also anticipatory protection of the environment for the benefit of current and future generations.

Id. at 919 (quoting *Robinson Twp.*, 83 A.3d at 963). There is a clear parallel between the historical problem of abandoned mines and the looming problem of abandoned wells. Pollution resulting from overly lax regulation of abandoned wells is exactly the kind of problem the Environmental Rights Amendment is meant to address. Because non-full cost bonding does not prevent the abandonment of oil and gas wells, and because allowing this abandonment to occur

²⁸ John C. Dernbach, *Pennsylvania's Implementation of the Surface Mining Control and Reclamation Act: An Assessment of How "Cooperative Federalism" Can Make State Regulatory Programs More Effective*, 19 U. Mich. J. L. Reform 903, 910 (1986).

violates the ERA, as demonstrated by recent Supreme Court precedent and the intent of the drafters, the EQB must adopt this petition and impose full-cost bonding on operators.

C. If Section 1606-E is interpreted to prohibit the EQB from acting on this petition, the law violates the Environmental Rights Amendment

The ERA applies to the legislature in the same manner as it applies to executive bodies. *See, e.g., PEDF*, 161 A.3d at 932 n.23 ("Trustee obligations are not vested exclusively in any single branch of Pennsylvania's government, and instead all agencies and entities of the Commonwealth government, both statewide and local, have a fiduciary duty to act toward the corpus with prudence, loyalty, and impartiality."). If Section 1606-E is interpreted to deprive the EQB of its authority to raise bond amounts for conventional wells, it would violate the ERA for the same reasons a decision by the EQB to refuse to use its authority to raise bond amounts would violate the ERA. The Commonwealth may not violate its trustee duties by allowing oil and gas production to degrade the environment without ensuring that the environment can be restored after production ceases.

CONCLUSION

Abandoned wells pollute Pennsylvania communities, harm public health, exacerbate climate change, and reduce property values. The current well bonding system, as DEP itself has acknowledged numerous times, does not come anywhere close to requiring full-cost bonding. It thus is inadequate to prevent operators from abandoning wells, and leaves the Commonwealth without adequate funding to plug orphaned wells. Dr. Jeremy Weber thoroughly reviewed the data and concluded that it costs, on average, \$38,000 to plug a conventional well if it is assumed that plugging contracts will be the same average size that they have been over the past ten years. The EQB should grant this petition and initiate a rulemaking to adjust bonds for conventional wells to this amount. It also should make the blanket bond amount an operator can pay equal to the sum of the cost of the individual well bonds that the operator would otherwise have to pay, and the EQB should apply all these changes to both new and existing wells. The Weber Report conducts a financial and historical analysis to evaluate the impact of increasing well bond amounts and finds that doing so would not have large financial implications for most conventional well operators, and other analyses indicate it would create thousands of jobs for Pennsylvanians over the next twenty years. The EQB has full authority under Act 13 to grant this petition. Failure to increase well bond amounts would not only disregard substantial evidence

24

demonstrating the need to increase bond amounts to reflect actual plugging costs, but would also violate the Commonwealth's obligations under the Environmental Rights Amendment. To fulfill its constitutional obligations, to protect the health and well-being of all Pennsylvanians, and to safeguard Pennsylvanians' hard-earned tax dollars, the EQB must grant this petition.

Dated: September 14, 2021

Respectfully submitted,

<u>/s/ Ankit Jain</u> Ankit Jain 50 F Street NW, Eighth Floor Washington, DC 20001 Telephone: (202) 495-3023 ankit.jain@sierraclub.org

Kelsey Krepps P.O. Box 606 Harrisburg, PA 17108 Telephone: (717) 232-0101 kelsey.krepps@sierraclub.org

Elizabeth Benson 2101 Webster Street, Suite 1300 Oakland, CA 94612 Telephone: (415) 977-5723 elly.benson@sierraclub.org

CERTIFICATE OF SERVICE

I hereby certify that on the 14th day of September, 2021, I filed the foregoing Petition with the Environmental Quality Board by mail via the United States Postal Service and by e-mail.

<u>/s/ Ankit Jain</u> Ankit Jain
Attachment B

Proposed Regulatory Language

25 Pa. Code § 78.302 REQUIREMENT TO FILE A BOND FOR CONVENTIONAL WELLS

- (a) For a conventional well that has not been plugged, the owner or operator shall file a bond in the amount of \$38,000 per well.
- (b) In lieu of individual bonds for each well, an owner or operator may file a blanket bond covering all of its wells in this Commonwealth. The blanket amount shall be computed as the sum of the applicable individual bond or security amounts required for each well.
- (c) This requirement shall apply to existing wells requiring a bond under 58 Pa. Cons. Stat. § 3225 and 72 Pa. Stat. and Cons. Stat. Ann. § 1606-E (West).
- (d) By January 2, 2025, the Department shall submit a report to the Environmental Quality Board evaluating whether the Board should adjust bond amounts further. The Department's report will include a recommendation on whether the Board should adjust the bond amounts. If the recommendation is to adjust bond amounts, the Department will develop a proposed rulemaking for Board consideration within six months after the Department submits its report to the Board.
 - 1) The Department's report shall be made available to the public
 - Within thirty days of the Department submitting the report to the Board, any member of the public may submit to the Department written comments on the report
 - The Department shall undertake this same process, under the same deadlines, every odd-numbered year after 2025
 - The Department may issue one joint report to fulfill its obligations under this provision and under 25 Pa. Code § 78.302a(d)

Attachment C

Weber Report

Bonding Requirements for Oil and Gas Wells

BONDING REQUIREMENTS FOR OIL AND GAS WELLS IN PENNSYLVANIA: COST-BASED RECOMMENDATIONS

A REPORT TO THE PENNSYLVANIA ENVIRONMENTAL QUALITY BOARD

JEREMY G. WEBER, PhD

SIERRA CLUB

Bonding Requirements for Oil and Gas Wells In Pennsylvania: Cost-Based Recommendations

Jeremy G. Weber, PhD¹

Contents

Executive Summary
Introduction
The Purpose of Plugging
The Purpose of Bonds
Current Bond Requirements
Methods for Projecting Plugging Costs for 2021-22
Conventional Plugging Costs7
Unconventional Plugging Costs8
Data9
Findings: Projected Costs for Conventional Wells 10
Assessing the Projection12
Findings: Projected Costs for Unconventional Wells
Assessing the Projection14
Contract Size and Economies of Scale in Plugging14
To What Wells Should Bond Adjustments Apply?17
The Likely Effect of Bond Adjustments on the Oil and Gas Industry
Conclusion
References
Appendix A: Conventional Well Plugging Costs 23
Appendix B: Unconventional Well Plugging Costs
Appendix C: Data

¹ Jeremy G. Weber (j.weber@pitt.edu) is an economist and Associate Professor at the University of Pittsburgh Graduate School of Public and International Affairs. This report was supported by funding from the Sierra Club. The analysis and recommendations herein are those of the author, as are any errors.

Executive Summary

Pennsylvania law requires that all oil and gas well operators properly decommission their wells at the end of the well's useful life, an act often referred to as well plugging. Since 1985, it has also required that operators set aside money, a bond, before drilling so as to guarantee funds for the well's plugging. The law sets bond amounts but gives the Pennsylvania Environmental Quality Board (EQB) the authority to adjust amounts "every two years to reflect the projected costs to the Commonwealth of performing well plugging."²

From 1989 to 2020, the Commonwealth has paid to plug more than 3,000 wells, spending \$15,100 per well on average and a minimum of \$3,400 per well. By comparison, the current bond amount for a conventional well is \$2,500 for an operator with few wells and, because of blanket bond provisions, \$250 for an operator with 100 wells. Using data on the wells the Commonwealth has paid to plug, this report projects the cost to the Commonwealth of plugging wells in the future and makes three recommendations to the Environmental Quality Board:

- 1. Adjust the bond amount to \$25,000 per conventional well and \$70,000 per unconventional well for the 2021-2022 period. These amounts match projected plugging costs for a well plugged in this period and, under current law, should apply to new wells and wells drilled after April 17, 1985. The projected cost for conventional wells is based on the historical cost incurred by the Commonwealth and the observed growth rate in plugging costs. It is also consistent with what a major operator paid to plug its own wells in the 2018-2020 period. Costs to the Commonwealth, however, will likely be higher if future plugging contracts cover fewer wells than they have historically. The unconventional well amount is based on cost relationships observed in the data and differences in the characteristics of conventional and unconventional wells.
- 2. Revisit bond amounts every two years to consider new information on plugging costs and to update bond amounts accordingly. Plugging costs rose over the last three decades, growing 3.2 percent per year after accounting for inflation and changes in the types of wells being plugged. In addition to a general rise in costs, changes in the types of wells that are being plugged and the scale of plugging can also affect projected costs. Periodic consideration of new information is especially important for unconventional wells for which there is currently limited publicly available data on plugging costs.
- Discontinue the use of blanket bonds or bond caps. Blanket bonds or caps create a large discrepancy between the projected cost of plugging and bond amounts. Moreover, financially secure operators already pay less to meet bond requirements in the form of lower rates charged by private insurers ("sureties").

Current bond amounts expose the Commonwealth to the risk of having to pay plugging costs for many wells. If adopted, the recommended amounts ensure that well operators bear the full financial responsibility of plugging their wells. This will continue to be the case if the Environmental Quality Board reconsiders bond amounts biennially using updated cost projections.

Adjusting bonding amounts will also encourage and enable more plugging, which restores well sites to alternative uses and reduces the risk that unplugged abandoned wells leak methane, oil, brine, or metals-rich liquids into their surroundings. This will free residents and municipalities to farm, build, or

² 58 Pa. Cons. Stat. § 3225.

simply enjoy the full extent of their land unencumbered by tanks, pipes, or contamination and the associated risks. This will benefit local economies as properties appreciate in value and the tax base expands.

The recommended adjustment to unconventional well bonds would increase operator costs by onefifth of the cost of the unconventional well Impact Fee. The adjustment for conventional wells is smaller in absolute terms but might cause some wells to shift to more financially secure operators.

Introduction

Since 1921, the Commonwealth of Pennsylvania has required that oil and gas well operators decommission their wells when abandoning them.³ Subsequent enforcement was limited and operators abandoned many wells over the rest of the 20th century without proper decommissioning, in part because of energy price drops that left operators without money to continue in business and plug old wells.⁴

Since 1985, the Commonwealth has required that an operator set aside funds, known as bonds, before drilling. The Commonwealth releases the operator from the bond requirement once the operator properly decommissions the well, which involves restoring the well site and filling the well with cement, an activity often referred to as plugging.⁵ Most oil and gas producing states have bond requirements so as to encourage compliance with the law and to fund plugging when an operator is financially unable to do so.⁶ Bonds therefore act as insurance that protects state governments and taxpayers from having to pay for plugging when operators become financially distressed.

Pennsylvania law gives the Environmental Quality Board the authority to adjust bond amounts "every two years to reflect the projected costs to the Commonwealth of performing well plugging."⁷ The statement recognizes that unplugged wells abandoned by defunct operators become the responsibility of the Commonwealth, which then has to pay for plugging. It also recognizes that the bond amount should match the cost of plugging, so that operators—not the Commonwealth and its taxpayers—pay for plugging.

From 1989 to 2020, the Commonwealth paid to plug more than 3,000 wells. Using the associated cost data, this report projects the cost to the Commonwealth of plugging wells in coming years and makes three recommendations to the Environmental Quality Board. First, the Board should adjust the bond amount to \$25,000 per conventional well and \$70,000 per unconventional well for the 2021-2022 period. The amounts match projected plugging costs for a well plugged in this period and, under current law,

³ Act 322 of 1921 introduced the first plugging requirements for gas wells. Similar requirements for oil wells had existed since the late 1800s. 58 Pa. Con. Stat. § 3203 defines an abandoned well as "any well that has not been used to produce, extract or inject any gas, petroleum or other liquid within the preceding 12 months, or any well for which the equipment necessary for production, extraction or injection has been removed, or any well, considered dry, not equipped for production within 60 days after drilling, redrilling or deepening, except that it shall not include any well granted inactive status."

⁴ Weber, McClure, and Simonides, *The Boom, the Bust, and the Cost of Cleanup: Abandoned Oil and Gas Wells in Pennsylvania and Implications for Shale Gas Governance*.

⁵ Through the rest of the report, I will use "plugging" to refer to all that is involved in decommissioning a well according to state standards.

⁶ Davis, Policy Monitor—Bonding Requirements for US Natural Gas Producers.

⁷ 58 Pa. Con. Stat. § 3225.

should apply to new wells and wells drilled after April 17, 1985. Second, it should revisit bond amounts every two years to consider new information on plugging costs and to update bond amounts accordingly. Plugging costs rose over the last three decades, growing 3.2 percent per year after adjusting for inflation and changes in the types of wells being plugged. Lastly, the Board should discontinue the use of blanket bonds or bond caps because they create a discrepancy between bond amounts and projected plugging costs.

By encouraging and enabling more well plugging, adjusting bond amounts will reduce the risk that abandoned wells leak methane, oil, brine, or metals-rich liquids into their surroundings. Abandoned wells have also been shown to discourage building in their vicinity. Well plugging and site restoration frees local residents and property owners to farm, build, or simply enjoy the full extent of their land unencumbered by tanks, pipes, or contamination and the associated risks. This has broad benefits for local economies in the form of higher property values and a larger tax base.

The recommended adjustment to unconventional well bond amounts would increase operator costs by far less than did the unconventional well Impact Fee, which the Commonwealth introduced in 2012 and applied retroactively to all unconventional wells.⁸ Despite increasing costs by more than would the recommended bond adjustment, the Impact Fee had imperceptible effects on drilling and production. The recommended adjustment for conventional wells is smaller in absolute terms but might cause some wells to shift to operators that are more financially secure.

In the next sections, the report explains the purpose of plugging wells, the role of bonding, and current bond policy. It then presents the methods, data, and findings for the projected cost to the Commonwealth of plugging wells in the 2021-2022 period. The final sections address the role of blanket bonds, the wells to which adjusted bond amounts should apply, and the likely effects of the adjusted amounts on the oil and gas industry in Pennsylvania.

The Purpose of Plugging

Unplugged abandoned wells create a pathway for subsurface gases or liquids to migrate into groundwater, the soil, or to the surface. Deterioration of the steel casing surrounding a well bore—or the cement surrounding the casing—opens this pathway for migration.⁹ Plugging wells and restoring their sites addresses problems caused by wells already leaking and constraining land use. It also largely eliminates risk from wells that may cause damage in the future, a risk that grows as wells age and their steel and concrete deteriorate.

Several studies and cases illustrate the health risks posed by unplugged abandoned wells and therefore the benefit of plugging them. Water in and around unplugged wells can contain pollutants, such as barium, chloride, and arsenic.¹⁰ In a sample of 46 abandoned wells discharging water on the Navajo

⁸ 58 Pa. Con. Stat. § 3225.

⁹ Alboiu and Walker, Pollution, management, and mitigation of idle and orphaned oil and gas wells in Alberta, Canada.

¹⁰ Woda et al., Methane concentrations in streams reveal gas leak discharges in regions of oil, gas, and coal development.

Nation, 15 wells had water with levels of arsenic above EPA standards.¹¹ Arsenic is a carcinogen and even short-term exposure can harm health.¹² Further, methane leaking into groundwater can create foul-smelling and toxic hydrogen sulfide when it oxidizes.¹³ The potential for groundwater contamination is illustrated by a study of oil-and-gas-related groundwater contamination events in Texas and Ohio. The study found that unplugged abandoned wells accounted for 14 percent and 22 percent, respectively, of contamination events over the study period, generally the 1980s through the early 2000s.¹⁴

Unplugged abandoned wells also leak gases into the air, particularly methane. Emissions of methane can harm air quality when methane oxidizes and creates ozone. Ozone is harmful when inhaled, causing damage to the heart and lungs and worsening chronic conditions such as asthma.¹⁵ Further, if methane leaks into enclosed spaces it can cause an entire house to explode, though this is not common.¹⁶ Globally, methane is a potent greenhouse gas, with roughly 30 times more warming potential than carbon dioxide over 100 years and as much as 87 times higher over 20 years.¹⁷ A study of methane leaks from abandoned oil and gas wells in Pennsylvania found that such wells account for as much as seven percent of the annual anthropogenic methane emissions in the Commonwealth. To put the number in perspective, it is equivalent to the annual greenhouse gas emissions from 200,000 to 250,000 passenger cars.¹⁸

In addition to the environmental and health risks, unplugged abandoned wells take up space and are an eyesore on the landscape, appearing as uncultivated or unmowed islands in fields or backyards. Wellheads, which are made up of pipes and valves, often extend about six feet into the air and can be accompanied by metal tanks, pipes, and pumps, all of which are removed as part of plugging. By removing well equipment and the risks associated with an open well, plugging expands land-use possibilities for the surrounding acreage. A recent study found that, over nearly fifty years, there was roughly twice as much building activity in the two acres surrounding wells that were plugged compared to the two acres surrounding wells that were not plugged.¹⁹ This illustrates how unplugged wells constrain or deter local residents from fully using their property.

Forgoing construction on and investment in land with unplugged wells has broad implications for community well-being because it suppresses the local tax base that funds local schools, roads, and other services. The same study estimates that by depressing investment, an unplugged well reduced the market value of the typical surrounding property by around \$22,000 (12 percent). In the case of the school district in the study area with the most abandoned unplugged wells—McGuffy School District—this tax base

¹³ Dusseault, Jackson, and MacDonald, *Towards a Road Map for Mitigating the Rates and Occurrences of Long-Term Wellbore Leakage;* U.S. Department of Labor, "Hydrogen Sulfide".

¹¹ U.S. Environmental Protection Agency, *Technical Memorandum: Investigation of Abandoned Wells on Navajo Nation*.

¹² U.S. Environmental Protection Agency, "Drinking Water Standard for Arsenic."

¹⁴ Kell, State Oil and Gas Agency Groundwater Investigations.

¹⁵ Nuvolone, Petri, and Voller, The effects of ozone on human health.

¹⁶ Quinton, "Why 'Orphan Oil and Gas Wells Are a Growing Problem for States."

¹⁷ U.S. Environmental Protection Agency, "Understanding Global Warming Potentials."

¹⁸ Kang et al., Direct measurements of methane emissions from abandoned oil and gas wells in Pennsylvania.

¹⁹ Harleman, Weber, and Berkowitz, Environmental Hazards and Local Investment: A Half-Century of Evidence from Abandoned Oil and Gas Wells.

effect translates into \$112 less school revenues per student each year.²⁰ The forgone revenue across all schools and local governments in the county exceeds \$500,000 annually.²¹

The Purpose of Bonds

Oil and gas operators are legally bound to plug their wells when they abandon them, and the Pennsylvania Department of Environmental Protection can fine operators that do not comply with plugging requirements. Fines, however, are meaningless when applied to operators that have dissolved or have no means to pay them. The upfront nature of bonds avoids this problem. Because operators post bonds as a requirement for receiving a permit to drill a new well, the bond amount is secured even if the operator later falls into financial distress. Bonds, therefore, act as an insurance policy that protects the Commonwealth from having to use public revenues to pay an operator's plugging liabilities.

The history of oil and gas development and policy in Pennsylvania underscores the value of such insurance. The Commonwealth has had plugging requirements for both oil and gas wells since the 1920s, and enforcing the requirements became easier in 1955 when the Commonwealth added permitting requirements, which allowed it to establish each well's location and ownership. Despite those policies, an estimated 20 percent of wells drilled between 1955 and 1984 (when bonding requirements were introduced) were abandoned without plugging.²² Many of these wells will likely become the responsibility of the Commonwealth to plug.

For the Commonwealth and its taxpayers to fully avoid the burden of plugging costs, the bond amount must cover plugging costs on average.²³ Some wells will cost more than the average and others less, but if set correctly, the savings from cheap wells will cover the extra costs of expensive wells. If instead the bond amount is below average plugging costs, the Commonwealth's plugging program will run a deficit and require another revenue source to cover its costs.

Current Bond Amounts

The law governing both conventional and unconventional wells states that bond amounts "may be adjusted by the Environmental Quality Board every two years to reflect the projected costs to the Commonwealth of plugging the well."²⁴ Moreover, the law governing bond amounts for conventional wells directs the Environmental Quality Board to "undertake a review of the existing bond requirements for conventional oil and gas wells."²⁵

²⁰ Ibid.

²¹ This estimate is based on the analysis in Harleman, Weber, and Berkowitz but not reported in the paper.

²² Weber, McClure, and Simonides, *The Boom, the Bust, and the Cost of Cleanup: Abandoned Oil and Gas Wells in Pennsylvania and Implications for Shale Gas Governance*.

²³ Setting bond amounts equal to average plugging costs would not be appropriate if operators were more likely to leave high-cost wells unplugged. This is possible but hard to establish.

²⁴ 58 Pa. Con. Stat. § 3225.

²⁵ 72 P.S. § 1606-E.

Current bond amounts, however, are the unadjusted amounts initially specified by law. The law currently requires a \$2,500 bond for each conventional well drilled on or after April 18, 1985.²⁶ In lieu of the \$2,500 per well bond, the law allows operators to post a "blanket bond" of \$25,000.²⁷ This allows operators with more than 10 wells to post a smaller total bond using a blanket bond instead of a per well bond. With 100 wells, for example, an operator would post \$250 per well²⁸ instead of \$2,500 per well.

In the late 2000s, operators began drilling more and more wells in the Marcellus and then Utica shale formations. Exploiting the formations required unconventional methods, namely horizontal drilling and hydraulic fracturing, and such wells became known as unconventional wells. In 2012, the Commonwealth adopted laws specific to unconventional wells. The law currently sets a \$10,000 bond for each unconventional well, but also caps the total bond amount for an operator with many wells, with the cap acting as a type of blanket bond.²⁹ The caps vary with operator size. An operator with 50 wells need only post \$290,000 in bonds, or \$5,800 per well.³⁰ An operator with more than 150 wells need only post \$600,000. Thus, an operator with 240 unconventional wells faces a per well bond amount of \$2,500.³¹

Well operators can satisfy bond requirements in different ways, including a corporate surety bond or a deposit of cash, certificates of deposit, or U.S. Treasury bonds.³² A surety bond acts like an insurance policy. In general, the operator pays an insurer (the surety) a percent of the bond amount each year, and the surety agrees to pay a third party (in this case the Commonwealth) the bond amount if conditions specified in the bond are met (in this case the failure of the operator to plug its well). The rate a surety elects to charge and the bond amount determine the cost of the bond incurred by the operator. At a 5 percent rate, a \$10,000 bond costs an operator \$500 each year.³³ Rates depend on an operator's financial health, with more financially secure firms facing lower rates and therefore lower costs to satisfy the same bond requirement.

Methods for Projecting Plugging Costs for 2021-2022

The focus of this report is projecting the per well plugging cost that the Commonwealth is likely to incur from plugging wells in the 2021-2022 period. The projection, in turn, is to aid the Environmental Quality Board in adjusting bond amounts to match the projected costs to the Commonwealth of performing well plugging. This section explains the methodology used to project this cost.

Conventional Plugging Costs

To project the cost of plugging a conventional well in the 2021-2022 period, I start by calculating the sample average cost per well for plugging from the 1989–2020 period (in 2020 dollars). This is the

²⁶ 25 Pa. Code § 78.302.

²⁷ 72 P.S. § 1606-E.

²⁸ \$25,000/100 wells.

²⁹ Bond amounts are less for unconventional wells with a total bore length less than 6,000 feet, which applies to few if any unconventional wells since they are generally greater than 6,000 feet in vertical length in addition to several thousand feet in horizontal length.

³⁰ \$5,800 = \$290,000/50 wells.

³¹ \$2,500 = \$600,000/240 wells.

³² 52 Pa. Con. Stat. § 3225.

³³ 0.05 x \$10,000.

total cost across all contracts divided by the total number of wells plugged. It would be a reasonable projection of average plugging costs in 2021-2022 if inflation-adjusted costs were constant over time, but they are not—costs have consistently risen over time. To project costs for 2021-2022, I estimate the growth rate in plugging costs using a regression model to account for changes in the location and types of wells being plugged over time. I then apply the estimated growth rate in plugging costs to the sample average well, which was plugged in 2005. See Appendix A for estimation of the growth rate and the calculation of the projected cost.

The key assumption of this approach is that the average well that *has been* plugged by the Commonwealth has characteristics similar to those of the average well that *will be* plugged by the Commonwealth, at least when considering characteristics that affect plugging costs. I test this assumption in two ways. First, I compare the projected cost of plugging a conventional well with the plugging costs incurred over the 2018-2020 period by a large operator of conventional wells in Pennsylvania. Second, I compare the characteristics of wells plugged by the Commonwealth with those of conventional wells drilled over the 2010-2018 period.

Unconventional Plugging Costs

Unlike the case of conventional wells, the Commonwealth of Pennsylvania has plugged no unconventional wells, nor am I aware of other states in the Appalachian basin that have done so. This is because unconventional gas wells, also known as shale gas wells, are relatively new to the region, having only been drilled on a large scale starting in the late 2000s. Private plugging of unconventional wells in Pennsylvania has occurred, but the associated cost data is not publicly available. If collected moving forward, this information could inform future decisions by the Environmental Quality Board.

The cost of plugging conventional wells in Pennsylvania may nonetheless provide a reasonable foundation for estimating unconventional costs. The Commonwealth applies similar plugging regulations to both well types. In coal areas, for example, regulations for both wells require a 200-foot section of cement around the bottom of the surface casing, followed by sections of cement and non-porous material through the rest of the vertical portion of the well bore.³⁴ Firms plugging both conventional and unconventional wells in Pennsylvania will also face similar material and labor costs.

Given the similarity in plugging regulations and prices for materials and labor, I follow the same methodology for unconventional wells as for conventional wells with one difference. I adjust the sample average plugging cost before applying the growth rate in costs. The adjustment accounts for two large differences between sample conventional wells and unconventional wells. First, unconventional wells are deeper than the average conventional well plugged from 1989 to 2020, which increases costs. Second, essentially all unconventional wells in Pennsylvania are gas wells, which historically have cost more to plug than oil wells. See Appendix B for details on the adjustments and regression model used to assess the effect of depth and well type on plugging costs.

³⁴ 25 Pa. Code § 78.92(b) and § 78a.92(b). In the case of an unconventional well whose bore extends horizontally, the operator must then place a mechanical plug to block off the vertical part of the well from the horizontal part.

Data

The Pennsylvania Department of Environmental Protection (DEP) provided a dataset with all wells that it has paid to have plugged since 1989, when it plugged its first well, through November of 2020. The dataset contains 3,134 wells and includes, among other variables, the well permit number, the contract number, and the total cost of the contract under which the well was plugged. I put all contract costs in 2020 dollars using the Consumer Price Index (CPI-U). I exclude 35 out-of-scope wells for reasons described in Appendix C, leaving 3,099 wells covered by 255 contracts.

The DEP dataset does not include each well's depth, which is a determinant of plugging costs. To assign depth to each well, I combined an additional DEP-provided dataset of the location of DEP-plugged wells with geospatial data from the Pennsylvania Department of Conservation and Natural Resources (DCNR) on oil and gas fields and pools, which includes each pool's average producing depth.³⁵ I mapped the DEP-plugged wells over the DNCR pools and assigned to each well the average depth of the pool in which it is located. In doing so, I estimated the depth of 3,060 wells covered by 226 contracts.

Using the well permit number in the DEP plugging data, I added two variables from other state data sources. These were the earliest year when the well appeared in any state records, which is a rough measure of when the well was drilled, and an indicator for whether the well was in a coal region. Older and more deteriorated wells are generally more expensive to plug. Wells in coal regions can also involve different plugging practices, which can affect costs. Incorporating the additional variables improves parts of the analysis by better accounting for differences in well characteristics that can affect cost. For example, it aids in estimating the growth rate in plugging costs apart from changes in the types of wells being plugged over time. The additional variables, along with the depth variable, are available for 3,040 wells from 211 contracts.

The data described above are used to create a contract-level dataset, which is the basis of the analysis. This is a practical necessity because DEP plugging contracts generally only have a total cost for the entire contract, not a unique cost for each well. Because the focus of this report is on the typical well, not the typical contract, I weight contract values by the number of wells in the contract, so that the resulting statistics represent the average well.³⁶ By comparison, the average of unweighted contract values reflects the average contract.

Values presented in the report reflect the largest sample of wells and contracts possible. Thus, the simple average cost per well is based on the largest sample of 3,099 wells (255 contracts). The average cost per foot of depth is based on the 3,060 wells (226 contracts) for which depth data are available. Analysis involving the two additional well variables uses 3,040 wells (211 contracts).

³⁵ The oil and gas pool geospatial data can be found by searching the DCNR's elibrary at www.dcnr.pa.gov/ELibrary/Pages/default.aspx.

³⁶ The well-weighted contract average is equivalent to summing the total costs across all contracts and dividing by the number of wells, which is why the weighted contract average refers to the average well, not the average contract.

Findings: Projected Costs for Conventional Wells

Over the 1989-2020 period the average well plugged cost the Commonwealth \$15,118 (Table 1, the "Weighted" column). This does not reflect current plugging costs since the average year of plugging is 2005. The cost per well for the average contract (Table 1, "Unweighted" column) is higher and reflects economies of scale in plugging discussed in detail in a later section. Because most wells are plugged under a large, lower-cost contract, the plugging cost of the average well is lower than for the average contract.

Costs range substantially across contracts, with per well costs ranging from \$3,422 to nearly \$485,000. The standard error of the weighted average cost, however, is fairly small, at \$472. This means that a sample of wells randomly drawn from the same population of previously plugged abandoned wells would likely have an average cost in the range of \$14,200 to \$16,000.

	Av	erage		
Variable	Weighted	Unweighted	Minimum	Maximum
Plugging Cost Per Well (\$)	15,118	49,008	3,422	484,677
Plugging Cost Per Foot (\$)	8	20	1	219
Depth Per Well (Feet)	1,925	1,832	450	7,174
Contract Size (Wells)	55	12	1	179
Year Plugged	2005	2005	1989	2020
Emergency Contract (0/1)	0.01	0.08	0.00	1.00
Well Type				
Share Oil Wells	0.83	0.43	0.00	1.00
Share Gas Wells	0.12	0.36	0.00	1.00
Share Oil & Gas Wells	0.04	0.13	0.00	1.00
Share Other	0.01	0.09	0.00	1.00
Share of Wells in Coal Regions	0.06	0.22	0.00	1.00
Estimated Year Drilled	1995	1988	1891	2015
Number of Contracts		211 1	to 256	
Number of Wells		3,040 1	to 3,099	

Table 1. Summary Statistics for Well Plugging Contracts

Notes: The data are drawn from various datasets of the Pennsylvania Department of Environmental Protection and Department of Conservation and Natural Resources. All tabulations are by the author. As noted in the text, not all information is available for every well or contract. The weighted average is the contract average weighted by the number of wells in the contract. All monetary values are in 2020 dollars.

As mentioned in the methods section, it is important to adjust the plugging cost of the sample average well for changes in cost over time. Figure 1 shows a scatter plot of plugging costs per foot (in 2020 dollars, log scale) and the year plugging occurred, with the data adjusted for differences in contract and well characteristics (See Appendix A for details). It shows that plugging costs rose over the three-decade

period even after adjusting for inflation. The slope of the best-fit-line line (estimated in log scale) gives the real annual growth rate, which is 3.2 percent.³⁷ Performing the same analysis but without adjusting for inflation gives a nominal growth rate of 5.6 percent.



Figure 1. Inflation-Adjusted Plugging Costs Have Grown Over Time

Notes: The vertical axis is plugging cost per foot in 2020 dollars and is shown on a log scale, increasing by increments of roughly 0.5 log points. Each dot represents a well plugging contract. The data shown have been adjusted to account for changes in contract and well characteristics over time. See Appendix A for details. The size of the dots reflects the weight given to the observation (the contract) based on the number of wells in the contract. Larger dots indicate contracts with more wells.

The average plugging cost per well combined with the real and nominal plugging cost growth rates provide what is needed to estimate the plugging cost for 2020 and project the cost for 2021-2022. Doing so gives an estimated 2020 plugging cost of \$23,829 per well (in 2020 dollars) and a projected 2021-2022 cost of \$25,164 per well (in 2021 dollars).

³⁷ Plugging and site restoration standards have changed over time, mostly due to Act 13 of 2012. Breaking the study period into before and after Act 13 reveals a growth rate of 3.0 percent before 2012 and 8.5 percent after 2011. That the global average (pooling data from both periods) is 3.2 percent reflects the greater weight given to earlier years when more wells were plugged. I use the global average growth rate as it should better reflect the growth rate moving forward. It is likely that Act 13 caused a temporary increase in the growth rate, with the rate returning to its long-run average after the full incorporation of the changes in plugging practices.

The projected cost for 2021-2022 supports the recommendation of a conventional bond amount of 25,000 per well for the 2021-2022 period. The Environmental Quality Board should revisit the amount every two years, taking into account updated information on plugging costs. The recommended \$25,000 amount could become outdated in several years because of inflation and rising real costs. For example, if plugging costs continue to grow at their historical rate, conventional well plugging costs would rise to more than \$31,000 by the end of 2025 (in 2025 nominal dollars).³⁸ In addition, the composition of wells needing to be plugged can change over time, resulting in a higher or lower average cost.

Assessing the Projections

As noted in the methods section, the reliability of the 2021-2022 projection depends in part on whether sample wells are unique in ways that affect plugging costs. One way to gauge their uniqueness is to compare their plugging costs to those of other wells, such as those plugged by the private sector.

A comparison with recent private sector plugging costs suggests that wells plugged by the Commonwealth are not unique in ways that have large effects on plugging costs. Diversified Gas and Oil is a large operator of conventional wells in Appalachia, and in August of 2020 it released a report providing its spending on wells plugged from 2018 through the second quarter of 2020. For the 192 wells that it plugged in the Appalachian region, it reports an average cost of \$24,280 per well. Not all of the wells were in Pennsylvania, but Diversified also reports an estimate of per well costs by state, reporting \$23,638 for Pennsylvania wells in coal regions and \$19,259 for wells outside of them.³⁹ The costs are similar to the estimated 2020 cost based on wells plugged by the Commonwealth (\$23,829).

Another way to gauge the uniqueness of the wells plugged by the Commonwealth is to compare their characteristics with those of conventional wells drilled in recent years. The comparison should reveal how conventional drilling has evolved, which is important because adjusted bond amounts would apply to recently drilled and soon-to-be-drilled wells. To conduct this comparison, I used data from the DEP and analyzed all wells drilled between 2010 and 2018, comparing them to the previously discussed dataset of plugged wells.

On the whole, the comparison also suggests that the plugged well sample is not unique (i.e., is roughly consistent with more recent conventional wells). The average wells of each sample have similar depth and likelihood of being in a coal region. This is notable given the difference in well age across the two samples. The average estimated year drilled is 1995 for plugged wells and 2011 for recently drilled wells. The primary difference between recently drilled wells and wells plugged by the state is the hydrocarbon focus, with the recently drilled wells focused on gas plays, or a mix of oil and gas, and fewer wells in pure oil plays. On the whole, then, the sample of wells plugged by the DEP are likely to provide reasonable estimates of the plugging costs that the Commonwealth is likely to incur in the near future. At the same time, there are some differences between older wells and recently drilled wells, which highlights the value of the Environmental Quality Board periodically revisiting bond amounts with updated cost data.

 $^{^{38}}$ = \$25,000 x (1.056)^4, where 0.056 refers to the nominal growth rate in plugging costs.

³⁹ Diversified Gas & Oil, Asset Retirement Supplement for the ARO Liability.

	Average Values		
	Plugged Wells	Recently Drilled Wells	Difference
Depth (Feet)	1,925	2,087	162
Oil Well (0/1)	0.83	0.57	-0.26
Gas Well (0/1)	0.12	0.21	0.09
Oil and Gas Well (0/1)	0.04	0.16	0.12
Other Well (0/1)	0.01	0.08	0.07
Well in Coal Region (0/1)	0.06	0.06	0.00
Estimated Year Drilled	1995	2011	16
Number of Wells	3.040	2.923	

Table 2. Comparing Plugged	Wells and Recentl	y Drilled Conve	ntional Wells
		/	

Notes: Data are from various datasets of the Pennsylvania Department of Environmental Protection and Department of Conservation and Natural Resources. All tabulations are by the author. The Estimated Year Drilled refers to the first year that the well appears in state records.

Findings: Projected Costs for Unconventional Wells

I project a plugging cost of \$70,000 for an unconventional well in 2021. The number reflects the same methodology used to project costs for conventional wells but with two adjustments to account for differences between unconventional wells and the conventional wells reflected in the DEP plugging data.

The first difference is that unconventional wells are deeper, which increases plugging costs.⁴⁰ Plugged wells have an average depth of 1,925 feet compared to an estimated 6,300 feet for unconventional wells.⁴¹ Statistical modeling of the plugging cost data indicates that each foot in depth adds \$1.90 in cost, which gives an adjustment of \$8,313.⁴² The second adjustment is for well type. Most of the conventional wells plugged were oil wells whereas essentially all unconventional wells are gas wells. The same statistical model that relates depth to plugging costs shows that natural gas wells cost an average of \$21,376 more to plug than other wells. The resulting adjustment is \$18,803.⁴³ These two adjustments sum to a slightly more than \$27,000 increase in cost of plugging from the sample average conventional well.

To arrive at the \$70,000 projection, I add the total adjustment to the sample average conventional well cost and then apply the same growth rates in plugging costs as estimated for conventional wells. See Appendix B for details of the calculations and statistical modeling. As with the projected cost for conventional wells, the projection and recommended bond amount for unconventional wells apply to the 2021-2022 period. The Environmental Quality Board should revisit the amount every two years, taking into account updated information on plugging costs. This is especially important in the case of unconventional wells because there is currently no publically available data on the cost of plugging unconventional wells in Pennsylvania.

⁴⁰ Ho et al., Managing environmental liability: an evaluation of bonding requirements for oil and gas wells in the United States.

⁴¹ Weber, McClure, and Simonides, *The Boom, the Bust, and the Cost of Cleanup: Abandoned Oil and Gas Wells in Pennsylvania and Implications for Shale Gas Governance*.

⁴² \$8,313 = (6,300 feet – 1,925 feet) x \$1.9 per foot. See Appendix B for a discussion of this calculation.

 $^{^{43}}$ \$18,803= (1.0 – 0.12036) x 21,376 per gas well, where .12036 is the weighted contract average share of gas wells (see Table 1).

Assessing the Projection

There is more uncertainty over the projection for unconventional wells than for conventional wells because of the lack of data on unconventional well plugging costs. Yet, the projection is arguably the most well-founded of any projection for unconventional wells in Pennsylvania.

A 2011 study estimated the cost of plugging unconventional wells in Pennsylvania based on well plugging data from Wyoming from 1997 to 2007, and reported that plugging a single unconventional well would cost about \$110,000.⁴⁴ The authors, however, did not account for differences in terrain and labor and material costs between Wyoming and Pennsylvania. Costs for plugging in Pennsylvania may be different than incurred in other states. For example, one study of plugging costs reports that a drilling rig, which is used to prepare a well for plugging, can cost \$85 an hour in Kansas and \$240 an hour in Pennsylvania. ⁴⁵ The estimate of \$110,000 also assumed that the horizontal portion of unconventional wells needs to be plugged. Current Department of Environmental Protection regulations cited above make it clear that this is not the case in Pennsylvania—operators need only put a mechanical plug near the bottom of the vertical portion of the well.

A forthcoming study that uses Pennsylvania conventional well plugging data estimates unconventional well plugging costs ranging from about \$92,000 to \$129,000.⁴⁶ These estimates, however, are conditional on wells being plugged in fairly small groups, resulting in small contract sizes. As the next section discusses, per well plugging costs decrease with contract size, and this report's projections are based on the historical average contract size.

The authors of the forthcoming study note that site restoration costs may differ between conventional and unconventional wells.⁴⁷ Unconventional wells are found on large pads that host multiple wells whereas conventional wells are more scattered across the landscape. The net effect of the differences on plugging costs (including site restoration) could be positive or negative–larger pads would require more restoration costs but ease of site access and clustering of wells on a pad would reduce it. Because there is no firm way to estimate the impact of this factor, it is not reflected in this report's projection.

Contract Size and Economies of Scale in Plugging

Both the conventional and unconventional well projections are based upon the average well in the DEP plugged well dataset, which is associated with an average contract size of 55 wells.⁴⁸ (The focus on the average well is because the recommended bond amount seeks to match the projected plugging cost for the average well, not the average contract.) The projections, therefore, assume that future wells

⁴⁴ Mitchell and Casman, *Economic incentives and regulatory framework for shale gas well site reclamation in Pennsylvania.*

⁴⁵ Ho et al., Managing environmental liability: an evaluation of bonding requirements for oil and gas wells in the United States.

⁴⁶ Weber, McClure, and Simonides, *The Boom, the Bust, and the Cost of Cleanup: Abandoned Oil and Gas Wells in Pennsylvania and Implications for Shale Gas Governance*.

⁴⁷ Weber, McClure, and Simonides, *The Boom, the Bust, and the Cost of Cleanup: Abandoned Oil and Gas Wells in Pennsylvania and Implications for Shale Gas Governance*.

⁴⁸ The average contract does not have 55 wells. Rather, the average well is plugged under a contract with 55 wells.

BONDING REQUIREMENTS FOR OIL AND GAS WELLS

will be plugged under similarly sized contracts. The assumption is important because larger contracts have lower average costs. The lower cost stems from at least two sources. First, a large contract provides steady work for well plugging firms, potentially for an entire year. Plugging firms, which tend to be small, value this stability and therefore offer lower bids for larger contracts. Second, wells in the same contract are often near each other, which allows a firm to spread the cost of moving equipment over multiple wells. Clustering can also allow a firm to use the same staging area and access roads for multiple wells, saving labor and equipment time.⁴⁹

Economies of scale in plugging are evident in the data. Figure 2 shows a scatter plot of plugging costs per well (vertical axis) and contract size (horizontal axis), with a best-fit curve shown as a solid black line. Costs decline dramatically as contract size increases from 1 to 15 wells. However, the rate of the decline slows greatly afterward, with contracts of 100 wells having only marginally lower costs per well than contracts of 50 wells.

The declining economies of scale shown in Figure 2 imply that the potential for an overstatement of costs is low since larger-than-expected contracts will bring only marginally lower cost. In contrast, the potential for understatement of costs is large if most wells in the future are plugged under small contracts. Over the entire sample, 1989-2020, the typical well was plugged under a contract covering 55 wells. However, the largest contracts in the data occurred in the 2000-2011 period when the Pennsylvania Department of Environmental Protection had greater funding (through the Growing Greener legislation).⁵⁰ Since 2011, a decrease in funding has translated into smaller contracts, with a more recent wells plugged under a contract with 14 wells. This highlights how greater funding for plugging, perhaps through higher bond amounts, could reduce the average plugging cost per well incurred by the Commonwealth.

Contract sizes have varied over time and may increase or decrease in the future. Given uncertainty over future contract sizes, this report's recommended bond amounts are based on the historical contract size for wells plugged by the Commonwealth. However, assuming the more recent contract size of 14 wells would increase the projected plugging cost and recommended bond amount to \$38,000 for conventional wells and \$83,000 for unconventional wells. The adjustment is based on the estimated non-linear relationship between contract size and per well plugging costs shown in Appendix Table B1.⁵¹

⁴⁹ These details are informed by an interview of an executive of a firm specializing in well plugging in the Appalachian basin.

⁵⁰ The level and sources of funding for well plugging can be seen by visiting:

www.dep.pa.gov/Business/Energy/OilandGasPrograms/OilandGasMgmt/LegacyWells/Pages/Well-Plugging-Program.aspx.

⁵¹ The adjustment is a \$7,711 increase, which I add to the sample average cost per well. The growth rate in plugging costs is then applied to this adjusted average cost as described by equations (A1-A2) and (B1-B2).



Figure 2. Plugging Costs Decline with Contract Size

Notes: The vertical axis is cost per well in 2020 dollars. Each dot represents a well plugging contract. For clarity of exposition, the vertical axis is limited to a maximum cost of \$200,000 per well.

Blanket Bonds

As noted in the section on current bond amounts, blanket bonds (for conventional wells) and bond caps (for unconventional wells) imply that per well bond amounts can be much lower than the commonly cited bond amounts of \$2,500 and \$10,000 per well. Blanket bonds may have been justified by noting that they limit the total financial burden of bonds on large and financially stable operators. Alternatively, large plugging projects have a lower average cost, also justifying a lower bond amount.

Neither justification is warranted given the bond amounts recommended in this report. With surety bonds, larger—and presumably more financially secure—operators pay less to comply with bonding requirements. This is because sureties base their rates on an operator's finances and the risk that it defaults on its plugging obligations. Thus, a surety bond equal to plugging costs allows lower-risk firms to pay less while also ensuring that the Commonwealth is able to cover the costs of plugging if the operator defaults on its obligations.

Regarding the second potential justification, economies of scale in plugging occur in the range of 1 to 15 wells as shown in Figure 2. There are little, if any, economies of scale in plugging after 50 or so wells, meaning that average plugging costs remain unchanged as contract size increases beyond this size.

Blanket bonds, in contrast, presume that average costs attenuate to zero as contracts grow larger. This is clearly not the case.

If blanket bonds are allowed in their current form, projected plugging costs will exceed, perhaps by a large amount, bond amounts received by the Commonwealth. This report therefore recommends discontinuing the use of blanket bonds or caps and instead recommends that the Commonwealth apply the recommended per well bond amounts to operators of all sizes. Doing so will ensure that the Commonwealth spends, on average, as much on plugging as it receives from forfeited bonds.

To What Wells Should Adjusted Bond Amounts Apply?

Under Pennsylvania statute, bonding requirements apply to all wells in existence after April 17, 1985.⁵² Applying adjusted bond amounts in a manner consistent with current law means applying them to new wells and those drilled after the 1985 date, only distinguishing between conventional and unconventional wells as the law does.

This application of adjusted amounts is also consistent with the scope that existing law gives the Environmental Quality Board to adjust bond amounts. The law states that bond amounts "may be adjusted every two years to reflect the projected costs to the Commonwealth of performing well plugging."⁵³ Because the Board's authority to adjust bond amounts is rooted in projected plugging costs, an uneven application of the adjustment could be justified if there were a basis for expecting new wells to have very different plugging costs than existing wells. The comparison of old and recently drilled wells previously presented in this report suggests no clear basis for the distinction. Thus, if the bond amount were not applied retroactively, the Commonwealth's plugging program would still have insufficient funds to plug the wells that become its responsibility in coming years. Further, this report recommends that the EQB revisit bond amounts every two years, so that it can adjust bond amounts based on any differences in plugging costs between new wells and existing wells that new data may reveal.

The Likely Effect of Bond Adjustments on the Oil and Gas Industry

This section describes the likely effects of adjusted bond amounts on the oil and gas industry based on the experience of Pennsylvania when it introduced its per well Impact Fee for unconventional wells and based on the experiences of Texas and North Dakota when they increased bond amounts. The experiences suggest that the adjustments will improve environmental outcomes, have little effect on aggregate industry activity, and potentially shift wells among operators.

To gauge likely impacts, I first illustrate the potential cost increase associated with adjusted bond amounts. I assume that operators currently post \$1,000 for the typical conventional well and \$5,000 for

⁵² 58 Pa. Con. Stat. § 3225.

^{53 58} Pa. Con. Stat. § 3225.

an unconventional well.⁵⁴ I further assume a well life of 30 years, a discount rate of 5 percent, and a bond rate of 5 percent.⁵⁵

The adjusted bond amount would increase annual costs by \$3,250 per unconventional well, which has a present value of \$50,000 over the life of a 30-year well (Table 3). To put the present value cost in perspective, it is about one-fifth that of the unconventional well Impact Fee. Operators in Pennsylvania pay an Impact Fee of about \$50,000 per unconventional well in its first year and about \$250,000 over the life of the well.⁵⁶

The industry's response to the introduction of the comparatively more costly Impact Fee suggests that adjusted bond amounts would not affect the number of wells drilled or production. A 2018 study found no systematic change in these outcomes around the introduction of the Impact Fee and compared to areas across the border in West Virginia and Ohio, which did not change their fees or taxes over the same period.⁵⁷ The authors did find that leasing declined but attributed this decline primarily to timing of the Fee, which was introduced when natural gas prices were very low and credit lines tight.

	We	ell Type
	Conventional	Unconventional
Assumptions		
Rate on Surety Bond (%)	5	5
Discount Rate (%)	5	5
Current Bond Amount (\$ Per Well)	1,000	5,000
Recommended Bond Amount (\$ Per Well)	25,000	70,000
Estimates (\$ Per Well)		
Current Annual Cost	50	250
Current Present Value of Costs Over 30 Years	769	3,843
New Annual Cost	1,250	3,500
New Present Value of Costs Over 30 Years	19,216	53,804
Change in Annual Cost of Bonding (\$ Per Well)	1,200	3,250
Change in Total Cost of Bonding (\$ Per Well)	18,447	49,960

Table 3. The Estimated Cost of Bonds at Current and Adjusted Levels

⁵⁵ There is limited data on the bond rates paid by oil and gas operators in Pennsylvania; however, one surety reports on its website that a lower-risk applicant will likely "pay no more than 5% of the bond amount." See <u>www.bryantsuretybonds.com/oil-and-gas-surety-bond</u>. Operators can satisfy bond requirements in different ways (e.g., depositing U.S. Treasury Bonds) and will presumably adopt the lowest cost option. If surety bonds represent the cheapest option, they will provide an accurate indication of actual cost; if not, they will overstate it. ⁵⁶ Black, McCoy, and Weber, *When externalities are taxed: The effects and incidence of Pennsylvania's impact fee on shale gas wells.*

57 Ibid.

⁵⁴ Assuming the use of blanket bonds, these per well bond amounts would correspond to a conventional operator with 25 wells (\$1,000 = \$25,0000 / 25 wells) and an unconventional operator with 120 wells (\$5,000 = \$600,000 / 120 wells). The cost of current bond amounts would be higher for smaller operators and lower for larger operators.

Estimates from another recent study show a muted effect of higher bond amounts on unconventional oil and gas activity. The study explored the effect of North Dakota's policy changes, which, among other things, increased per well bond amounts from \$20,000 to \$50,000 for all existing and new wells.⁵⁸ It found that higher bond amounts along with increased regulation had no statistically discernable effect on drilling or production.

The adjusted bond amount would increase annual costs by \$1,200 per conventional well, or about \$18,000 over the life of a 30-year well (in present value terms). A study of the Texas experience provides insight into what might happen to the conventional well industry. In the early 2000s, Texas introduced a bonding requirement of \$2 per foot. In the short term the requirement caused about five percent of operators to exit the market.⁵⁹ Exiting operators were small on average and had poor environmental records. Over time, the requirement shifted wells across operators, with about four percent of wells operated by small operators shifting to new operators. As a result, the number of unplugged and abandoned wells decreased by 70 percent and violation of water regulations fell by a quarter. This is a plausible outcome for Pennsylvania—operators unable to pay to the insurance against leaving a well unplugged could exit the market, and their wells could shift to more financially secure operators. Such a shift would protect the Commonwealth from bearing plugging costs since operators unable to pay for insurance (bonds) are probably unable to pay to plug their wells.

It is possible that the adjustment could prematurely shift some existing wells to the responsibility of the Commonwealth. This would happen if the adjustment bankrupts an operator and no other operator wants to acquire the acreage and wells. For such marginal wells and operators, it is likely that the bond adjustment simply changes when the transfer to the Commonwealth happens, not whether it happens. Moreover, with the adjustment the Commonwealth gains financial protection in cases where operators currently can afford the new bonds on existing wells but will eventually fall into financial distress and abandon their wells without plugging them.

It is also worth noting that if Pennsylvania adjusted bond amounts upward it would not be unique among major oil and gas producing states. In addition to North Dakota's bond amount increase referenced above, in 2019 the state increased bond amounts on injection wells from \$50,000 to \$100,000 and reduced the number of inactive wells that can be covered under a blanket bond.⁶⁰ In the same year, Alaska also increased its bond amounts considerably, and Mississippi introduced an annual fee on idle wells.⁶¹

Conclusion

Thanks to the Pennsylvania Department of Environmental Protection's orderly recording of its plugging activity and costs, much can be said about the well-plugging costs that the Commonwealth has incurred and is likely to incur moving forward. The law prescribing bond amounts appears to anticipate analysis of such data and its consideration by the Environmental Quality Board so that bond amounts can be adjusted to reflect the projected costs to the Commonwealth.

⁵⁸ Lange and Redlinger, Effects of stricter environmental regulations on resource development.

⁵⁹ Boomhower, Drilling Like There's No Tomorrow.

⁶⁰ Industrial Commission of the State of North Dakota, "Case No. 27828 Order No. 30278". https://www.dmr.nd.gov/oilgas/or30278.pdf

⁶¹ Peltz and Saunders, "How oil & gas states did (and did not) protect land and water in 2019".

BONDING REQUIREMENTS FOR OIL AND GAS WELLS

Based on analysis of the cost data, this report recommends for the 2021-2022 period a bond amount of \$25,000 per conventional well and \$70,000 per unconventional well. This adjustment—and subsequent reviews and adjustments by the EQB—will help protect residents and property owners in oil and gas producing areas who would otherwise be harmed or constrained by unplugged abandoned wells. It will also protect the Commonwealth and its taxpayers from shouldering the liabilities of private oil and gas operators that fall into financial distress. By adopting this report's recommendations, the EQB can therefore restore the financial responsibility of well plugging to well operators and remove it from the Commonwealth.

References

Alboiu, V. and Walker, T.R., 2019. Pollution, management, and mitigation of idle and orphaned oil and gas well in Alberta, Canada. *Environ Monitoring and Assessment*, 191(10).

Black, K.J., McCoy, S.J. and Weber, J.G., 2018. When externalities are taxed: The effects and incidence of Pennsylvania's impact fee on shale gas wells. *Journal of the Association of Environmental and Resource Economists*, *5*(1), pp.107-153.

Boomhower, J., 2019. Drilling Like There's No Tomorrow: Bankruptcy, Insurance, and Environmental Risk. *American Economic Review*, 109(2), pp. 391-426.

Davis, L.W., 2015. Policy Monitor—Bonding Requirements for US Natural Gas Producers. *Review of Environmental Economics and Policy*, *9*(1), pp.128-144.

Diversified Gas and Oil, 2020. Asset Retirement Supplement (30 June 2020). https://dlio3yog0oux5.cloudfront.net/_8e147196b5aaa77961e336892f97afb1/dgoc/db/562/4383/pdf/ DGO Asset Retirement Supplement 30 June 2020.pdf.

Dusseault, M.B., Jackson, R.E. and Macdonald, D., 2014. *Towards a road map for mitigating the rates and occurrences of long-term wellbore leakage*. Waterloo, ON, Canada: University of Waterloo.

Harleman, M., Weber, J.G. and Berkowitz, D., 2020. Environmental Hazards and Local Investment: A Half-Century of Evidence from Abandoned Oil and Gas Wells. *U.S. Association for Energy Economics Working Paper No. 20-470*.

Ho, J.S., Shih, J.S., Muehlenbachs, L.A., Munnings, C. and Krupnick, A.J., 2018. Managing environmental liability: an evaluation of bonding requirements for oil and gas wells in the United States. *Environmental Science & Technology*, *52*(7), pp.3908-3916.

Industrial Commission of the State of North Dakota, 2019. Case No. 27828 Order No. 30278. https://www.dmr.nd.gov/oilgas/or30278.pdf.

Kang, M., Kanno, C.M., Reid, M.C., Zhang, X., Mauzerall, D.L., Celia, M.A., Chen, Y. and Onstott, T.C., 2014. Direct measurements of methane emissions from abandoned oil and gas wells in Pennsylvania. *Proceedings of the National Academy of Sciences*, *111*(51), pp.18173-18177.

Kell, S., 2011. State Oil and Gas Agency Groundwater Investigations. Groundwater Protection Council. <u>www.gwpc.org/sites/default/files/State%20Oil%20%26%20Gas%20Agency%20Groundwater%20Investig</u><u>ations.pdf</u>.

Lange, I. and Redlinger, M., 2019. Effects of stricter environmental regulations on resource development. *Journal of Environmental Economics and Management*, *96*, pp.60-87.

Mitchell, A.L. and Casman, E.A., 2011. Economic incentives and regulatory framework for shale gas well site reclamation in Pennsylvania. *Environmental Science & Technology*, *45*(22), pp.9506-9514.

Nuvolone, D., Petri, D. and Voller, F., 2018. The effects of ozone on human health. *Environmental Science and Pollution Research*, *25*(9), pp.8074-8088.

Peltz, A. and Saunders, N., 2020. How oil & gas states did (and did not) protect land and water in 2019. *Environmental Defense Fund Blog*. <u>http://blogs.edf.org/energyexchange/2020/02/06/how-oil-gas-states-did-and-did-not-protect-land-and-water-in-2019/</u>.

Quinton, S., 2018. Why 'Orphan' oil and Gas Wells Are a Growing Problem for States. *Stateline*. <u>www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2018/07/09/why-orphan-oil-and-gas-wells-are-a-growing-problem-for-states</u>.

U.S. Department of Labor Occupational Safety and Health Administration. "Hydrogen Sulfide". Accessed 5 January 2021. <u>www.osha.gov/hydrogen-sulfide</u>.

U.S. Environmental Protection Agency, 2019. Technical Memorandum: Investigation of Abandoned Wells on Navajo Nation.

https://www.epa.gov/sites/production/files/2019-

03/documents/r9techmemo_navajoabandonedwells_march2019.pdf.

U.S. Environmental Protection Agency. "Understanding Global Warming Potentials." Accessed 5 January 2021. <u>www.epa.gov/ghgemissions/understanding-global-warming-potentials</u>.

U.S. Environmental Protection Agency, 2001. Drinking Water Standard for Arsenic. <u>nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=20001XXC.txt</u>.

Weber, J.G., N. McClure, and I. Simonides, in press. The Boom, the Bust, and the Cost of the Cleanup: Abandoned Oil and Gas Wells in Pennsylvania and Implications for Shale Gas Governance, in <u>Boom or</u> <u>Bust? Governance, Planning, and Economic Impacts of the US Shale Boom</u>, Eds. S. Deitrick and I. Murtazashvili. Cornell University Press. See also USAEE Working Paper No. 18-358 available at papers.ssrn.com/sol3/papers.cfm?abstract_id=3245620.

Woda, J., Wen, T., Lemon, J., Marcon, V., Keeports, C.M., Zelt, F., Steffy, L.Y. and Brantley, S.L., 2020. Methane concentrations in streams reveal gas leak discharges in regions of oil, gas, and coal development. *Science of The Total Environment*, p.140105.

Appendix A: Conventional Well Plugging Costs

I estimate the plugging cost for a conventional well in the 2021-2022 period by adjusting the sample average plugging cost for changes in costs over time. Let \bar{c} be the sample average cost per well over the 1989-2020 period, \bar{y} the year that the average well was plugged, and \hat{r}_r the estimated real annual growth rate in plugging cost, accounting for any changes in well characteristics over time. The estimated plugging cost for a conventional well in 2020 is then:

Estimated Cost (Con)
$$_{2020} = \bar{c} \cdot (1 + \hat{r}_r)^{(2020 - \bar{y})}$$
 (A1)

If \hat{r}_n is the estimated nominal growth rate in plugging costs (unadjusted for inflation), the projected plugging cost for a conventional well in 2021-2022⁶² (in 2021 dollars) is then:

Projected Cost (Con)
$$_{2021-22}$$
 = Estimated Cost (Con) $_{2020} \cdot (1 + \hat{r}_n)$ (A2)

I estimate the real growth rate in plugging costs using the following regression where the unit of analysis is the contract but the regression is weighted by contract size. The dependent variable is the natural log of plugging costs per foot.

$$Ln(Plugging \ Cost \ Per \ Foot_{it}) = \delta Year \ Plugged_{it} + X_{it}\gamma + \delta_c + \varepsilon_{it}$$
(A3)

The term δ_c is a county fixed effect based on the modal county of wells in contract *i* executed in year *t*. The county fixed effect makes for comparisons of plugging costs within the same county, thereby holding constant factors such as remoteness, terrain, and geology. This accounts for the possibility that plugging costs changed over time because the location of wells being plugged also changed.

The variable Year Plugged is the calendar year (e.g. 2005) when wells in contract *i* were plugged. The vector *X* includes other variables associated with the contract and its wells and that may affect plugging costs. In its most comprehensive form it includes the natural log of the number of wells in the contract (Contract Size), the shares of wells in the contract of various types (e.g. gas wells), a variable indicating an emergency contract, the share of wells in a coal region, and the average estimated year drilled of contract wells as indicated by the first year the well appears in state records. Their effect on plugging costs is captured by the vector of coefficients in γ . The term ε_{it} captures all variation in the log of plugging costs per foot not captured by the variables in the model.

Multiplying the estimated coefficient on the variable Year Plugged ($\hat{\delta}$) by 100 gives the percent change in per foot plugging costs for each 1-year increase in Year Plugged. Because plugging costs are already adjusted for inflation, this coefficient gives the real annual growth rate in plugging costs over the period holding constant all the other variables in the model. Put differently, $\hat{\delta} = \hat{r}_r$.

Table A1 shows the results from three regressions based on equation A3. The first column includes all the wells in the DEP plugging summary data with depth data, the second includes only wells with additional variables and the third uses this smaller sample and includes two additional control variables. The estimated growth rate—the coefficient on Year Plugged—changes little as the sample is restricted

⁶² I consider plugging costs over the 2021-2022 period to equal the cost estimated for the last day of 2021, which is what is given by the formula that applies the nominal annual growth rate to the estimated 2020 plugging cost, assuming that the 2020 cost estimate reflects costs on the last day of 2020.

and more variables are added. The main estimate is 3.2 percent with a 95 percent confidence interval of 2.6 percent to 3.7 percent.

	1	2	3
Year Plugged	0.031	0.031	0.032
	(0.002)	(0.003)	(0.003)
Ln(Contract Size)	-0.437	-0.433	-0.399
	(0.012)	(0.012)	(0.013)
Share Oil Wells	-1.116	-1.250	-1.212
	(0.672)	(0.901)	(0.695)
Share Gas Wells	-0.674	-0.803	-1.189
	(0.671)	(0.898)	(0.716)
Share Oil and Gas Wells	-0.944	-1.069	-1.413
	(0.672)	(0.902)	(0.706)
Emergency Contract	-1.064		
	(0.708)		
Share Wells in Coal Region			-0.683
			(0.175)
Estimated Year Drilled			0.011
			(0.001)
Control for County	Yes	Yes	Yes
Number of Contracts	226	211	211
Number of Wells	3,060	3,040	3,040
Adjusted R-Squared	0.51	0.50	0.64

Table A1. Plugging Costs Per Foot (Ln) and Contract and Well Characteristics

Notes: Robust standard errors are in parenthesis. The regression is based on contractlevel data but weighted by the number of wells per contract. The sample of contracts analyzed in columns 2 and 3 does not have any emergency contracts, which is why no results are reported for that variable.

As noted in the main text, the data depicted in Figure 1 are adjusted for changes in contract and well characteristics over time. This is done by excluding the variable Year Plugged from the regression in column 3 of Table A1, in which case the resulting regression error $\hat{\varepsilon}$ reflects variation in plugging costs holding constant factors other than time. Figure 1 then depicts $\hat{\varepsilon}$ on the vertical axis and Year Plugged on the horizontal axis.

Appendix B: Unconventional Well Plugging Costs

I estimate the cost of plugging an unconventional well by adjusting the sample average conventional cost (\bar{c}) for differences in the characteristics of the two well types. Let \bar{X}_{con} and \bar{X}_{un} be vectors of the characteristics of the average conventional and unconventional well and let $\hat{\beta}$ be the relationship between a one unit change in a variable in X on per well plugging costs. This adjustment for differences in average well characteristics, such as well depth, can be incorporated into equation (B1) to estimate the cost of plugging an unconventional well in 2020:

Estimated Cost
$$(Un)_{2020} = \bar{c} \cdot \left((\bar{X}_{un} - \bar{X}_{con}) \cdot \hat{\beta} \right) \cdot (1 + \hat{r}_r)^{(2020 - \bar{y})}$$
 (B1)

Similarly, the projected cost for 2021-2022 (in 2021 dollars) would be:

Projected Cost
$$(Un)_{2021-22} = Estimated Cost (Un)_{2020} \cdot (1 + \hat{r}_n)$$
 (B2)

The real and nominal growth rates (\hat{r}_r and \hat{r}_n) are the same as those used for conventional wells and described in Appendix A. I estimate the relationship between per well costs (at the contract level) and well characteristics, given by β , using the regression equation:

$$Plugging \ Cost \ Per \ Well_{it} = Z_{it}\beta + \delta_c + \epsilon_{it} \tag{B3}$$

where δ_c is a county fixed effect that accounts for any differences in average plugging costs across counties. In its most comprehensive form, the vector Z includes the average depth of wells in the contract, the contract size and the contract size squared (to capture declining economies of scale), the share of contract wells that are gas wells, a variable indicating an emergency contract, the share of wells in a coal region, and the average estimated year drilled of contract wells as indicated by the first year the well appears in state records. The term ϵ_{it} captures all variation in plugging costs per well not captured by the variables in the model.

Table B1 shows the results from two regressions based on equation B3. The unit of analysis is the contract, but the regression is weighted by contract size. Column 1 shows the results of a simple model that only includes depth, contract size, and the year plugged (and no county fixed effect). Column 2's results are based on a model with county fixed effects and the comprehensive version of Z. I use the $\hat{\beta}$ from this more comprehensive model when making the adjustment in equation (B1) because the comprehensive model should more reliably estimate the effects of well depth and type on plugging costs. These are the two characteristics incorporated into the adjustment because they most differ between sample wells and the typical unconventional well.

Based on the short model, an additional foot of depth adds \$5.00 to plugging costs. Adding more variables reduces the coefficient on average depth to \$1.90, but also shows that contracts with a greater share of natural gas wells have higher costs, suggesting that a contract consisting of all gas wells costs about \$21,000 more per well than a contract with no gas wells.

	1	2
Average Well Depth (Feet)	5.0	1.9
	(0.5)	(0.5)
Contract Size (Number of Wells)	-681.2	-270.4
	(34.1)	(26.3)
Contract Size Squared	3.1	1.2
	(0.2)	(0.1)
Year Plugged	335.2	278.2
	(132.9)	(105.4)
Share Gas Wells		21,376.1
		(3,545.7)
Share of Wells in Coal Regions		-5,852.3
		(13,524.1)
Estimated Year Drilled		102.0
		(43.9)
Control for County	No	Yes
Number of Contracts	226	211
Number of Wells	3,060	3,040
Adjusted R-Squared	0.27	0.27

Table B1. Contract and	Well Characteristics and	Plugging Costs Per We	
------------------------	--------------------------	------------------------------	--

Notes: Robust standard errors are in parenthesis. The regression is based on contract-level data but weighted by the number of wells per contract.

Appendix C: Data

The following contracts and wells were removed from the Pennsylvania Department of Environmental Protection's well plugging summary dataset, which left 3,099 wells:

- 1 contract that was in process and had no cost data (7 wells).
- 1 contract where it was noted that site restoration but not plugging occurred (1 well).
- 20 wells across various contracts where instead of a plugging date, it was noted: "not plugged," "not a well," "prev plugged," "stray gas," "unable to locate," "water," "gas drip," or "well not found." Because they were not plugged, these wells were ignored when calculating average values for each contract.

Mapping the DEP wells onto oil and gas pool outlines permitted approximating each well's depth. Some wells could not be mapped onto pools but where other wells in the same contract had depth data, I imputed missing depth data with the contract mean depth. After imputation, depth data were available for 3,060 of the 3,099 wells left after the above exclusions.

I created two additional variables from data not found in the DEP plugging summary dataset. These were an indicator for whether the well was in a coal region and the estimated year the well was drilled as indicated by the first year that the well was observed in state records. Data for both variables were obtained through the Department of Conservation and Natural Resources' EDWIN database. The database is a repository of oil and gas well data from multiple sources, including from various Department of Environmental Protection reports.

Attachment D

Well Bond Amounts by State

State	Program	Program		
Federal (Bureau of Land Management)	Any operator that seeks to drill wells on federal land must sign a lease to do so with the Bureau of Land Management (BLM). 43 C.F.R. Part 3100 describes the process of obtaining a lease from BLM to drill a well. Prior to commencing drilling on the leased land, the operator must submit a bond to BLM whose return is conditioned on the operator following all lease requirements, including plugging of the well and restoration of the land after production has ceased. 43 C.F.R. Subpart 3104 governs the bond requirements.			
	For multiple wells, an operator shall provide a. Not less than \$25,000 to cover all wells in b. Not less than \$150,000 to cover all wells	one of the following blanket bonds: any one state; nationwide, and		
	 BLM state offices have the authority to increase (or decrease) individual bond amoun as the office feels necessary, provided that the new bond amount does not exceed "the total of the estimated costs of plugging and reclamation, the amount of uncollected royalties due to the Service, plus the amount of monies owed to the lessor due to previous violations remaining outstanding." 43 C.F.R. § 3104.5. BLM has adopted a policy of reviewing bond amounts for all statewide and nationwide bonds every five years, and increasing or decreasing the bond amount based on a set formula (with some discretion to disregard the formula). Memorandum from the Assistant Dir., Energy, Minerals, and Realty Mgmt., Bureau of Land Mgmt., to all Field Officials (Nov. 15, 2018), https://www.blm.gov/policy/im-2019-014#_ftn7. 			
Alabama	The State Oil and Gas Board of Alabama is a regulatory agency that promotes protection and conservation of the environment. The board enforces the state rules and regulations through oversight of oil and gas drilling, operation, exploration, and production; Class II injection wells; and underground storage of gas in reservoirs in Alabama. The Oil and Gas Board of Alabama Administrative Code <u>400-1-101 thru 400-7-123</u> defines the regulations process for oil and gas permits. <u>Chapter 400-1-2</u> details the process of well permitting, and Section 400-1-203 explains the bond requirement.			
	Measured Depth (ft)	Amount of bond req'd		
	0 - 5,000	\$5,000		
	5,001 - 10,000	\$10,000		
	10,001 - 15,000	\$15,000		
	15,001 - 20,000	\$30,000		
	Greater than 20,000	\$50,000		
	The Board may, however, accept a blanket b	oond in the amount of one hundred thousand		

	dollars (\$100,000.00).		
State	Program		
Alaska	Alaska oil and gas operators that drill, produce, and maintain oil, gas, and geothermal wells must obtain a Permit to Drill from the Alaska Oil and Gas Conservation Commission (AOGCC). The Commission manages certain oil and gas operations in the state, whether it is federally owned, state owned, or privately owned. The permit covers operators of exploratory, stratigraphic test, development wells, injection, and other service wells related to oil, gas and geothermal activities. A part of the permit process includes obtaining a single well or blanket surety bond . Alaska Admin. Code tit. 20, § 25.025.		
	# Permitted Wells	Bond Amount	
	1 - 5 wells	\$400,000 per well	
	6-20 wells	\$2,000,000 plus \$250,000 per well	
	21 - 40 wells	\$6,000,000 blanket bond	
	41 - 100 wells	\$10,000,000	
	101 - 1,000 wells	\$20,000,000	
	Over 1,000 wells	\$30,000,000	
State	Program		
Arizona	The Arizona Department of Environmental Quality, Oil and Gas ConservationCommission is responsible for the issuing of permits and operator compliance with statelaws and regulations for oil and gas new well operations, re-entering an abandoned well,drilling, and production. The Department requires a performance bond before drilling ofnew wells, re-entering an abandoned well, or assuming the responsibility of an existingwell.Arizona Administrative Code (A.A.C.) <u>R12-7-103</u> For individual wells, an operator shall provide a \$10,000 bond for each well drilled to atotal depth of 10,000 feet or less or a \$20,000 bond for each well drilled deeper than10,000 feet, orFor multiple wells, an operator shall provide one of the following blanket bonds to cover		
	all wells: a. \$25,000 for 10 or fewer wells; b. \$50,000 for more than 10 but fewer than 50 wells; or c. \$250,000 for 50 or more wells.		

State	Program			
California	Oil and gas well operators in California are regulated by the Department of Conservation's (DOC) Division of Oil, Gas, & Geothermal Resources. The Division oversees the drilling, operation, maintenance, plugging and abandonment of oil, gas, and geothermal wells. Oil and gas operators in California must file individual or blanket bonds with the Department.			
	<u>CA PRC 3204</u>	<u>4</u>		
	Twenty-five	thousand dollars (\$25,000) for a	each well that is less than 10,000 feet deep.	
	Forty thousa	and dollars (\$40,000) for each we	ell that is 10,000 or more feet deep.	
State	Program			
Colorado	The Colorado Department of Natural Resources, State Land Board, Oil & Gas Conservation Commission (COGCC) is responsible for the issuing of permits and operator compliance with state laws and regulations for oil and gas well drilling, exploration, operation and plugging. The Commission requires a surety bond prior to the assignment or permit to drill new wells, deepening of wells, and the plugging of wells. <u>2 CO ADC 404-1</u> - 700 Series (Rule 706)			
Individual \$10,000 for wells less than 3,000 feet deep and \$20,000 for or more than 3,000 feet deep			00 feet deep and \$20,000 for wells equal to	
	Blanket	A \$60,000 blanket bond for les bond for more than 100 wells	s than 100 wells, or a \$100,000 blanket	
	The Commis Rule 702.a (ission may increase the required assurance under special circumstances, per (2 CCR 404-1:702(a))		
State	Program			
Florida	bridaThe State of Florida Department of Environmental Protection, Oil and Gas Program is the permitting authority for mining and minerals regulation programs. The oil and gas program details can be found in Chapter 377 of the Florida Statutes and Rules 62C-25 through 30 of the Florida Administrative Code. FS 377.22(f) gives the Department the authority to require bonds, and Rule 62C-26.002 details the requirement.Rule 62C-26.002, F.A.C. or Fla. Admin. Code r. 62C-26.002Security Required			

	0 - 9,000		\$50,000		
	9,001 or mo	pre	\$100,000		
	In lieu of fu may file wit the amount	rnishing a separate security for e th the Department a blanket bonc of \$1,000,000.00. Each blanket b	each particular well, an owner or operator I for multiple operations within the State in bond may cover up to ten wells.		
State	Program				
Georgia	In order to work on oil and gas wells in Georgia, operators need to obtain a permit from the state Department of Natural Resources. One of the main criteria that you have to fulfill to get a permit is to post a surety bond . It serves as a protection mechanism for the state that you will operate the oil and gas well drilling in accordance with state regulations.				
	Ga. Code An	n., § 12-4-47 (sets the maximum)		
	Ga Comp. R.	& Regs. 391-3-1304			
	Permit Dep	th	Amount of Bond		
	Less than 5	000 feet	\$20,000		
	5,000 - 10,000 feet 10,000 - 15,000 feet Over 15,000 feet		\$40,000		
			\$60,000		
			\$80,000		
	"[A] blanket bond in the amount of \$100,000 may be substituted The Director may require that the blanket bond not be applicable for any well left open after rig removal."				
State	Program				
Idaho	The Idaho Department of Lands, Oil & Gas Conservation Commission regulates drilling, explorations, and production of oil and gas wells. The Commission requires a surety bond before any drilling of new wells, plug back, or deepening of an existing well.				
	<u>IDAPA 20.0</u>	7.02.220.			
	Individual	Individual "[N]ot less than ten thousand dollars (\$10,000) plus one dollar (\$1) for each foot of planned well length"			
	Blanket	 \$50,000 (up to 10 wells \$100,000 (11 to 30 wells \$150,000 (over 30 wells) 	s) ls) s)		
State	Program				
Illinois	The Illinois Department of Natural Resources, Office of Oil and Gas Resource Management, regulates the permitting, drilling, operating, and plugging oil and gas production wells. The Department requires surety bonds or another form of security from oil and gas drillers to help protect Illinois' oil and gas resources, the environment, land, and water resources.				
----------	--	---	--	--	--
	62 Ill. Adm. Code	<u>240.1500</u> .			
	Individual	 \$1,500 for a well < 2000 ft \$3,000 for a well > 2000 ft 			
	Blanket	 \$25,000 for up to 25 wells \$50,000 for up to 50 wells \$100,000 for all wells 			
	Other	 \$10,000 before a permit is issued, authorizing a person to operate \$2,500 for each individual permit (or \$25,000 blanket bond) to be filed before a permit is issued to drill a test hole or monitoring of a well 			
State	Program				
Indiana	The Indiana Department of Natural Resources requires a permit for drilling, deepening, operating, or converting a well for oil and gas purposes. The Department requires a security from well operators to ensure compliance with respect to plugging of the well, filling in of all excavations, the removal of concrete bases, discarding machinery and materials, cutting off of the surface casing, and restoration of the surface as nearly as possible to its former condition prior to drilling. Indiana Code (IC) <u>14-37-6</u>				
	Individual	\$2,500			
	Blanket	\$45,000			
Iowa	The Iowa Department of Natural Resources oversees the administration of the state's laws and regulations governing oil, gas, and metallic mineral exploration and production. The Department requires a conformance bond from any operators in this field. Iowa Admin. Code <u>561-17.5(458A)</u>				
	Individual	\$15,000			
	Blanket	\$30,000			
State	Program				
Kansas	The Kansas Corporation Commission, Conservation Division regulates oil and gas				

	 production in the state, including exploration and production activities and intrastat storage. The Division requires a form of financial assurance before any drilling of wells, deepening, repairing, re-drilling, or plugging and abandoning of an existing v. K.S.A. 55-155, K.A.R. 82-3-120 \$.75 times the total aggregate depth (in feet) of all wells 					
	OR < 2,000 feet in - 1 to 5 - 6 to 22 - Over 2 > 2,000 feet in - 1 to 5 - 6 to 22 - 0 ver 2	a depth: wells \$7,500 5 wells \$15,000 25 wells \$30,000 a depth: wells \$15,000 5 wells \$30,000				
	- 6 to 25 wells \$30,000 - Over 25 wells \$45,000					
State	Program					
Kentucky	KRS 353.590 governs bond requirements in Kentucky.					
	Individual	Shallow Wells - \$2/foot Vertical Deep Wells - \$25,000 Horizontal Deep Wells - \$40,000				
	Blanket	Shallow Wells - $1 - 25$ Wells = $$20,000$ - $26 - 100 = $50,000$ - $101 - 500 = $200,000$ - $101 - 1000 = $300,000$ - $1001 - 1025 = $320,000$ - $1026 - 1100 = $350,000$ - $1101 - 1500 = $500,000$ - $1501 - 2000 = $600,000$ - $2001 - 2025 = $620,000$ - $2026 - 2100 = $650,000$ - $2101 - 2500 = $800,000$ - $2501 - 3000 = $9900,000$ - $3001 - 3025 = $920,000$ - $3026 - 3100 = $950,000$ - $3101 - 3500 = $1,100,000$ - $3501 - 4000 = $1,200,000$ - $4001 - 4025 = $1,220,000$ - $4101 - 4500 = $1,400,000$				

	 4501 - 5000 = \$1,500,000 Vertical Deep Wells \$200,000 for every ten wells Horizontal Deep Wells \$320,000 for every ten wells 						
State	Program						
Louisiana	The Louisiana Department of Natural Resources, Office of Conservation, regulates oil an gas production in the state, including exploration and production activities and intrastate gas storage. The Office requires a form of financial assurance before any new drilling of wells, deepening, operation, plugging and abandoning of an existing well. La. Admin Code. tit. 43, Pt XIX, § 104. Individual Well by Footage					rvation, regulates oil and activities and intrastate fore any new drilling of ing well.	
	$\leq 3000 \text{ ft}$	<u> </u>	$\frac{2}{2}$ ft	\$8 ft	\$12 ft	<u> </u>	
	3.001 - 10.0	000 ft \$	5 ft	\$8 ft	\$12 ft		
	>10000ft	\$	4 ft	\$8 ft	\$12 ft		
	Blanket Bon # Wells <10 11-99 >100	nd – Prior Land \$25,000 \$125,000 \$250,000	Coas \$250 \$1,25 \$2,50	tal ,000 50,000 00,000	Offshore \$500,000 \$2,500,000 \$5,000,000)	
	Blanket Bond – After August 12, 2016						
	# Wells I	Land	Coast	al	Offshore		
	<10 \$	\$50,000	\$250,	000	\$500,000		
	11-99 \$	\$250,000	\$1,25	0,000	\$2,500,00)	
	>100 \$	5500,000	\$2,50	0,000	\$5,000,000)	
State	Program						
Maryland	Applicants for a permit to drill a well must file a financial assurance with the Marylan Department of the Environment in order to receive their permit. Md. Code Ann., Env't 14-111 (West) and COMAR 26.19.01.06 set the requirements for bond amounts.					Ince with the Maryland Id. Code Ann., Env't § bond amounts.	
	Individual	I4-111 (west) and COMAR 26.19.01.06 set the requirements for bond amounts. Individual \$50,000 per well, but "not less than the most recent closure cost estimate provided by the permit holder" The amount, however, cannot exceed \$100,000 per well					t closure cost estimate lowever, cannot exceed

	Blanket \$500,000					
State	Program					
Michigan	The Michigan Department of Environmental Quality, Oil, Gas and Minerals Division is responsible for the issuing of permits and operator compliance with state laws and regulations for oil and gas well operations, plugging, deepening, converting, and drilling. The Department requires a conformance bond prior to the drilling of any new wells, deepening of wells, and the plugging of wells. <u>MCL 324.61525</u> and <u>Mich. Admin. Code R 324.212</u> set the bond requirements					
	Individual - - - -	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				
	Blanket (100 well max)- $< 2,000 \text{ ft deep - }\$100,000$ - $2,000 - 4,000 \text{ ft - }\$200,000$ - $> 4,000 \text{ ft deep - }\$250,000$					
State	Program					
Mississippi	The Mississippi Oil and Gas Board regulates oil and gas production in the state. The Board issues operator permits; collects and tracks inactive and active well data and maintains well field maps; conducts inspections for new wells, plugging and abandoning of wells; and provides a financial responsibility element in the event an operator fails to perform the duties to meet the state requirements. The Board requires a form of financial responsibility before new drilling of wells, operation, plugging and abandoning of an existing well.					
	26 Miss. Admin. Code Pt. (Formerly cited as MS AD	<u>2, R. 1.4</u> DC 26-2:1.4)				
	Individual Well					
	Depth in Feet Bond Required Zero to 10,000 ft \$20,000 10,001 to 16,000 ft \$30,000 16,001 or more ft \$60,000 Blanket Bond \$100,000					
	Number of WellsBorFach Well\$10	nd Required				
	Blanket Bond \$20	0,000				

State	Program	Program			
Missouri	The Missouri Department of Natural Resources, Oil and Gas Council regulates oil and production including drilling, deepening, plug-back, or recomplete well operations. The Department requires a form of financial assurance before the drilling of wells, deependent operation, plug-back, and recomplete of an existing well.				
	Well Depth	Bond Amount			
	0 - 500 ft	\$1,100			
	501 - 1,000 ft	\$2,200			
	1,001 - 2,000 ft	\$3,300			
	2,001 - 5,000 ft	\$4,400			
	5,000 ft	\$5,500 + \$2 for each additional foot			
	Blanket				
	Well Depth	Bond Amount			
	0 - 800 ft	\$22,000 for up to 40 wells			
	800 - 1,500 ft	\$25,000 for up to 10 wells			
	Wells with a depth greater than 1,500 ft must be bonded individually				
State	Program				
Montana	The Montana Board of Oil and Gas Conservation regulates oil and gas production including drilling, re-entering, well operations, deepening, plugging, and restoration. T Board requires a form of financial responsibility before the drilling of wells, deepenin operation, or re-entering and plugging of an existing well.				
	Mont.Admin.K. (AKivi) <u>50.22.1500</u>	Mont.Admin.R. (ARM) <u>36.22.1308</u>			
	Well Depth	Bond Requirement			
	< 2,000 ft	\$1,500			
	2,500 - 3,501 ft	\$5,000			
	> 3,501 ft	\$10,000			
1 ,	(<u> </u>	·			

	The Board has the option to increase surety bond amounts for an individual well from: \$1,500 to \$3,000; \$5,000 to \$10,000; \$10,000 to \$20,000				
	Blanket				
	\$50,000 - May be increased to \$100,000 at the discretion of the Board				
State	Program				
Nebraska	The Nebraska Oil and Gas Conservation Commission regulates oil and gas production including drilling, producing, well operations, re-entering, plugging, and land restoration. The Commission requires a form of financial responsibility before drilling of new wells, deepening, operation, or re-entering and plugging of an existing well.				
	Neb. Admin. 1	R. & Regs. Tit. 267, Ch. 3, § 00	4		
	Individual \$10,000				
Blanket \$100,000					
Nevada	The Nevada Commission of Mineral Resources, Division of Minerals regulates oil, gas and geothermal production or injection including re-drilling, deepening, drilling, abandoning, and production of minerals at well sites. The Division requires a form of financial responsibility in order to obtain a permit for oil, gas, or geothermal drilling. <u>NAC 522.230</u>				
	Individual		\$10,000		
	Blanket		\$50,000		
State	Program				
New Mexico	The New Mexico Energy, Minerals, and Natural Resources Department, Oil Conservation Division requires a surety bond prior to the drilling of new wells, deepening of wells, and the plugging of wells.				
	<u>19.15.8.9 NM</u>	AC			
	Individual	\$25,000 + \$2/ft			
	Blanket	1-10 wells - \$50,000 11-50 wells - \$75,000 51-100 wells - \$125,000 100+ wells - \$250,000			

State	Program				
New York	The New York Department of Envir Resources is responsible for the issu and regulations for oil and gas well of converting, drilling, and surface rest restoration bond prior to the drilling and the plugging of wells. 6 CRR-NY <u>551.4</u> ; <u>551.5</u> ; <u>551.6</u>	bartment of Environmental Conservation, Division of Mineral hisible for the issuing of permits and operator compliance of state laws oil and gas well operations and solution mining, plugging, deepening, , and surface restoration. The Division requires a plugging and surface for to the drilling of any new wells, deepening of wells, and converting wells. 551.5; 551.6			
	< 2,500 ft deep - 1 - 25 V - 26 - 50 wells, t - 51 - 10 wells, t - 100 + v 100 we	Wells = $$2,500$ per well, not exceeding $$25,000$ = $$25,000$, plus $$2,500$ per well in excess of 25 tot exceeding $$40,000$ D = \$40,000, plus $$2,500$ per well in excess of 50 tot exceeding $$70,000$; or wells = $$70,000$, plus $$2,500$ per well in excess of lls, not exceeding $$100,000$			
	2,500 - 6,000 ft - 1 - 25 V - 26 - 50 wells, r - 51 - 10 wells, r - 100 + v 100 we	Wells = $$5,000$ per well, not exceeding $$40,000$ = $$40,000$, plus $$5,000$ per well in excess of 25 not exceeding $$60,000$ D = $$60,000$, plus $$5,000$ per well in excess of 50 not exceeding $$100,000$; or wells = $$100,000$, plus $$5,000$ per well in excess of lls, not exceeding $$150,000$			
	> 6,000 ft - The Di "based abando - Or a bl	vision is empowered to set an amount for each well upon the anticipated costs of plugging and ning that well" up to \$250,000 anket bond of \$2,000,000			
State	Program				
North Carolina	The North Carolina Department of Environmental Quality's Oil and Gas Commission is responsible for adopting rules on oil and gas exploration in North Carolina. The Commission requires financial assurance to be filed with the state prior to any drilling operation.				
	N.C.G.S.A. § 113-378 and <u>15A NC</u>	AC 05H.1402			
	Plugging & Abandonment Bond	\$5,000 + \$1/ft			
	Environmental Damage Bond	\$1,000,000, but the Commission may set a higher bond amount if it determines the well would be cited in an "environmentally sensitive area."			

	The bonds may be aggregated.				
State	Program				
North Dakota	The North Dakota Industrial Commission, Department of Natural Resources, Oil and Gas Division regulates drilling, exploration, and production of oil and gas wells. It is also responsible for the issuing of permits and operator compliance, well completion, drilling, and production. The Division requires a form of security before any drilling of new wells, plugging, or deepening of an existing well. <u>North Dakota Administrative Code 43-02-03-15.2</u>				
	Individual	ual $$50,000$, but if < 2,000 ft, may be approved with a smaller bond			
	\$100,000 for wells used for "commercial injection operations"				
	Blanket	\$100,000, so long as it meets certain requirements			
State	Program				
Ohio	The Ohio Division of Oil and Gas Resources Management is responsible for the issuing of permits and operator compliance of state laws and regulations for oil and gas well drilling, operation, exploration, and plugging. The Division requires a surety bond prior to the drilling of any new wells, deepening of wells, and the plugging of wells. <u>OAC 1501:9-1-03</u>				
	Individual		\$5,000		
	Blanket		\$15,000		
Oklahoma	The Oklahoma Corporation Commission, Oil & Gas Conservation Division regulates oil and gas drilling, re-drilling, deepening, abandoning, and production at well sites, commercial pits, seismic operations, and commercial soil farming. The Division requires a form of financial security in order to obtain a permit for oil or gas drilling, deepening, re- entering, plugging, and abandoning of wells.				
	Okla. Admin. Code 165:10-1-12				
	"An operator may file a blanket surety bond in the principal amount of \$25,000.00 in U.S. dollars as surety. In the alternative, the operator may file a surety bond of a lesser amount but that is sufficient to cover the total estimated cost of properly plugging and abandoning each and every well"				
State	Program				
Oregon	The Oregon Dep	artment of Geology and Min	eral Industries oversees mining operations		

	within the state. The Department requires every person who engages in the drilling, redrilling, or reworking of any well to file a bond prior to the approval of any drilling application.			
	<u>OAR 632-010-0205</u>			
	< 10,000 feet deep	\$25,000		
	> 10,000 feet deep	\$50,000		
	Blanket	\$150,000		
State	Program			
South Carolina	The South Carolina Water Resources Commission regulates bond amounts in the state. Before any person shall be granted a well drilling permit, such person shall file with the Commission a reasonable performance bond . <u>S.C. Code of Regulations R. 121-8.6</u>			
	Up to 10,000 ft	\$20,000		
	10,000 - 15,000 ft	\$30,000		
	15,000 - 20,000 ft	\$40,000		
	20,000+ ft	\$50,000		
	Submerged Land	\$100,000		
	Blanket	\$100,000		
South Dakota	The South Dakota Department of Environment and Natural Resources, Minerals & Mining Program Board requires that a performance surety bond be obtained for wells drilled or permitted after July 1, 2013. <u>SDCL § 45-9-15</u>			
	Individual	\$50,000		
	Blanket	\$100,000		
State	Program			
Tennessee	The Tennessee Department of Environment and Conservation, Division of Water Resources, Oil and Gas Program is responsible for the issuing of permits and operator compliance with state rules and regulations for oil and gas well drilling, re-drilling, operations, plugging, and abandonment. The Program requires a surety bond for the plugging of each well and maintaining and restoring well sites.			

	Tenn. Comp. R. & Regs. 0400-52-0101 and .02			
	Individual			
	Up to 2,500 ft	\$2,000		
	2,500 - 5,000 ft	\$3,000		
	Over 5,000 ft	\$3,000 + \$1/ft over		
	 Blanket \$20,000 up to 10 wells with a maximum depth of 5,000 feet \$30,000 for up to 10 wells with a maximum depth of 10,000 feet If well depth exceeds 10,000 feet, the well is not eligible to be included in a blanket bond. 			
State	Program			
Texas	The Texas Oil and Gas Railroad Commission is responsible for the permitting, compliance, enforcement, and environmental cleanup programs for the state. Operators or wells are required to obtain either a bond or other form of financial assurance or financial guarantee depending on the number of wells the operator has. 16 TAC § 3.78(a)(4) and (g) Individual \$2 / ft Blanket 10 or fewer wells \$25,000 11 - 99 wells \$50,000 100 # \$100,000			
State	Program			
Utah	The Utah Department of Natural Resources, Division of Oil, Gas, and Mining is responsible for issuing permits and ensuring operator compliance with state rules and regulations for oil and gas well drilling, re-drilling, operations, plugging and abandonment, deepening, and repairing. The Division requires a surety bond for the plugging of each dry or abandoned well, repairs to wells, and maintaining and restoring well sites. <u>U.A.C. R649-3-1</u>			

	Individual				
	Up to 1,000	ft	\$1,500		
	1,000 - 3,00	00 ft	\$15,000		
	3,000 - 10,0	000 ft	\$30,000		
	More than 1	0,000 ft	\$60,000		
	Blanket				
	Less than 1,	,000 ft	\$15,000		
	More than 1	,000 ft	\$120,000		
State	Program				
Virginia	Program The Commonwealth of Virginia, Department of Mines, Minerals, and Energy, Division of Gas and Oil is responsible for the issuing of permits and operator compliance with state rules and regulations for oil and gas well drilling, operations, plugging, and abandonmen The Division requires a surety bond for the plugging of each well and maintaining and restoration of well sites. Senate Bill 1453, § 45.2-1633, passed in March 2021, goes into effect on October 10, 20 and repeals and replaces VA Code Ann. § 45.1-361.31 Individual \$10,000/each well + \$2,000/acre of disturbed land The statute is ambiguous on whether the Department can increase this bond amount if it believes the cost of plugging the well is higher; the Department unambiguously has this authority in the Tidewater region of Virginia Blanket - Up to 10 wells - \$25,000 - 11 wells to 50 wells - \$100,000 - 200 or more wells - \$200,000 The Department may choose not to allow an operator to submit a blanket bond and require individual bonds				
State	Program				
Washington	The Washington Department of Natural Resources, Division of Geology and Earth Resources requires the filing of a bond with the state before drilling.				
	<u>WAC 344-12</u>	<u>WAC 344-12-060</u>			

	In dissi da al	No. 4 1	1.	
	Individual	Not less than \$50,000 ea	ach	
	Blanket	Not less than \$250,000		
State	Program			
West Virginia	The West Virginia Department of Environmental Protection, Office of Oil and Gas is responsible for the issuing of permits and operator compliance with state laws and regulations for oil and gas well operations, exploration, drilling, storage, and production. The Office requires a performance bond prior to the drilling of any new wells, deepening of wells, and the plugging of wells. <u>W. Va. Code, § 22-6-26</u>			
	Individual		\$5,000	
	Blanket		\$50,000	
State	Program			
Wyoming	The Wyoming Oil and Gas Conservation Commission, Office of State Oil and Gas regulates drilling, re-drilling, repairing, operating, deepening, plugging, and abandoning of wells. It is also responsible for the issuing of permits. The agency requires a bond to ensure the plugging of wells. <u>WY Rules and Regulations 055.0001.3 § 4(b)</u>			
	Individual	Individual \$10/foot		
	Blanket		\$100,000	

Attachment E

Gillian Graber Affidavit

AFFIDAVIT OF GILLIAN GRABER

Pursuant to 18 Pa. Cons. Stat. § 4904, I, Gillian Graber, state as follows:

1. I have personal knowledge of the statements contained herein and could competently testify to them if called as a witness.

2. I live with my family in Trafford Borough in Westmoreland County, Pennsylvania. We have lived here for eight years. We moved here with the intention of raising our children in a healthy environment and neighborhood.

3. We chose Trafford because it is still a close drive to Pittsburgh but is more of a residential suburban community with great schools, parks, a quaint ice cream shop on the corner, and a semi-private road where my kids could learn how to ride their bikes safely. This working-class community fits our needs perfectly as it is also close to my in-laws, who are our source of child care. When looking for a home we intentionally steered clear of other locations like Plum Borough in Allegheny County because it was upwind from the Cheswick Power Plant. Having previously lived on a busy road, we were concerned about the air our children breathe and wanted to ensure their access to clean air.

4. I am a member of the Sierra Club. I support the Sierra Club's mission and goals to encourage the public to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystem and resources; to educate and enlist humanity to protect and restore the quality of the natural environment; and to use all lawful means to carry out these objectives.

5. I also currently serve as the Executive Director of Protect PT (Penn-Trafford). I founded the organization, along with other Penn-Trafford community members, in December

2014 to fight a fracking well pad that was proposed in the community less than a half-mile from my home. My husband and I were particularly concerned about air quality living near unconventional gas development. The more we learned about fracking, and the health impacts and detriment to our community that it poses, the more we wanted to fight this proposal for a well pad near our home. Additionally, this well pad was the closest we had ever seen to such a densely populated suburban neighborhood like ours. This means that hundreds of children would be exposed to this pollution in addition to our children. As a mother and home owner, I worried that this idyllic neighborhood would soon become an industrial zone. While the operator is still attempting to move the project forward, until now we have successfully stopped that well pad from being constructed.

6. However, there are hundreds of conventional wells scattered across my community that were drilled before I moved to Trafford. This includes both actively producing wells and wells that are legally abandoned, but are not plugged. Based on a Sierra Club analysis I saw, there are three wells within two miles of my home that the Pennsylvania Department of Environmental Protection ("DEP") has listed as abandoned but not plugged, and nineteen wells within five miles of my home that DEP has listed as abandoned but not plugged. In addition, there are two wells within two miles of my home that are listed as active but that have not produced any oil or gas for at least a year, which means they are legally abandoned and must be plugged, and twenty-one of these wells within five miles of my home. This mean that in total, there are forty-six wells that are not plugged, but should be, within a five-mile radius of our home. I believe, and am very concerned that, there are dozens to even hundreds of additional abandoned wells that DEP does not even have records for within five miles of my home.

7. In addition, based on a Sierra Club analysis I have reviewed, I am aware that there are five wells within five miles of the Protect PT office that DEP has listed as abandoned but not plugged; one well within two miles of my office that is listed as active but has not produced for over three years; and six such wells within five miles of my office. Additional orphan wells that have not been identified by DEP are likely located within five miles of my office, based upon neighbor accounts.

8. Because there are so many conventional wells in my community, I have no doubt that there are also numerous abandoned and active wells near areas where I recreate and spend time with friends and family. In fact, there are so many abandoned wells in the community that with every new proposed well pad, the operators must survey the neighbors about what abandoned wells are on their property. In one case, while taking a walk two Protect PT members found that at the location of a proposed well pad there was at least one abandoned well that the operator had not identified in their survey.

9. I did not realize the extent to which these oil and gas wells are impacting the health of my family until we participated in a study with Environmental Health News ("EHN") in 2019. Because we do not live extremely close to any fracked wells, my family was supposed to be part of the control group that did not have contact with dangerous fracking chemicals. EHN analyzed the pollutants we had been exposed to against people who live closer to fracked wells. However, our reports showed alarming amount of dangerous pollutants in our bodies. My daughter, particularly, had a very high rate of dangerous pollutants in her body.

10. We were tested three times, and each time every member of my family had levels of mandelic acid (a metabolite of ethylbenzene and styrene) detected in our urine that exceeded

the 95th percentile for the general U.S. population. Ethylbenzene and styrene can cause liver, kidney, or circulatory system problems and increase the risk of cancer. We also all had levels of hippuric acid (a metabolite of toluene and cinnamaldehyde), 2-Methylhippuric acid (a metabolite of xylene), phenylglyoxylic acid (a metabolite of ethylbenzene and styrene), and trans, trans-muconic acid (a metabolite of benzene) above the U.S. median. We often far exceeded the U.S. median for these chemicals. In several instances we even exceeded the 95th percentile for these chemicals in at least one family members' urine sample. These chemicals can cause health effects such as nervous system damage, kidney damage, nausea, circulatory system problems, anemia, and an increased risk of cancer.

11. Additionally, as part of this study we wore air sampling monitors for periods of six to eight hours. We wore these monitors on two separate occasions. The air monitor results indicated that we were all exposed to benzene, ethylbenzene, and naphthalene levels that are above the risk limit set by the California Office of Environmental Health Hazard Assessment; a risk limit that indicates an increased cancer risk of at least one in a million. At high enough exposures, these chemicals can also cause conditions such as anemia, liver and kidney problems, neurological damage, and eye damage.

12. Water from our hose and bathtub were also tested. Only five of the 40 chemicals tested have regulatory limits, and our water samples did not exceed those regulatory limits. However, our water samples did exceed the median among the other nineteen samples analyzed in the study for several pollutants, including heptane, 1,2,3-trimethylbenzene, and naphthalene. While we use reverse osmosis to purify our drinking water, we do not have that system set up for

our showers or our hose, and it is unclear what the consequences will be from our higher exposure to these chemicals.

13. I cannot know for certain how these pollutants got in my body, especially since the oil and gas industry refuses to give us data on the kinds of chemicals they use in their operations. However, I believe a lot of this pollution comes from the conventional wells, both abandoned and actively producing, all around us. Many of these wells are very old and have limited reserves left, so the owners have fracked the wells to stimulate production. It is known that the pollutants that were found in our bodies are carcinogenic and are associated with oil and gas drilling. I believe specifically that the use of the dangerous chemicals employed in fracking has resulted in harmful pollutants migrating into our water supply and into the air.

14. The operators of these wells also store the condensate from drilling in condensate tanks that vent pollutants into the atmosphere, and these tanks are often not properly maintained. Recently, the DEP charged an operator near my office with multiple violations because they kept a condensate tank on the well pad for years and did not maintain it. As a result, the condensate overflowed and spilled into a nearby stream.

15. I believe that my family and I are also being exposed to methane, benzene, toluene, and other pollutants as a result of leaks from both active and abandoned wells. Methane can turn into ozone, which can damage the heart and lungs; benzene can cause anemia, increase cancer risk, and can have significant harmful developmental effects in children; and toluene can cause nervous system or liver problems and increase cancer risk. We worry about living around these wells that have constant, low, ambient-level leaks because we just do not know if the leaks are infiltrating our air or water.

16. I am incredibly worried about how the pollution my family and I have been exposed to will impact our long-term health. My fear is that I'm going to get cancer and that my kids are going to get cancer. It is shocking how often we hear about kids and adults that have been diagnosed with cancer in our area. It is the same types of cancer too—types of leukemias, Ewing's sarcomas, and osteosarcomas—that are usually very rare. For example, one of my friend's grandmothers died several years ago from a very rare form of leukemia, and research shows that one of the ways that form of leukemia can manifest is from exposure to fracking chemicals. My friend is certain that this is how her grandmother developed leukemia, and because of it they became interested in supporting our work at Protect PT. Another friend that knows the kind of work I do a has contacted me on two separate occasions to tell me that someone they grew up with in this area was either diagnosed with cancer or that their child was. Last year, he even sent me a picture of a fundraising poster for a third grader in Norwin School District that was diagnosed with cancer.

17. It is hard to overstate the fear you are forced to live with when you and your family are exposed to these kinds of chemicals every day that you know are incredibly dangerous, and that you see are already sickening your friends and neighbors. It takes an incredible mental toll. No one should have to fear exposing their children to an increased risk of cancer just because of the place they choose to live. No mother should have to go through this, but so many are and no one is doing anything about it.

18. It's not just our health that these wells impact. They also impact our ability to enjoy the natural environment. Now that I know what the big, green condensate tanks are and what negative consequences rusty well pipes can cause, it worries me every time I see them,

which is all the time; they are all over the place. There is a well in a stream next to a nearby park, for example. I cannot walk in the woods near my home without seeing a gas well. I often wonder, "Am I being exposed just by walking along this path?" I get out in nature to avoid pollution, but that's where many of these wells are.

19. I believe if abandoned wells are properly plugged, some portion-and perhaps a very large portion-of the pollution that I am currently exposed to would be mitigated. The abandoned wells that are currently spewing chemicals into the groundwater and air would stop emitting pollutants, including the dangerous fracking chemicals with which many of these wells have been stimulated. The operator or state also must remediate the well pad when they close an abandoned well, which includes removing the condensate tanks and other polluting aspects of the drilling operation. This would greatly reduce the pollution my family and I are exposed to and reduce our risk of long-term disease. For this reason, I believe properly incentivizing and funding the closure of abandoned wells would reduce the harms I have described throughout this affidavit. It also would prevent me, and other taxpayers, from paying for the clean-up because it would make it less likely that operators leave plugging responsibilities to the state. I do not want these abandoned wells in my area polluting my air and water, and I absolutely do not want to have to pay for the cleanup. I do not want to see what happened with the mining industry, which caused hundreds of red creek beds from mine drainage that will never be remediated, happen again.

The foregoing is true and correct to the best of my knowledge, information and belief. I understand that any false statements made are subject to the penalties of 18 Pa. Cons. Stat. § 4904 relating to unsworn falsification to authorities.

Executed on this 9th day of September 2021.

Udles.

Gillian Graber

Attachment F

Ann Lecuyer Affidavit

AFFIDAVIT OF ANN LECUYER

Pursuant to 18 Pa. Cons. Stat. § 4904, I, Ann Lecuyer, state as follows:

1. I have personal knowledge of the statements contained herein and could competently testify to them if called as a witness.

2. I live with my family—my husband and four children—in Trafford Borough in Westmoreland County, Pennsylvania. We have lived here for five years. I grew up in Plum Borough, about ten miles away from my current home.

3. We decided to move to Trafford because it has a small school, the neighborhood has sidewalks, and there are a lot of playgrounds, so it's nice for young children. It seemed like a wonderful, idyllic community.

4. I am a member of the Sierra Club. I also was on the staff of the organization Protect Penn-Trafford (Protect PT) from 2017 to 2020.

5. I met Gillian Graber, the Executive Director of Protect PT, through my kids' school. My kids and her children went to the same school. I was very worried about a proposed fracking well in our community that Protect PT was fighting, so I ended up getting hired part-time to work with the organization. I eventually became the Project Outreach Coordinator, planning the programming, writing grants, and doing anything else the organization needed.

6. Today I work as a birth doula, coaching moms through their pregnancy. I have been doing this work in some capacity for the past twenty-two years.

7. My community is covered in oil and gas wells—there are numerous abandoned and active conventional wells near my home. Based on a Sierra Club analysis I have seen, there are four wells within a three-mile radius of my home that the Pennsylvania Department of Environmental Protection ("DEP") has listed as abandoned but not plugged, and sixteen such wells within five miles of my home. In addition, there are ten wells within a three-mile radius of my home that are listed as active but that have not produced any oil or gas for at least a year (which means they are legally abandoned and must be plugged), and twenty-two such wells within five miles of my home. When I researched the issue in 2019, I learned that there are scores of wells listed as active within five miles of my home and over fifty active wells within a mile of my home--many that have not been inspected in the last ten years. Given how many abandoned wells there are across the state that DEP does not have records for and how many abandoned and active wells there are in my area, I believe there are likely hundreds of additional abandoned wells within five miles of my home.

8. In 2019, I participated in a study run by Environmental Health News ("EHN") that was intended to examine the health impacts of oil and gas drilling in the region. The results showed that all three times we were tested, every member of my family had levels of mandelic acid (which is a metabolite of ethylbenzene and styrene) detected in our urine that exceeded the ninety-fifth percentile for the general U.S. population. Eighty-seven percent of our family's samples also exceeded the ninety-fifth percentile for phenylglyoxylic acid (a metabolite of ethylbenzene and styrene); and more than half of our samples exceeded the ninety-fifth percentile for trans, trans-muconic acid (a metabolite of benzene). These chemicals can cause health effects such as liver, kidney, and circulatory system problems; anemia; and an increased risk of cancer. We also all had levels of several additional pollutants, such as hippuric acid (a metabolite of toluene and cinnamaldehyde) that exceeded the U.S. median.

9. As part of the study my family also wore air sampling monitors for several hours two separate times. Nine out of ten of those air monitor results showed that we were exposed to levels of benzene, ethylbenzene, and naphthalene that increased our risk of cancer by at least one in a million. This is based on a benchmark set by the California Office of Environmental Health Hazard Assessment, assuming that the person is consistently exposed to this level of a chemical over the course of their lifetime. These chemicals, at high enough exposures, can also cause (among other things) anemia, liver and kidney problems, and neurological damage.

10. I always wondered how living next to so many wells was impacting my family's health. Finding out just how many toxic chemicals we had in our bodies was extremely stressful. I am concerned these pollutants will increase our risk of cancer or some other dangerous disease. I have considered moving to protect myself and my family from the pollution we are being exposed to living in this area. But I don't know where we would go. My family is here in Pennsylvania and it feels like much of the state is dealing with the same problem our community is. And this is a problem in a lot of other areas in the country too. So, I've stayed put. But I'm always wondering in the back of my mind about what pollutants we are being exposed to that we cannot see and how I can protect my kids from that exposure. Now, every time I see a well, it is stressful for me because it makes me think about the air pollution I'm exposing myself and my family to. And I see wells all the time—pretty much every time I leave my house. To be exposed to this level of air pollution every day, both at home and, for my kids, at school, is very dangerous.

11. Since moving to Trafford, I have also noticed that my asthma has gotten much worse. I have always had asthma, but it was never this severe. I had to go to the emergency room

by ambulance once in November of 2018 because of an asthma attack, and that had never happened before. My doctor has since prescribed me additional maintenance medication for my asthma that has made the situation better, but I still have more problems with my asthma now than I did before moving to Trafford. Having to go to the emergency room because of difficulty breathing was very scary, and it is frustrating to have to deal with additional difficulties with my asthma on a regular basis.

12. We live in a valley between two hills, and I believe that this traps air pollution in and makes it worse. I am concerned that whatever pollutants are coming up from these wells are sitting in the air and we are breathing it in, increasing our cancer risks and exacerbating my asthma. I don't know how else these dangerous pollutants could have entered our body but from the oil and gas wells. The wells are all around us and the pollutants found in our body are known to be emitted by oil and gas wells.

13. As a birth doula I think all the time about how to ensure healthy births. I have seen the literature on the especially large impact that pollution from oil and gas wells can have on prenatal development. It can cause preterm birth, low birth weight and heart complications, among other problems. I am concerned for the pregnant moms that have to deal with this and for the health of their children.

14. After I got the results from the EHN study, I researched the wells around me to see if I could find any evidence of problems that could have caused the pollution my family and I experienced. I looked at the inspection dates and production reports for every well within a few miles of my house (I do not remember the exact distance). I found out there were numerous wells that no one had inspected in a long time, and several that also had no production reports

associated with them so, to my understanding, were legally required to be plugged. I called DEP and told them about what I had found. They told me they would look into it and get back to me. They never got back to me, and I had to call two or three more times until they finally told me that they had sent an inspector out to a few of the wells I identified and the inspector had found that the wells were fine and were not leaking. They did not say anything about the wells that were not producing and were supposed to be plugged. In my opinion, DEP just does not have the resources to properly enforce the laws regulating oil and gas wells and their plugging.

15. I believe that plugging abandoned oil and gas wells will reduce the pollution my family and I are exposed to. It is known that unplugged abandoned wells leak, and plugging them would stop this leakage. This should lower the health risks my family and I face living next to these abandoned wells. Because of my observations of DEP's inability to ensure operators plug wells, I believe the best way to ensure the abandoned wells in my community are plugged is a higher bond amount that would incentivize operators to plug their abandoned wells themselves. I believe ensuring abandoned wells are plugged should be a top priority for the state. The foregoing is true and correct to the best of my knowledge, information and belief. I understand that any false statements made are subject to the penalties of 18 Pa. Cons. Stat. § 4904 relating to unsworn falsification to authorities.

Executed on this 13th day of September 2021

Ann Zeluger

Ann Lecuyer

Attachment G

Legacy Well Issues

(Office of Oil and Gas Management, Pennsylvania Department of Environmental Protection)





Oil and Gas Management

Legacy Well Issues



Air Quality Technical Advisory Committee December 12, 2019





Discussion Outline

- DEP Well Plugging
 Program
- Well Plugging Funding and Financial Liability Estimates
- Plugging Projects
- Plugging Program Initiatives
- Path Forward





"Legacy Well"

Any previously undiscovered, unregistered or unpermitted historical well. The status may be active, shut-in, abandoned, or plugged.



Source: State Museum of Pennsylvania pennsylvania pennsylvania pennsylvania pennsylvania pennsylvania pennsylvania pennsylvania

 Regulatory History of Well Plugging
 1859 – First commercial well drilled, "Drake well", Titusville, PA
 1878 – Wells first required to be plugged with wood and sediment
 1881 – Plugging requirements updated: Fill well with sand or rock sediment and wooden plugs above third producing sand
 1921 – Plugging requirements updated Fill with sand or rock sediment and each producing strata plugged with
wood plug
 Requires venting of wells through coal layers
 Allows for casing to be pulled with tubing and packer in place
 1952 – API standards for cement and well plugging published
 1956 – Well permitting begins; modern plugging requirements
 1984 – Modern environmental plugging requirements
 1989 – First well plugged in DEP plugging program
DEPARTMENT OF ENVIRONMENTA PROTECTION

Regulatory History of Well Plugging

42. Junior V. 2. 00' 24 GENERAL LAWS

PASSED BY THE

LEGISLATURE

OF THE

STATE OF PENNSYLVANIA,

DUBING THE

SESSION OF 1881.

BY AUTHORITY.

No. 101.

AN ACT

Regulating the mode of plugging abandoned oil wells, and providing a penalty for the violation thereof.

SECTION 1. Be it enacted, d.c., That whenever any well Abandoned of wells to be a section of the purpose of exploring for plugged. shall have been put down for the purpose of exploring for end of the casing shall have rested, which plug shall be at least three feet in length, tapering in form and to be of the same diameter at the distance of eighteen inches from the and producing oil, upon abandoning or ceasing to operate cluding all fresh water from the oil-bearing rock and before plug at least two feet in length, equal in diameter to the smaller end as the diameter of the well below the point at drawing the casing, till up the well with sand or rock sedisand or oil-bearing rock, and drive a round, seasoned, wooden diameter of the well below the casing, to a point at least plug into the well at the point just below where the lower shall fill in on top of same with sand or rock sediment to the the same, the owner or operator shall, for the purpose of exment to the depth of at least twenty feet above the third ive feet below the bottom of the casing, and, immediately after the drawing of the casing, shall drive a round wooden which it is to be driven; after it has been properly driven depth of at least five feet.









	Current DEP Plugging Program
	. Abandoned/Orphan well is identified
2.	. Field inspection performed by OGI: wells are
	assigned score based on environmental/health and safety concerns now including methane emissions
ŝ	. Wells are selected for plugging (high-risk focus)
4	. Contracts are generated/bid out
<u></u> .	. Winning bidder plugs wells
9.	. Wells are inspected by OGI during plugging operations. and before contract is closed out
Ζ.	. Wells re-inspected 1 year post-plugging
	DEPARTMENT OF ENVIRONMENTAL PROTECTION


			e) 10	4 25 10 5 10 10 55 10 10 10 10 10 10 10 10 10 10 10 10 10	4 55 10 10 10 10 10 10 10 10 10 10 10 10 10	22 22 23 23 23 23 23 23 23 23 23 23 23 2	و ع دو الع م م م م م	μ	ennsylvar
DEP OFFICE OF OIL AND GAS MANAGEMENT WELL SCORING SHEET	o: GPS Latitude: Scoring Date e: GPS Longitude: Quad Section: - i# DEP Inspector: Quad Name: - b: District Office: - Well Classification: - b: Well Type: - Well Classification: -	eceptors Choose Up To 5 Gas in occupied structure with similar isotopic signature or believed to be associated with well* Olibrine in occupied structure believed to be associated with well* Soil gas within 200 feet of structure believed to be associated with well Gas in water supply	al Receptors Choose Up to 2 Liquids (oll/brine) to stream or wetland Oll/brine seep (discharge not from wellbore)	Hazards Choose Up to 4 Any ambient H ₂ S detection Any ambient LEL readings ≥ 10% Sustained ambient LEL <10% Unstable equipment, open pits, E&S issues/washouts Evidence of historical liquid spills not associated with well integrity breach	Grity Choose Up to 4 Gas present outside surface casing/present in stream or liquid flow to surface Measurable annular flow of gas Veilhead pressure or solver da Severe corrosion (pitting) on well component that possibly contains pressure or fluids	Ing Status Choose Up To 1 Well within active underground mine (sealed or undergoing mining i.e., longwall district) ¹ Writhin abandoned mined area Permitted but not yet mined (intact oparlook) Workable coal present but not permitted	Surrounding Area Choose Up to 4 Well within 200 feet of occupied building or water supply well Well located in known gas migration area but not believed to be source Well within 100 feet of stream Well within 300 feet of any wetland >1 acre in size	3.10 Investigation Form situation justifies an emergency remediation or plugging contract oal Operator upon confirmation of well location.	19 Den 19
	API N Farm Nar Wel Cour	Human F	Ecologic	Well Site	Well Inte	Coal/Min	Setback	Add reman *Detemine if * Notify the C	evised: July 2

Risk Score Based on

Well Plugging Prioritization

- Human Receptors
- **Ecological Receptors** •

- Well Site Hazards
- Well Integrity
- Coal/Mining Status
- Setback/Surrounding





Year

DEP Plugging Program	Oil and Gas Act of 1984 - Established Abandoned Well Fund • \$50 Permit Surcharge	Act 78 of 1992 - Established Orphan Well Plugging Fund • \$100 Permit Surcharge on Oil Wells • \$200 Permit Surcharge on Gas Wells	

ALS.

Well Count in Pennsylvania

- Dilmore et al. (2015) and Engelder (2017) have estimated that somewhere between 330,000 and 350,000
 - 330,000 and 350,000 wells were likely drilled in the commonwealth between 1859 and 2016
- Kang et al.'s (2016)
 estimate <u>more than</u> <u>doubles</u> the upper end of this range





- have not yet been accounted for "best-fit" estimate is means between 100,000 to 560,000 legacy wells that 113,000 active permits and 13,000 wells on O&A list 200,000 wells remaining to plug
- Total potential liability: \$6.6 BILLION



Cost Modeling

- A conservative estimate of \$33,000 per well has been derived from reviewing contract costs.
- Liability forecasting changes significantly based on per-well cost assumptions
- At \$33,000 per well, DEP's plugging liability ranges somewhere between \$280 MM (8,500 wells) and \$6.6 B (200,000 wells)









High Risk

- Unknown risks to public health, safety and the environment
- present a significant risk of communication ("area of Wells located within 1,500' of hydraulic fracturing review" regulations in Chapter 78a)
- Wells are not being maintained in any way which creates highest risk and cost to plug/remediate



Plugging Liabilities in Pennsylvania

What can happen when an orphan or abandoned well is not properly plugged?

Discharges of oil and/or brine to land surface or surface water, or impacts to groundwater



Intermediate Risk

- with production or mechanical integrity reporting non- Approximately 51,000 active status conventional wells compliance (~5,400 operators)
- February 15 annually, hydrocarbons and waste produced
- February 15 annually, mechanical integrity assessment
- Likely high number of abandoned wells
- Includes many home use wells
- Wells may not be properly maintained which creates significant risk and cost to plug/remediate



lia	
ar	
\geq	
SI	
D	
Pe	
C	
.—	
<u>.</u>	
q	
60	
b 0	
<u>n</u>	

Lowest Risk

- Active status conventional wells in compliance with production or mechanical integrity reporting
- Active status unconventional wells (11,975 as of 3/22/19)
- Low risk with some unknowns or integrity issues
- Significant impact of low commodity prices
- Bond coverage for wells drilled after April 1985



DEP Emergency Contracts

Antaki Well: \$425,000





DEP Emergency Contracts

Antaki Well:\$14,000



DEP Emergency Contracts

John Barron Well: \$179,000





DEP Emergency Contracts

John Barron Well: \$179,000





DEP Emergency Contracts

John Barron Well: \$179,000





DEP Emergency Contracts

Monahan Well: \$160,000





DEP Emergency Contracts

Monahan Well: \$160,000



2	Aanagir	ng "Priority	y" and "(Opportuni	ity" Wells
Ŧ	ow can res	sources be ex	tended mo	st effectively	Ċ.
•	As the sun olugging a approxima	nmary tables Il 120 Priority ately \$5.7 mill	below indic / Wells indiv lion	ate, it is estir idually woul	nated that d cost
•	By groupir 'opportun	ng "priority" (I nity" wells, 13 or only 7x the	high risk) w x the numb total cost	ells with oth er of wells co	er nearby ould be
Well Sco	ores	Number of Wells	Sum of Lov	v Cost 2017 S	um of High Cost 2017
High (>6	(9)	120	\$2,664,	157.00	\$5,777,969.01
Interme	diate (34 - 66)	509	\$10,604	,050.39	\$19,758,784.01
Low (<3,	4)	7540	\$94,606	,792.86	\$192,934,105.08
Grand To	otal	8169	\$107,87!	5,000.25	\$218,470,858.10
Column1	Number of F	Projects Number of	Wells in Project	Sum of Low Cost 2()17 Sum of High Cost 20
Brand Total	85		1565	\$20,281,920.20	\$40,742,308.41

Example Partnership Projects



01021 Diracina Droioot Nom

Flugging Project Name: 13/L	
Priority Ranking: 19 / 85	
Opportunity Ranking: N/A	
Number of Abandoned / Orphan Wells:	45
Estimated Number of Water Supplies:	2
Estimated Number of Residents: 105	
Environmental Justice Area: Yes	
Project Value (Low): \$674,521.59	
Project Value (High): \$1,318,357.56	
High Resolution Cost Control: Yes	
Congressional District:	
Thompson, Glenn W. (5)	
House District:	
Rapp, Kathy L. (65)	
Senate District:	
Hutchinson, Scott E. (21)	
Designated Use Streams (miles):	
Cold Water Fishery: 5.5	
Trout Stocking: 0	
Warm Water Fishery: 0	
High Quality: 8.3	
Exceptional Value: 0	
Recreational Areas (acres):	
State or National Parks: 0	

Fish and Game / State Game Lands: State or National Forest: residents, legislative districts, stream miles, and recreational areas for the location. It also Environmental Justice area. Project value information was developed in consideration of responsible for plugging. These characteristics were used to rank this project relative to historical DEP plugging contract amounts. If the project falls in an area where DEP has provides key statistics on the number of abandoned and orphan wells, water supplies, many other potential plugging projects throughout Pennsylvania. The project profile assigns a project value and assesses whether or not the location coincides with an completed a greater amount of prior work, the project is designated as having "High Resolution Cost Control."

0

3119.7

ts
e C
0
Р
jip
l S
Je
f
Jal
d
3
Xa

Plugging Project Name: 161L



Primary County: Venango	
Primary Municipality:OILCREEK	
Priority Ranking: N/A	
Opportunity Ranking: 11/415	
Number of Abandoned / Orphan Wells:	85
Estimated Number of Water Supplies: 1	17
Estimated Number of Residents: 254	
Environmental Justice Area: No	
Project Value (Low): \$904,566.35	
Project Value (High): \$1,665,306.37	
High Resolution Cost Control: Yes	
Congressional District:	
Thompson, (5)	
House District:	
James, (64)	
Senate District:	
Hutchinson, (21)	
Designated Use Streams (miles):	
Cold Water Fishery: 16.3	
Trout Stocking: 0	
Warm Water Fishery: 0	
High Quality: 0	
Exceptional Value: 0	
Recreational Areas (acres):	

Fish and Game / State Game Lands: State or National Forest:

historical DEP plugging contract amounts. If the project falls in an area where DEP has

completed a greater amount of prior work, the project is designated as having

"High Resolution Cost Control."

1228.7 0 0

Plugging Program Initiatives

- Collaboration and Partnerships Critical
- Good Samaritan Act/COGWA
- Commonwealth Financing Authority
- Orphan and Abandoned Well Plugging Program
- DCNR Addressing Funding Gaps
- State Forests and State Parks and wells in the vicinity
- Oil Spill Liability Trust Fund
- Developers/Municipalities



CFA OAWP Program Summary

CFA Distribution of Marcellus Legacy Fund

			2013					2014		
Program	# Anns	# Annr Anns	Amt of Grant	Percent	Percent of	# Anns	# Annr Anns	Amt of Grant	Percent	Percent of
		כלולט ולולט ש		Approval Rate	Total \$		כללע וללע ב		Approval Rate	Total
GREENWAYS, TRAILS AND RECRATION (GTR)	206	107	\$14,648,964	51.94%	55.93%	301	67	\$9,294,334	22.26%	62.14%
FLOOD MITIGATION	19	4	\$655,866	21.05%	2.50%	33	6	\$2,338,039	27.27%	15.63%
WATERSHED RESTORATION AND PROTECTION	57	31	\$5,105,930	54.39%	19.50%	49	13	\$1,256,797	26.53%	8.40%
ABANDONED MINE DRAINAGE ABATEMENT & TREATMENT (AMDAT)	34	12	\$5,091,447	35.29%	19.44%	13	4	\$1,541,610	30.77%	0.94%
ORPHAN OR ABANDONED WELL PLUGGING	2	2	\$225,000	100.00%	0.86%	۱	1	\$139,999	100.00%	1.22%
BASELINE WATER QUALITY DATA (BWQD)	8	2	\$463,342	25.00%	1.77%	7	1	\$181,895	14.29%	1.22%
SEWAGE FACILITIES PROGRAM	0	0	\$0	0.00%	0.00%	57	7	\$205,041	12.28%	1.37%
Grand Total	326	158	\$26,190,549			461	102	\$14,957,715		

			2015					2016		
Program	# Anne	# Appr Appe	Amt of Grant	Percent	Percent of	# Anne	# Appr Apps	Amt of Grant	Percent	Percent of
		sddy iddy #		Approval Rate	Total \$	eddy #	כוווע ווווע ד		Approval Rate	Total \$
GREENWAYS, TRAILS AND RECRATION (GTR)	309	89	\$11,167,747	28.80%	66.22%	254	99	\$8,766,477	25.98%	65.38%
FLOOD MITIGATION	40	12	\$2,975,847	30.00%	17.65%	27	œ	\$1,821,325	29.63%	13.58%
WATERSHED RESTORATION AND PROTECTION	38	~	\$1,019,097	21.05%	6.04%	36	11	\$1,986,538	30.56%	14.82%
ABANDONED MINE DRAINAGE ABATEMENT & TREATMENT (AMDAT)	13	3	\$1,080,491	23.08%	6.41%	~	2	\$563,191	25.00%	4.20%
ORPHAN OR ABANDONED WELL PLUGGING	3	0	\$0	%00.0	0.00%	11	1	\$129,715	9.09%	0.97%
BASELINE WATER QUALITY DATA (BWQD)	4	2	\$469,912	50.00%	2.79%	0	0	\$0	0.00%	0.00%
SEWAGE FACILITIES PROGRAM	22	3	\$151,000	13.64%	0.90%	13	4	\$141,647	30.77%	1.06%
Grand Total	429	117	\$16,864,094			349	92	\$13,408,893		

			2017					2018		
LIOGIAIII	# Anns	# Annr Anns	Amt of Grant	Percent	Percent of	# Anns	# Annr Anns	Amt of Grant	Percent	Percent of
				Approval Rate	Total \$				Approval Rate	Total \$
SREENWAYS, TRAILS AND RECRATION (GTR)	234	81	\$9,862,804	34.62%	63.75%	286	06	\$10,586,673	31.47%	65.36%
LOOD MITIGATION	30	13	\$2,994,521	43.33%	19.36%	43	12	\$2,866,069	27.91%	17.69%
VATERSHED RESTORATION AND PROTECTION	23	11	\$1,830,000	47.83%	11.83%	36	15	\$1,993,662	41.67%	12.31%
ABANDONED MINE DRAINAGE ABATEMENT & TREATMENT (AMDAT)	+	0	\$0	0.00%	0.00%		1	\$500,000	33.33%	3.09%
DRPHAN OR ABANDONED WELL PLUGGING	5	3	\$657,503	60.00%	4.25%	4	1	\$20,624	25.00%	0.13%
A SELINE WATER QUALITY DATA (BWQD)	+	0	\$0	0.00%	0.00%	80	0	\$0	0.00%	0.00%
SEWAGE FACILITIES PROGRAM	10	4	\$125,147	40.00%	0.81%	13	4	\$231,328	30.77%	1.43%
Grand Total	304	112	\$15,469,975			393	123	\$16,198,356		

Drodram	Total #	Total # Appr	Total Amt of Grants	Percent	Percent of
LINGIAIII	Apps	Apps		Approval Rate	Total \$
GREENWAYS, TRAILS AND RECRATION (GTR)	1,590	500	\$64,326,999	31.45%	62.40%
FLOOD MITIGATION	192	28	\$13,651,667	30.21%	13.24%
WATERSHED RESTORATION AND PROTECTION	239	89	\$13,192,024	37.24%	12.80%
ABANDONED MINE DRAINAGE ABATEMENT & TREATMENT (AMDAT)	72	22	\$8,776,739	30.56%	8.51%
ORPHAN OR ABANDONED WELL PLUGGING	26	8	\$1,172,841	30.77%	1.14%
BASELINE WATER QUALITY DATA (BWQD)	28	5	\$1,115,149	17.86%	1.08%
SEWAGE FACILITIES PROGRAM	115	22	\$854,163	19.13%	0.83%
Grand Total	2,262	704	\$103,089,582		



<u> </u>
\mathbf{O}
\leq
60
•
Ο
60
$\overline{\mathbf{O}}$

Plugging Program Initiatives

- BOGPPM Plugging Program modernization and enhanced outreach
 - Website
- Social media
- DCNR partnership
- Cross-program work
- GHG emissions factors and estimates (EPO and Air Quality)
- Academia
- GHG emissions factors and estimates (Kang at McGill)
- Integrity concerns (Brantley at PSU) I
 - Property values (Weber at Pitt)



Attainable Bottom Field Study

Investigate plug effectiveness in wells not plugged to total depth





Quantify emissions to be reduced through area-wide

plugging project





g Plug Study	Analyze well and plug	characteristics to identify potential contributing factors				DEPARTMENT OF ENVIRONMENTAL PROTECTION
Leakir	,01 	75' 8 5/8" Surface Casing Set Depth 575 20' 20'	Approx vertical Scale = 50' per cell <u>Letend:</u> Cement Non-porous Material (g) 260' Lithology.	Sal' Shows Sandstone G Gas Freshwater	247	,747 000 10
	Zula Etoz				2	2
	977 Plug	<mark>575</mark> 620'			711/2	2,867 2,900' 3,097
	1 100 Z 150 Z 200 200 250 350 350	450 450 550 600 770 800 770	850 900 950 1000 1150 1150 1150 1150 1150	1400 1450 1500 1550 1550 1650 1750 1750 11750 11800 11800 11800 11800	2000 2050 2150 2150 2250 2350 2350 2450 2450 2450 2550	2660 2650 2700 22900 2880 2880 2880 2990 3090 3050 3050
	105 150'	750'	, 2 14,1		2,172' G 2,499' 2,512'	2,695' 2,921' G 3,097'
	ă,					

- McGill University (Kang)
- occurrence of leaking abandoned and plugged wells - Utilized highly sensitive meters to determine a high
- Isotopic signatures support deep, oil-associated origin
- In some cases, gas was found outside of the outermost well casing I
- construction and/or plugging details at the identified DEP is currently working to understand the leaking wells I



Summary

- Historic legacy challenge must be met
- Overall liability has been defined
- Economic opportunity
- Focused responses
- Delivering protection







Oil and Gas Management

Thank You!

Kurt Klapkowski Director kklapkowsk@pa.gov

Bureau of Oil & Gas Planning & Program Mgmt 717.772.2199

Acknowledgments

M. Seth Pelepko, Harry Wise, Serena Oldhouser, Kevin Bogdan, Crystal Magon, Doug Catalano, Rick Swank, Lindsay Byron, and Stew Beattie

Attachment H

Abandoned and Orphan Oil and Gas Wells in Pennsylvania (Office of Oil and Gas Management, Pennsylvania Department of Environmental Protection)





Oil and Gas Management

Citizens Advisory Council

Abandoned and Orphan Oil and Gas Wells in Pennsylvania

Bureau of Oil and Gas Planning and Program Management

Division of Subsurface Activities January 19, 2021

Ð
Jt
Ō
.0
at
nt
Se
Ű.

- Plugging Program Status Update
- Funding
- **Emergency Procurement**
- Estimated Unfunded Liability
- Emerging Environmental/Safety Issues
- Plugging Effectiveness
- Short-term Environmental and Safety Risks
- Emissions
- Summary






Expenditures

Year

Antaki Well: \$14,000 for stray gas mitigation system





Antaki Well: \$14,000 for stray gas mitigation system



Antaki Well: Approximately \$350,000 for plugging



John Barron Well: \$179,000 for flaring and plugging





John Barron Well: \$179,000 for flaring and plugging





John Barron Well: \$179,000 for flaring and plugging





Monahan Well: \$160,000 for plugging





Monahan Well: \$160,000 for plugging



expenditures have the potential to exceed fund growth DEP's emergency procurement trends also suggest



Mass Abandonment

- In 2018 two operators with major holdings abandoned approximately 2,750 wells
- eventually need to be plugged but they may not have a Tens of thousands of conventional oil and gas wells will viable owner that can afford to plug them
- Bonding levels do not equate to actual plugging costs
 - \$2,500 single conventional well bond
- \$25,000 blanket bond (unlimited number of conventional wells)
- Thousands of wells are under a single blanket bond or have no bonds at all (Pre-Act wells)



Crunching the Numbers

- Orphan Well database DEP has the statutory authority to There are more than 8,000 wells in DEP's Abandoned and plug these wells
- Over the last four years, DEP has added 345 wells to its Abandoned and Orphan Well database
- Mass abandonment is likely to continue increasing DEP's plugging liability
- Since 1989, DEP has plugged a little over 3,000 wells
- Comparing peer reviewed research (Dilmore et al., 2015; many as 200,000 additional legacy wells, many of which Kang et al., 2016) to public databases, there could be as will require plugging as they are discovered



Cost Modeling/Liability Forecasting

- A conservative estimate of \$33,000 per well has been derived from reviewing contract costs
- Liability forecasting changes significantly based on per-well cost assumptions
- somewhere between \$280 million (8,500 wells) and At \$33,000 per well, DEP's plugging liability ranges \$6.6 billion (200,000 wells)



Emerging Environmental/Safety Issues

Plugging Effectiveness: Field Investigation and Statistical Analysis

- Conduct well site investigations utilizing high sensitivity gas monitoring equipment to determine if plugs are leaking
- Analyze field data and compare to other leaking plugged wells and non-leaking plugged wells to determine variables that may be influencing rate of plug failure



Emerging Environmental/Safety Issues



Box Plots Suggest:

 Leaking wells have substantially more production or intermediate casing left in the ground than non-leaking wells – differences are statistically significant (p<0.05)



Bar Charts Suggest:Leaking wells have a

 Leaking wells have a greater ratio of cement & gel plugs

Shallow Charged Zones Possibly Attributable to Legacy Activities



Emerging Environmental/Safety Issues

Risks associated with Abandoned, Orphan, and improperly plugged wells can be compounded by mine-influenced water in areas of coal mining



 Emerging Environmental/Safety Issues
Encroachment
 High population density areas/regions of active development may introduce intersections between legacy wells and occupied enclosed spaces
 During Phase I/Phase II site assessments, a thorough review of legacy development is critical for mitigating client liability
 PA Geologic Survey Farmline Maps PASDA
 DEP Oil and Gas Mapping Tool Local Government Resources
 The Good Samaritan Law affords liability relief for third parties who volunteer to decommission legacy wells for which there is no responsible party
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Encroachment



- Improperiy uecommissionea garnering systerits
- Stubbed off segments of gathering lines have the subsurface if not properly decommissioned potential to introduce stray gas into the during well plugging
- Recent DEP field work has identified elevated soil gas concentrations in association with such systems



Improperly Decommissioned Gathering Systems



Emissions

- McGill University
- Kang et al. (2016) found a high occurrence of leaking abandoned and plugged wells
 - Isotopic signatures support deep, oil-associated Origin
- In some cases, gas was found to be flowing through the soil beyond the footprint of the outermost well casing
- DEP is currently working to understand if Kang et al.'s (2016) emission regression model can be used as a risk-management tool



Summary	
 Pennsylvania has a significant history of legacy a gas development and the potential for hundred thousands of wells with no associated responsi 	gacy oil and ndreds of ponsible party
 Unfunded plugging liability is currently estimate \$280 million, but could be much higher – it is fo to grow 	timated at it is forecasted
 An analysis of failed plugs suggests that further improvements may be necessary to ensure long plug integrity 	irther e long-term
 Legacy wells are contributing to environmental public safety risks 	ental and
DEPAR	DEPARTMENT OF ENVIRONME PROTECTION





Oil and Gas Management

Thank You! Questions?

Seth Pelepko, P.G.

Division of Subsurface Activities Program Manager

mipelepko@pa.gov

Bureau of Oil & Gas Planning & Program Mgmt

717.772.2199

Many thanks to my co-authors: Serena Oldhouser, Liz Cushman, Harry Wise, Rick Swank, and Jim Braunns!

Rewriting Pennsylvania's Legacy (dep.pa.gov/legacy wells)

Attachment I

Amendments to House Bill No. 1144

MAB:CDM 05/07/21 #90

A00943

LEGISLATIVE REFERENCE BUREAU

AMENDMENTS TO HOUSE BILL NO. 1144

Sponsor:

Printer's No. 1199

Amend Bill, page 1, lines 1 through 6, by striking out all of 1 2 said lines and inserting Amending Title 58 (Oil and Gas) of the Pennsylvania Consolidated 3 4 Statutes, providing for conventional development and for 5 annual fees; and making an editorial change. 6 Amend Bill, page 1, lines 7 through 16; page 2, lines 1 7 through 30; page 3, lines 1 through 15; by striking out all of 8 said lines on said pages Amend Bill, page 3, lines 18 through 30; pages 4 through 67, 9 10 lines 1 through 30; page 68, lines 1 through 14; by striking out 11 all of said lines on said pages and inserting Section 1. The heading of Chapter 32 of Title 58 of the 12 13 Pennsylvania Consolidated Statutes is amended to read: 14 CHAPTER 32 15 UNCONVENTIONAL DEVELOPMENT Section 2. Title 58 is amended by adding chapters to read: 16 17 CHAPTER 36 18 CONVENTIONAL DEVELOPMENT 19 Subchapter 20 A. Preliminary Provisions B. General Requirements 21 22 C. Enforcement and Remedies 23 D. Miscellaneous Provisions 24 SUBCHAPTER A 25 PRELIMINARY PROVISIONS 26 <u>Sec.</u> 27 3601. Scope of chapter. 28 3602. Declaration of purpose of chapter. 3603. Definitions. 29 <u>§ 3601. Scope of chapter.</u> 30 This chapter relates to conventional oil and gas development. 31 32 § 3602. Declaration of purpose of chapter. 33 The purposes of this chapter are to:

1 (1) Permit optimal development of oil and gas resources of this Commonwealth consistent with the property rights of 2 3 owners of the oil and gas resources and the protection of the 4 health, safety, environment and the property rights of 5 Pennsylvania citizens. 6 (2) Protect the safety of personnel and facilities 7 employed in coal mining or exploration, development, storage 8 and production of natural gas or oil. 9 (3) Protect the safety and property rights of persons_ residing in areas where mining, exploration, development, 10 11 storage or production occurs. 12 (4) Protect the natural resources, environmental rights and values secured by the Constitution of Pennsylvania. 13 14 § 3603. Definitions. 15 The following words and phrases when used in this chapter shall have the meanings given to them in this section unless the 16 17 context clearly indicates otherwise: "Abandoned well." Any of the following: 18 19 (1) A well: (i) that has not been used to produce, extract or 20 inject any gas, petroleum or other liquid within the 21 22 preceding 12 months; 23 (ii) for which equipment necessary for production, 24 extraction or injection has been removed; or 25 (iii) considered dry and not equipped for production within 60 days after drilling, redrilling or deepening. 26 (2) The term does not include wells granted inactive 27 28 <u>status.</u> "Additive." A hydraulic fracturing chemical. 29 "Alteration." An operation which changes the physical 30 characteristics of a well bore, including stimulation or 31 32 removing, repairing or changing the casing. For the purpose of 33 this chapter only, the term does not include: (1) Repairing or replacing of the casing if the activity 34 does not affect the depth or diameter of the well bore, the 35 36 use or purpose of the well does not change and the activity 37 complies with regulations promulgated under this chapter, 38 except that this exclusion does not apply: (i) to production casings in coal areas when the 39 production casings are also the coal protection casings; 40 41 or 42 (ii) when the method of repairing or replacing the 43 casing would affect the coal protection casing. 44 (2) Stimulation of a well. 45 "Bridge." An obstruction placed in a well at any depth. "Building." An occupied structure with walls and roof within 46 which persons live or customarily work. 47 "Casing." A string or strings of pipe commonly placed in 48 49 wells drilled for natural gas or petroleum. "Cement" or "cement grout." Any of the following: 50 (1) Hydraulic cement properly mixed with water only. 51

1	(2) A mixture of materials adequate for bonding or
2	sealing of well bores as approved by regulations promulgated
3	<u>under this chapter.</u>
4	"Certified mail." Any verifiable means of paper document
5	delivery that confirms receipt of the document by the intended
6	recipient or the attempt to deliver the document to the proper_
7	address for the intended recipient.
8	"Chemical." Any element, chemical compound or mixture of
9	elements or compounds that has its own specific name or
10	identity, such as a chemical abstract service number.
11	"Coal mine." Operations in a coal seam, which include the
12	excavated and abandoned portions as well as the places actually
13	being worked, all underground workings and shafts, slopes,
14	tunnels and other ways and openings and all shafts, slopes,
15	tunnels and other openings in the course of being sunk or
16	driven, together with all roads and facilities connected with
17	them below the surface.
18	"Coal operator." A person who proposes or has a permit to
19	operate or operates a coal mine either as owner or lessee.
20	"Completion of a well." The date after treatment, if any,
21	that the well is properly equipped for production of oil or gas,
22	or, if the well is dry, the date that the well is abandoned.
23	"Conventional well." A bore hole drilled or being drilled
24	for the purpose of or to be used for construction of a well
25	regulated under this chapter that is not an unconventional well,
26	irrespective of technology or design. The term includes:
27	(1) A well drilled to produce oil.
28	(2) A well drilled to produce natural gas from
29	formations other than shale formations.
30	(3) A well drilled to produce natural gas from shale
31	formations located above the base of the Elk Group or its
32	stratigraphic equivalent.
33	(4) A well drilled to produce natural gas from shale
34	formations located below the base of the Elk Group where
35	<u>natural gas can be produced at economic flow rates or in</u>
36	economic volumes without the use of vertical or nonvertical
37	<u>well bores stimulated by hydraulic fracture treatments or</u>
38	multilateral well bores or other techniques to expose more of
39	the formation to the well bore.
40	(5) Irrespective of formation, a well drilled for
41	<u>collateral purposes, such as monitoring, geologic logging,</u>
42	secondary and tertiary recovery or disposal injection.
43	"Council." The Pennsylvania Grade Crude Development Advisory
44	<u>Council.</u>
45	"Department." The Department of Environmental Protection of
46	the Commonwealth.
47	"Drilling." The drilling or redrilling of a well or the
48	<u>deepening of an existing well.</u>
49	"Fresh groundwater." Water in that portion of the generally
50	recognized hydrologic cycle which occupies the pore spaces and
51	<u>fractures of saturated subsurface materials.</u>

1	"Gas." Any of the following:
2	(1) A fluid, combustible or noncombustible, which is
3	<u>produced in a natural state from the earth and maintains a</u>
4	<u>gaseous or rarified state at standard temperature of 60</u>
5	degrees Fahrenheit and pressure 14.7 PSIA.
6	(2) Any manufactured gas, by-product gas or mixture of
7	gases or natural gas liquids.
8	"Home or consumptive use well." A conventional well
9	producing natural gas solely for consumptive use by the
10	permitted or registered operator of the well.
11	"Hydraulic fracturing chemical." Any chemical substance or
12	combination of substances, including any chemicals and
13	proppants, that is intentionally added to a base fluid for
14	purposes of preparing a stimulation fluid for use in hydraulic
15	<u>fracturing.</u>
16	<u>"Inactivate." To shut off the vertical movement of gas in a</u>
17	<u>gas storage well by means of a temporary plug or other suitable</u>
18	device or by injecting bentonitic mud or other equally nonporous
19	material into the well.
20	"Linear foot." A unit or measurement in a straight line on a
21	<u>horizontal plane.</u>
22	"Noncoal area." An area where there are no workable coal
23	seams.
24	"Notice." For the purpose of providing nonrequired notice to
25	the department, includes notice provided by telephone, email or
26	other available electronic means, unless a specific form of, or
27	<u>location for, notice is required by this act, regulations</u>
28	promulgated thereunder or otherwise established by the
29	<u>department.</u>
30	<u>"Oil." Hydrocarbons in liquid form at standard temperature</u>
31	of 60 degrees Fahrenheit and pressure 14.7 PSIA, also referred
32	<u>to as petroleum.</u>
33	<u>"Operating coal mine." The portion of a workable coal seam</u>
34	which is covered by an underground mining permit issued by the
35	<u>department. Coal mines that have already been projected and </u>
36	platted for which a technically complete mine permit application
37	has been filed with the department shall also meet this
38	definition.
39	"Operating well." A well that is not plugged and abandoned.
40	<u>"Operator." A well operator.</u>
41	"Orphan well." A well abandoned prior to April 18, 1985,
42	that has not been affected or operated by the present owner or
43	operator and from which the present owner, operator or lessee
44	has received no economic benefit other than as a landowner or
45	recipient of a royalty interest from the well.
46	"Outside coal boundaries." When used in conjunction with the
4/	term "operating coal mine," the boundaries of the coal acreage
48	assigned to the coal mine under an underground mine permit
49 50	Issued by the department.
JU ⊑1	<u>"Owner." A person who owns, manages, leases, controls or</u>
ЭТ	possesses a well of coal property. The term does not apply to

1	orphan wells, except where the department determines a prior
2	owner or operator benefited from the well as provided in section
3	<u>3620(a) (relating to plugging requirements).</u>
4	"Person." An individual, association, partnership,
5	<u>corporation, political subdivision or agency of the Federal</u>
6	<u>Government, State government or other legal entity.</u>
7	"Petroleum." Hydrocarbons in liquid form at standard
8	temperature of 60 degrees Fahrenheit and pressure 14.7 PSIA,
9	<u>also referred to as oil.</u>
10	"Pillar." A solid block of coal surrounded by either active
11	<u>mine workings or a mined-out area.</u>
12	"Plat." A map, drawing or print accurately drawn to scale
13	showing the proposed or existing location of a well or wells.
14	"Retreat mining." Removal of coal pillars, ribs and stumps
15	remaining after development mining has been completed in that
16	section of a coal mine.
17	"Secretary." The Secretary of Environmental Protection of
18	the Commonwealth.
19	"Storage operator." A person who operates or proposes to
20	<u>operate a storage reservoir as an owner or lessee.</u>
21	"Storage reservoir." That portion of a subsurface geological
22	<u>stratum into which gas is or may be injected for storage</u>
23	<u>purposes or to test suitability of the stratum for storage.</u>
24	<u>"Unconventional formation." A geological shale formation</u>
25	<u>existing below the base of the Elk Sandstone or its geologic</u>
26	<u>equivalent stratigraphic interval where natural gas generally</u>
27	cannot be produced at economic flow rates or in economic volumes
28	except by vertical or horizontal well bores stimulated by
29	hydraulic fracture treatments or by using multilateral well
30	bores or other techniques to expose more of the formation to the
31	well bore.
32	"Unconventional well." A bore hole drilled or being drilled
33	for the purpose of or to be used for the production of natural
34	gas from an unconventional formation.
35	"Water purveyor." Any of the following:
36	(1) The owner or operator of a public water system as
3/	defined in section 3 of the act of May 1, 1984 (P.L.206,
20 20	NO.45), Known as the Pennsylvania Sale Drinking Water Act.
39 40	(2) Any person subject to the act of June 24, 1959 (D I 942 No 265) referred to be the Water Dights Law
40 11	(P.L.042, NO.363), referred to as the water Rights Law.
41 10	ef er te be wood for producing ovtracting er injecting ga
42 13	of of to be used for producing, extracting of injecting gas,
4-5 Л Л	storage including bring disposal but evaluding a bore belo
44	drilled to produce petable water. The term does not include a
40	diffied to produce potable water. The term does not include a
	Note note attited of pering attited for the purpose of of to be
т / Д Q	(1) Systems of monitoring producing or extracting gas
10 29	from solid waste disposal facilities if the hore hole is a
1) 50	well subject to the act of July 7 1980 (P I 380 No 97)
51	known as the Solid Waste Management Act, which does not
	mit as the stree nabes hanaysment hot, whiteh about hot

1	<u>penetrate a workable coal seam.</u>
2	(2) Degasifying coal seams, if the bore hole is:
3	(i) used to vent methane to the outside atmosphere
4	from an operating coal mine; regulated as part of the
5	mining permit under the act of June 22, 1937 (P.L.1987,
6	No.394), known as The Clean Streams Law, and the act of
7	May 31, 1945 (P.L.1198, No.418), known as the Surface
8	Mining Conservation and Reclamation Act; and drilled by
9	the operator of the operating coal mine for the purpose
10	of increased safety; or
11	(ii) used to vent methane to the outside atmosphere
12	under a federally funded or State-funded abandoned mine
13	reclamation project.
14	"Well control emergency." An incident during drilling,
15	operation, workover or completion that, as determined by the
16	department, poses a threat to public health, welfare or safety,
17	including a loss of circulation fluids, kick, casing failure,
18	blowout, fire and explosion.
19	"Well control specialist." Any person trained to respond to
20	a well control emergency with a current certification from a
21	well control course accredited by the International Association
22	of Drilling Contractors or other organization approved by the
23	department.
24	"Well operator." Any of the following:
25	<u>(1) The person designated as operator or well operator</u>
26	<u>on the permit application or well registration.</u>
27	<u>(2) If a permit or well registration was not issued, a</u>
28	<u>person who locates, drills, operates, alters or plugs a well</u>
29	<u>or reconditions a well with the purpose of production from</u>
30	the well.
31	<u>(3) If a well is used in connection with underground</u>
32	<u>storage of gas, a storage operator.</u>
33	"Well site." The areas occupied by equipment or facilities
34	necessary for or incidental to drilling, completion, production
35	or plugging a well, including auxiliary pads, staging areas,
36	access roads and tank batteries.
37	"Wetland." Areas inundated or saturated by surface water or
38	groundwater at a frequency and duration sufficient to support,
39	and which normally support, a prevalence of vegetation typically
40	adapted for life in saturated soil conditions, including swamps,
41	marshes, bogs and similar areas.
42	"Workable coal seams." The term includes:
43	(1) A coal seam in fact being mined in the area in
44 15	question under this chapter by underground methods.
45	(2) A COAL Seam which is:
40 17	(1) Idlerally extensive and one of either of the
4 / 10	polenilai washinglon, waynesburg, Sewickiey, Kedstone, Dittaburgh II Erconort I Erconort II Vittarnizz M
40 / 0	<u>rittanning, U. rieepoit, L. rieepoit, U. Kittanning, M.</u> Kittanning, I. Kittanning, Clarian, Brackwille, an Margar
サブ 50	AILLANNING, D. AILLANNING, CLAILON, BLOOKVILLE OF MERCER
50 51	(ii) at least 28 inches thick and
<u> </u>	$(\pm \pm)$ at $\pm $

1	<u>(iii) deeper than 100 feet from the ground surface.</u>
2	(3) A coal seam which is, in the judgment of the
3	department, otherwise reasonably expected to be mined by
4	underground methods.
5	SUBCHAPTER B
6	<u>GENERAL REQUIREMENTS</u>
7	Sec.
8	3611. Well permits.
9	3612. Permit objections.
10	3613. Well identification.
11	3614. Inactive status.
12	3615. Well location restrictions.
13	3616. Well site restoration.
14	3617. Protection of fresh groundwater and casing requirements.
15	3618. Protection of water supplies.
16	3618.1. Notification to public drinking water systems.
17	3619. Use of safety devices.
18	3619.1. Well control emergency response.
19	3620. Plugging requirements.
20	3621. Alternative methods.
21	3622. Well reporting requirements.
22	3623. Notification and effect of well transfer.
23	<u>3624. Coal operator responsibilities.</u>
24	<u>3625. Bonding.</u>
25	<u>§ 3611. Well permits.</u>
26	(a) Permit requiredNo person shall construct a well site,
27	drill or alter a well, except for alterations which satisfy the
28	requirements of subsection (j), without having first obtained a
29	well permit under subsections (b), (c), (d) and (e), or operate
30	an abandoned or orphan well unless in compliance with subsection
31	(1). A copy of the permit shall be kept at the well site during
32	<u>preparation and construction of the well site or access road</u>
33	<u>during drilling or alteration of the well. No person shall be</u>
34	<u>required to obtain a permit to redrill a nonproducing well if</u>
35	<u>the redrilling:</u>
36	<u>(1) has been evaluated and approved as part of an order</u>
37	from the department authorizing cleaning out and plugging or
38	<u>replugging a nonproducing well under section 13(c) of the act</u>
39	of December 18, 1984 (P.L.1069, No.214), known as the Coal
40	and Gas Resource Coordination Act; and
41	(2) is incidental to a plugging or replugging operation
42	and the well is plugged within 15 days of redrilling.
43	<u>(b) Plat</u>
44	(1) The permit application shall be accompanied by a
45	complete and accurate plat prepared by a person trained in
46	the preparation of plats on forms furnished by the
4/	department, snowing the political subdivision and county in
48 40	which the tract of land upon which the well to be drilled,
49 50	operated or altered is located; the name of the surface
ЭU ⊑ 1	Landowner of record and lessor; the name of all surface
ЪТ	<u>landowners and water purveyors whose water supplies are</u>

2021/90MAB/HB1144A00943 - 7 -

1	within 1,000 feet of the proposed well location; the name of
2	the owner of record or operator of all known underlying
3	workable coal seams; the acreage in the tract to be drilled;
4	the proposed location of the well determined by plat, courses
5	and distances of the location from two or more permanent
6	identifiable points or landmarks on the tract boundary
7	corners; the proposed angle and direction of the well if the
8	well is to be deviated substantially from a vertical course:
9	the number or other identification to be given the well: the
10	workable coal seams underlying the tract of land upon which
11	the well is to be drilled or altered and which shall be cased
12	off under section 3617 (relating to protection of fresh
13	groundwater and casing requirements): and any other
14	information needed by the department to administer this
1.5	chapter.
16	(2) The applicant shall forward by certified mail a copy
17	of the plat to the surface landowner: the municipality in
18	which the tract of land upon which the well to be drilled is
19	located: all surface landowners and water purveyors, whose
20	water supplies are within 1.000 feet of the proposed well
21	location: the owner and lessee of any workable coal seams:
22	and each coal operator required to be identified on the well
23	permit application.
24	(b.1) NotificationThe applicant shall submit proof of
25	notification with the well permit application. Notification of
26	surface owners shall be performed by sending notice to those
27	persons to whom the tax notices for the surface property are
28	sent, as indicated in the assessment books in the county in
29	which the property is located. Notification of surface
30	landowners or water purveyors shall be on forms, and in a manner
31	prescribed by the department, sufficient to identify the rights
32	afforded those persons under section 3618 (relating to
33	protection of water supplies) and to advise them of the
34	advantages of taking their own predrilling or prealteration
35	survey.
36	(b.2) ApprovalIf the applicant submits to the department
37	written approval of the proposed well location by the surface
38	landowner and the coal operator, lessee or owner of any workable
39	coal underlying the proposed well location and no objections are
40	raised by the department within 15 days of filing, or if no
41	approval has been submitted and no objections are made to the
42	proposed well location within 15 days from receipt of notice by
43	the department, the surface landowner or any coal operator,
44	lessee or owner, the written approval shall be filed and become
45	a permanent record of the well location, subject to inspection
46	at any time by any interested person. The application form to
47	operate an abandoned or orphan well shall provide notification
48	to the applicant of its responsibilities to plug the well upon
49	abandonment.
50	<u>(c) ApplicantsIf the applicant for a well permit is a</u>
51	corporation, partnership or person that is not a resident of

1	this Commonwealth, the applicant shall designate the name and
2	address of an agent for the operator who shall be the attorney-
3	<u>in-fact for the operator and who shall be a resident of this</u>
4	Commonwealth upon whom notices, orders or other communications
5	<u>issued under this chapter may be served and upon whom process</u>
6	may be served. Each well operator required to designate an agent
7	<u>under this section shall, within five days after termination of</u>
8	the designation, notify the department of the termination and
9	<u>designate a new agent.</u>
10	(d) Permit feeIn addition to any annual fee under Chapter_
11	37, each application for a well permit shall be accompanied by a
12	permit fee, established by the Environmental Quality Board.
13	<u>(e) Issuance of permitThe department shall issue a permit</u>
14	within 45 days of submission of a permit application unless the
15	department denies the permit application for one or more of the
16	reasons set forth in subsection (e.1), except that the
17	department shall have the right to extend the period for 15 days
18	for cause shown upon notification to the applicant of the
19	reasons for the extension. The department may impose permit
20	terms and conditions necessary to assure compliance with this
21	<u>chapter or other laws administered by the department.</u>
22	<u>(e.1) Denial of permitThe department may deny a permit</u>
23	for any of the following reasons:
24	(1) The well site for which a permit is requested is in
25	violation of any of this chapter or issuance of the permit
26	would result in a violation of this chapter or other
27	applicable law.
28	(2) The permit application is incomplete.
29	(3) Unresolved objections to the well location by the
30	coal mine owner or operator remain.
31	(4) The requirements of section 3625 (relating to
32	<u>bonding) have not been met.</u>
33	(5) The department finds that the applicant, or any
34	parent or subsidiary corporation of the applicant, is in
35	continuing violation of this chapter, any other statute
36	administered by the department, any regulation promulgated
37	<u>under this chapter or a statute administered by the</u>
38	<u>department or any plan approval, permit or order of the</u>
39	<u>department, unless the violation is being corrected to the </u>
40	satisfaction of the department. The right of the department
41	to deny a permit under this paragraph shall not take effect
42	until the department has taken a final action on the
43	violations and:
44	(i) the applicant has not appealed the final action
45	in accordance with the act of July 13, 1988 (P.L.530,
46	No.94), known as the Environmental Hearing Board Act; or
47	(ii) if an appeal has been filed, no supersedeas has
48	been issued.
49	(6) The applicant failed to pay the fee or file a report
50	under section 2303(c) (relating to administration), unless an
51	appeal is pending. The commission shall notify the department

1 of any applicant who has failed to pay the fee or file a 2 report and who does not have an appeal pending. 3 (f) Drilling.--4 (1) Upon issuance of a permit, the well operator may drill, operate or alter at the exact location shown on the 5 6 plat after providing the department, the surface landowner 7 and the local political subdivision in which the well is to 8 be located 24 hours' notice of the date that drilling will commence. Notification to the department must be provided 9 electronically. If there is a break in drilling of 30 days or 10 11 more, the well operator shall notify the department at least 12 24 hours prior to the resumption of drilling. (2) Prior to drilling each additional project well, the 13 well operator shall notify the department and provide 14 15 reasonable notice of the date on which drilling will 16 commence. (3) Whenever, before or during the drilling of a well 17 18 not within the boundaries of an operating coal mine, the well 19 operator encounters conditions of a nature which renders_ 20 drilling of the bore hole or a portion thereof impossible, or more hazardous than usual, the well operator, upon verbal 21 notice to the department, may immediately plug all or part of 22 23 the bore hole, if drilling has occurred, and commence a new_ bore hole not more than 50 feet from the old bore hole if the 24 25 location of the new bore hole does not violate section 3615 (relating to well location restrictions) and, in the case of 26 a well subject to the act of July 25, 1961 (P.L.825, No.359), 27 28 known as the Oil and Gas Conservation Law, if the new 29 location complies with existing laws, regulations and spacing 30 orders and the new bore hole is at least 330 feet from the 31 nearest lease boundary. 32 (4) If drilling occurred at the original well bore, 33 within 10 days of commencement of the new bore hole, the well_ 34 operator shall file with the department a written notice of intention to plug, a well record, a completion report, a 35 36 plugging certificate for the original bore hole and an 37 amended plat for the new bore hole. 38 (5) The well operator shall forward a copy of the amended plat to the surface landowner identified on the well 39 permit application within ten days of commencement of the new 40 41 well bore. 42 (q) Labeling.--The well operator shall install the permit 43 number issued by the department in a legible, visible and 44 permanent manner on the well upon completion. (h) Expiration.--Well permits issued for drilling wells 45 under this chapter shall expire three years after issuance 46 unless operations for drilling the well are commenced within the 47 period and pursued with due diligence or unless the permit is 48 49 renewed in accordance with regulations of the department. If drilling is commenced during the permit term, the well permit 50 shall remain in force until the well is plugged in accordance 51

with section 3620 (relating to plugging requirements) or the 1 permit is revoked. A drilling permit issued prior to April 18, 2 1985, for a well which is an operating well on April 18, 1985, 3 4 shall remain in force as a well permit until the well is plugged 5 in accordance with section 3620. 6 (i) Exceptions.--The Environmental Quality Board may 7 establish by regulation certain categories of alterations of permitted or registered wells for which permitting requirements 8 9 of this section shall not apply. A well operator or owner who 10 proposes to conduct the alteration activity shall first obtain a 11 permit or registration modification from the department. The Environmental Quality Board shall promulgate regulations as to 12 13 the requirements for modifications. (j) No transfer permitted. -- No permit issued under this 14 15 section or registration issued under section 3613 (relating to well registration and identification) may be transferred without 16 17 prior approval of the department. A request for approval of a transfer shall be on the forms, and in the manner, prescribed by 18 the department. Transfer of a well requires a bond for the well 19 20 and the well site on forms prescribed by the department in an amount sufficient to plug the well and restore the well site as 21 22 determined by the department. A bond filed with a transfer 23 request for a home use well shall be payable to the Commonwealth 24 and conditioned on the operator's faithful performance of all 25 water supply replacement, restoration and plugging requirements <u>of this chapter. The department shall approve or deny a transfer</u> 26 27 request within 45 days of receipt of a complete and accurate 28 application. The department may deny a request only for reasons 29 set forth in subsection (e.1)(1), (4) and (5) or if the well is abandoned. Approval of a transfer request shall permanently 30 31 transfer responsibility to plug the well under section 3620 to 32 the recipient of the transferred permit or registration. 33 (k) Regulations. -- The Environmental Quality Board may 34 establish by regulation requirements for the permitting and operation of abandoned or orphan wells. A person who proposes to 35 36 conduct abandoned or orphan well operations shall first obtain a 37 permit to operate an abandoned or orphan well. § 3612. Permit objections. 38 39 (a) General rule.--If a well referred to in section 3611(b) (relating to well permits) will be located on a tract whose 40 41 surface is owned by a person other than the well operator, the 42 surface landowner affected shall be notified of the intent to drill and may file objections, in accordance with section 3651 43 44 (relating to conferences), based on the assertion that the well location violates section 3615 (relating to well location 45 46 restrictions) or that information in the application is untrue in any material respect, within 15 days of the receipt by the 47 48 surface owner of the plat under section 3611(b). Receipt of 49 notice by the surface owner shall be presumed to have occurred 15 days from the date of the certified mailing when the well 50 51 operator submits a copy of the certified mail receipt sent to
the surface owner and an affidavit certifying that the address 1 2 of the surface owner to which notice was sent is the same as the address listed in the assessment books in the county where the 3 property is located. If no objection is filed or none is raised 4 by the department within 15 days after receipt of the plat by 5 the surface landowner or if written approval by the surface 6 7 landowner is filed with the department and no objection is raised by the department within 15 days of filing, the 8 9 department shall proceed to issue or deny the permit. (b) Special circumstances. -- If a well referred to in section_ 10 11 <u>3611(b) will penetrate within the outside coal boundaries of an</u> 12 operating coal mine or a coal mine already projected and platted but not yet being operated, or within 1,000 linear feet beyond 13 those boundaries, and, in the opinion of the coal owner or 14 15 operator, the well or a pillar of coal about the well will unduly interfere with or endanger the mine, the coal owner or 16 17 operator affected may file objections under section 3651 to the proposed location within 15 days of the receipt by the coal 18 operator of the plat under section 3611(b). If possible, an 19 20 alternative location at which the proposed well could be drilled to overcome the objections shall be indicated. If no objection 21 22 to the proposed location is filed or if none is raised by the 23 department within 15 days after receipt of the plat by the coal 24 operator or owner or if written approval by the coal operator or 25 owner of the location is filed with the department and no objection is raised by the department within 15 days of filing, 26 the department shall proceed to issue or deny the permit. 27 28 (c) Procedure upon objection. -- If an objection is filed by a_ 29 coal operator or owner or made by the department, the department shall fix a time and place for a conference under section 3651_ 30 31 not more than ten days from the date of service of the objection 32 to allow the parties to consider the objection and attempt to 33 agree on a location. If they fail to agree, the department, by an appropriate order, shall determine a location on the tract of 34 35 land as near to the original location as possible where, in the 36 judgment of the department, the well can be safely drilled 37 without unduly interfering with or endangering the mine as defined in subsection (b). The new location agreed upon by the 38 39 parties or determined by the department shall be indicated on the plat on file with the department and become a permanent 40 41 record upon which the department shall proceed to issue or deny 42 the permit. 43 (d) Survey.--Within 120 days after commencement of drilling 44 operations, the coal operator shall accurately locate the well by a closed survey on the same datum as the mine workings or 45 46 coal boundaries are mapped, file the results of the survey with the department and forward a copy by certified mail to the well_ 47 48 <u>operator.</u> 49 § 3613. Well identification. 50 (a) General rule.--Each person who owns or operates a well 51 in existence prior to the effective date of this section, which

has not been registered with the department and for which no 1 drilling permit has been issued by the department, shall apply_ 2 to adopt the well using forms developed by the department. No 3 4 fee shall be charged for well adoption unless the well must also be altered in accordance with section 3611 (relating to well_ 5 6 permits) prior to operation. 7 (b) Orphaned and abandoned wells. -- A well owner, well operator or other person discovering an abandoned well on_ 8 property purchased or leased by the well owner, well operator or 9 other person shall identify it to the department within 60 days 10 of discovery. A well owner or well operator shall advise the 11 12 department that it is seeking classification of the well as an orphan well or abandoned well. The classification request or 13 identification notice shall include any available information_ 14 relating to the well's operating and ownership interests. No fee 15 shall be required for identification. 16 17 (c) Area of review. -- An operator shall undertake reasonable diligence to avoid inadvertent communication with abandoned, 18 orphan, plugged, active and inactive wells during hydraulic 19 20 fracturing by conducting an area of review survey consisting of the following: 21 22 (1) Review of records and reports. 23 (2) Field investigation. 24 (3) Monitoring of orphan and abandoned wells that could be potentially impacted by hydraulic fracturing. 25 26 (d) Notice. -- An operator shall provide notice to the department as soon as practicable if a well undergoing hydraulic 27 28 fracturing communicates with any abandoned, orphan, plugged, 29 active or inactive well in a manner that has the potential to 30 cause an adverse environmental, public health or safety impact. In coal areas when the affected well is within an active mine or 31 32 2,000 linear feet or less from an active mine, the coal operator 33 shall also be notified as soon as practicable. 34 (e) Remedial actions. -- An operator inadvertently 35 communicating with any abandoned, orphan, plugged, active or 36 inactive well shall implement remedial actions necessary to 37 prevent pollution and protect the environment, public health and safety. Remedial actions may include but are not limited to 38 39 cessation of hydraulic fracturing and plugging. 40 (f) Permit. -- A person who proposes to operate an orphan or abandoned well affected by hydraulic fracturing operations shall 41 42 first obtain a permit to adopt and operate the well in accordance with subsection (a) if the well complies with the 43 44 spacing requirements in coal areas under the act of December 18, 1984 (P.L.1069, No.214), known as the Coal and Gas Resource 45 Coordination Act, or for wells subject to the act of July 25, 46 1961 (P.L.825, No.359), known as the Oil and Gas Conservation_ 47 48 Law. 49 (g) Regulations. -- The Environmental Quality Board shall have 50 the authority to adopt regulations regarding the area of review provisions in subsections (c), (d) and (e). 51

1	<u>§ 3614. Inactive status.</u>
2	<u>(a) General ruleWithin 60 days of receipt of an</u>
3	application for inactive status, the department may grant
4	<u>inactive status for a period of five years for a permitted or</u>
5	registered well, if the following requirements are met:
6	(1) the condition of the well is sufficient to prevent
7	<u>damage to the producing zone or contamination of fresh water</u>
8	<u>or other natural resources or surface leakage of any</u>
9	substance;
10	(2) the condition of the well is sufficient to stop the
11	vertical flow of fluids or gas within the well bore and is
12	adequate to protect freshwater aquifers, unless the
13	<u>department determines the well poses a threat to the health</u>
14	and safety of persons or property or to the environment;
15	(3) the operator anticipates construction of a pipeline
16	or future use of the well for primary or enhanced recovery,
17	<u>gas storage, approved disposal or other appropriate uses</u>
18	related to oil and gas well production; and
19	(4) the well to be granted inactive status is bonded in
20	<u>an amount sufficient to plug the well and restore the well</u>
21	site as determined by the department. The bond required by
22	this paragraph shall be in addition to the bond required by
23	section 3625 (relating to bonding). A bond filed with an
24	inactive status application shall be payable to the
25	<u>Commonwealth and conditioned on the operator's faithful</u>
26	performance of all water supply replacement, restoration and
27	plugging requirements of this chapter.
28	(b) Inactive statusIf the department has not made a final
29	determination on an application for inactive status within 60
3U 21	days, the well will be considered inactive for purposes of
3⊥ 20	<u>compliance with the reporting requirements in this act until the</u>
ンム つつ	department makes a final determination on the application for
22 21	(a) Manitoring The europe of energies well granted
24 25	(c) Monitoring me owner of operator of a wert granted
30	machanical integrity of the well to onsure that the requirements
30	$\frac{1}{1}$ of subsection (a) (1) and (2) are met. The owner or operator of a
38	well granted inactive status shall submit a report on an annual
20 29	basis to the department in a manner and form as provided by the
40	department that demonstrates that the well complies with
41	subsection (a) (1), (2) and (3). The owner or operator of a well
42	granted inactive status under subsection (a) shall immediately
4.3	notify the department when the well no longer meets the
44	requirements of subsection (a) and plug the well in accordance
45	with section 3620 (relating to plugging requirements) or repaint
46	the well in order to meet the requirements of subsection (a) (1)
47	and (2).
48	<u>(d) Return to active</u> statusAn inactive status well under
49	subsection (a) or (b) shall be plugged in accordance with
50	section 3620 or returned to active status within five years of
51	the date inactive status commenced, unless the owner or operator

applies for an extension of inactive status which may be granted 1 once for up to five years if the department determines that the 2 owner or operator has demonstrated an ability to continue 3 4 meeting the requirements of this section and the owner or operator certifies that the well will be of future use within a 5 reasonable period of time. An owner or operator who has been 6 granted inactive status for a well which is returned to active 7 status prior to expiration of the five-year period set forth in 8 subsection (a) shall notify the department that the well has 9 10 been returned to active status and shall not be permitted to apply for another automatic five-year period of inactive status 11 12 for the well. The owner or operator may make application to 13 return the well to inactive status, and the application may be approved on a year-to-year basis if the department determines 14 15 that the owner or operator has demonstrated an ability to_ continue meeting the requirements of this section and the owner 16 17 or operator certifies that the well will be of future use within a reasonable period of time. The department shall approve or 18 deny an application to extend a period of inactive status or to 19 20 return a well to inactive status within 60 days of receipt of the application, and the application shall not be unreasonably 21 22 denied. If the department has not completed its review of the 23 application within 60 days, the inactive status shall continue 24 until the department has made a determination on the request. An owner or operator may in no circumstances extend the total 25 period of inactive status for a well beyond 10 years. If the 26 department denies an application to extend the period of 27 28 inactive status or to return a well to inactive status, a well 29 owner or operator aggrieved by the denial shall have the right 30 to appeal the denial to the Environmental Hearing Board within 31 30 days of receipt of the denial. Upon cause shown by a well 32 owner or operator, the board may grant a supersedeas under section 4 of the act of July 13, 1988 (P.L.530, No.94), known as 33 34 the Environmental Hearing Board Act, so that the well in 35 question may retain inactive status during the period of the 36 appeal. 37 (e) Revocation of inactive status. -- The department may revoke inactive status and order immediate plugging of a well if 38 39 the well is in violation of this chapter or rules or regulations promulgated under this chapter or if the owner or operator 40 41 demonstrates inability to perform obligations under this chapter 42 or becomes financially insolvent, or upon receipt by the department of notice of bankruptcy proceedings by the permittee. 43 44 § 3615. Well location restrictions. (a) General rule. -- Wells may not be drilled within 200 feet 45 46 measured horizontally from the vertical well bore to a building 47 or water well, existing when the copy of the plat is mailed as 48 required by section 3611(b) (relating to well permits) without 49 written consent of the owner of the building or water well. If 50 consent is not obtained and the distance restriction would 51 deprive the owner of the oil and gas rights of the right to

1	produce or share in the oil or gas underlying the surface tract,
2	the well operator shall be granted a variance from the distance
3	restriction upon submission of a plan identifying the additional
4	<u>measures, facilities or practices as prescribed by the</u>
5	<u>department to be employed during well site construction, _</u>
6	drilling and operations. The variance shall include additional
7	terms and conditions required by the department to ensure safety
8	and protection of affected persons and property, including
9	insurance, bonding, indemnification and technical requirements.
10	Notwithstanding section 3611(e), if a variance request has been
11	submitted, the department may extend its permit review period
12	for up to 15 days upon notification to the applicant of the
13	reasons for the extension.
14	(b) Limitation
15	<u>(1) No well site may be prepared or well drilled within</u>
16	<u>100 feet from the vertical well bore or 100 feet from the</u>
17	<u>edge of the well site, whichever is greater, measured</u>
18	horizontally from any solid blue lined stream, spring or body
19	<u>of water as identified on the most current 7 1/2 minute</u>
20	<u>topographic quadrangle map of the United States Geological</u>
21	<u>Survey or within 100 feet of any wetlands greater than one</u>
22	<u>acre in size.</u>
23	(2) The department may waive the distance restrictions
24	<u>upon submission of a plan identifying additional measures,</u>
25	<u>facilities or practices to be employed during well site</u>
26	<u>construction, drilling and operations necessary to protect</u>
27	the waters of this Commonwealth. The waiver, if granted,
28	shall include additional terms and conditions required by the
29	<u>department necessary to protect the waters of this</u>
30	<u>Commonwealth. Notwithstanding section 3611(e), if a waiver</u>
31	request has been submitted, the department may extend its
32	permit review period for up to 15 days upon notification to
33	the applicant of the reasons for the extension.
34	(c) ImpactOn making a determination on a well permit, the
35	department shall consider the impact of the proposed well on
36	public resources, including, but not limited to:
37	(1) Publicly owned parks, forests, game lands and
38	<u>wildlife areas.</u>
39	<u>(2) National or State scenic rivers.</u>
40	<u>(3) National natural landmarks.</u>
41	(4) Habitats of rare and endangered flora and fauna and
42	<u>species of special concern.</u>
43	(5) Historical and archaeological sites listed on the
44	<u>Federal or State list of historic places.</u>
45	<u>(6) Sources used for public drinking supplies in</u>
46	<u>accordance with subsection (b).</u>
47	(d) Regulation criteriaThe Environmental Quality Board
48	<u>shall develop by regulation criteria:</u>
49	(1) For the department to utilize for conditioning a
50	well permit based on its impact to the public resources
51	identified under subsection (c) and for ensuring optimal

<u>dev</u>	elopment of oil and gas resources and respecting property
<u>rig</u>	hts of oil and gas owners.
	(2) For appeal to the Environmental Hearing Board of a
<u>per</u>	mit containing conditions imposed by the department. The
req	ulations shall also provide that the department has the
bur	den of proving that the conditions were necessary to
pro	tect against a probable harmful impact of the public
res	ources.
(e)	Floodplains
	(1) No well site may be prepared or well drilled within
anv	floodplain if the well site will have:
<u> </u>	(i) a pit or impoundment containing drilling
	cuttings, flowback water, produced water or hazardous
	materials, chemicals or wastes within the floodplain; or
	(ii) a tank containing bazardous materials.
	chemicals condensate wastes flowback or produced water
	within the floodway
	(2) A well site shall not be eligible for a floodplain
ree	triction waiver if the well site will have a tank
<u>105</u>	taining condensate flowback or produced water within the
<u>flo</u>	and fringe upless all the tanks have adequate fleedpreefing
in	accordance with the National Flood Insurance Program
<u></u>	accordance with the National Flood Insulance Flogram
<u>sta</u>	(2) The department may verify practices.
a la	(3) The department may walve restrictions upon
<u>aue</u>	mission of a plan that shall identify the additional
<u>mea</u>	sures, facilities of practices to be employed during well
<u>sit</u>	e construction, drilling and operations. The waiver, if
<u>gra</u>	nted, shall impose permit conditions necessary to protect
<u>the</u>	waters of this Commonwealth.
	(4) Best practices as determined by the department to
<u>ens</u>	ure the protection of the waters of this Commonwealth must
<u>be</u>	utilized for the storage and handling of all water,
<u>che</u>	micals, fuels, hazardous materials or solid waste on a
<u>wel</u>	1 site located in a floodplain. The department may request
<u>tha</u>	t the well site operator submit a plan for the storage and
<u>han</u>	dling of the materials for approval by the department and
<u>may</u>	'impose conditions or amend permits to include permit
<u>con</u>	ditions as are necessary to protect the environment,
<u>pub</u>	lic health and safety.
	(5) Unless otherwise specified by the department, the
<u>bou</u>	ndary of the floodplain shall be as indicated on maps and
<u>flo</u>	od insurance studies provided by the Federal Emergency
<u>Man</u>	agement Agency. In an area where no Federal Emergency
<u>Man</u>	agement Agency maps or studies have defined the boundary
of	the 100-year frequency floodplain, absent evidence to the
<u>con</u>	trary, the floodplain shall extend from:
	(i) any perennial stream up to 100 feet horizontally
	from the top of the bank of the perennial stream; or
	(ii) from any intermittent stream up to 50 feet
	horizontally from the top of the bank of the intermittent
	stream.
	 _

1	(f) Applicability
2	(1) This section shall not apply to a well proposed to
3	<u>be drilled on an existing well site for which at least one</u>
4	well permit has been issued prior to the effective date of
5	this section.
6	(2) Nothing in this section shall alter or abridge the
7	terms of any contract, mortgage or other agreement entered
8	<u>into prior to the effective date of this section.</u>
9	<u>§ 3616. Well site restoration.</u>
10	<u>(a) General ruleEach oil or gas well owner or operator</u>
11	shall restore the land surface within the area disturbed in
12	siting, drilling, completing, producing and plugging the well.
13	Restoration includes, but is not limited to, reclamation of the
14	land affected to preconstruction contours so that it closely
15	resembles the general surface configuration of the land prior to
16	construction activities, if known, and blends into and
⊥ / 1 0	complements the drainage pattern of the surrounding terrain, and
18	can support the land uses that existed prior to the applicable
19	oil and gas operations and to the extent practicable based on
20	<u>current land conditions.</u>
21	(b) PlanDuring and alter earthmoving or soil disturbing
22	activities, including, but not inmited to, activities related to
23	sicing, diffining, completing, producing and plugging the well,
24 25	erosion and sedimentation control and storm water management
25	in accordance with the act of June 22 1937 (P. I. 1987 No. 394)
20	known as The Clean Streams Law
28	(c) Pits drilling supplies and equipmentWithin nine
29	months after completion of drilling of a well or expiration of
30	the well permit, the owner or operator shall restore the well
31	site and remove or fill all pits used to contain produced fluids
32	or industrial wastes and remove all drilling supplies and
33	equipment not needed for production. Drilling supplies and
34	equipment not needed for production may be stored on the well
35	site if express written consent of the surface landowner is
36	obtained so long as such storage and any remaining disturbed
37	areas that are not included in a restoration plan, and other
38	remaining impervious surfaces, comply with all requirements in
39	<u>The Clean Streams Law.</u>
40	<u>(d) Items related to production or storageWithin nine</u>
41	months after plugging a well, the owner or operator shall remove
42	all production or storage facilities, supplies and equipment and
43	restore the well site.
44	<u>(e) Clean Streams LawRestoration activities required by</u>
45	this chapter or in regulations promulgated under this chapter
46	<u>shall also comply with all applicable provisions of The Clean</u>
47	Streams Law.
48	(I) Violation of chapterFailure to restore the well site
49	as required in this chapter or regulations promulgated under
50	this chapter constitutes a violation of this chapter.
51	<u>(g) Extension</u>

1	(1) The restoration period may be extended by the
2	<u>department for an additional period of time not to exceed two</u>
3	<u>years upon demonstration by the well owner or operator that:</u>
4	(i) the extension will result in less earth
5	<u>disturbance, increased water reuse or more efficient</u>
6	development of the resources; or
7	(ii) site restoration cannot be achieved due to
8	adverse weather conditions or a lack of essential fuel,
9	equipment or labor.
10	(2) The demonstration under paragraph (1) shall do all
11	of the following:
12	(i) Include a site restoration plan that shall
13	provide for.
14	(A) the timely removal or fill of all nits used
15	to contain produced fluids or industrial wastes.
1 G	(D) the remewal of all drilling supplies and
17	(B) the removal of all drifting supplies and
⊥ / 1 0	equipment not needed for production;
10	(C) the stabilization of the well site that
19	shall include interim postconstruction storm water_
20	<u>management best management practices; or</u>
21	(D) other measures to be employed to minimize
22	accelerated erosion and sedimentation in accordance
23	with The Clean Streams Law.
24	(ii) Provide for returning the portions of the site
25	not occupied by production facilities or equipment
26	<u>consistent with subsection (a).</u>
27	<u>(3) The department may condition an extension under this</u>
28	<u>subsection as is necessary in accordance with The Clean</u>
29	<u>Streams Law.</u>
30	<u>§ 3617. Protection of fresh groundwater and casing</u>
31	<u>requirements.</u>
32	<u>(a) General ruleTo aid in protection of fresh</u>
33	groundwater, well operators shall control and dispose of brines
34	produced from the drilling, alteration or operation of an oil or
35	gas well in a manner consistent with the act of June 22, 1937
36	(P.L.1987, No.394), known as The Clean Streams Law, or any
37	<u>regulation promulgated under The Clean Streams Law.</u>
38	<u>(b) CasingTo prevent migration of gas or fluids into</u>
39	sources of fresh groundwater and pollution or diminution of
40	fresh groundwater, a string or strings of casing shall be run
41	and permanently cemented in each well drilled through the fresh
42	water-bearing strata to a depth and in a manner prescribed by
43	regulation by the department. The regulation shall be consistent
44	with practices that have proven to be protective in regional
45	areas and consider the use of alternative cement formulations
46	and casing materials to protect the casing from corrosion.
47	lithologic and physical conditions of the surrounding well bore.
48	(c) Noncoal areas In noncoal areas, the surface casing may
49	be employed as production casing for oil or gas production.
50	provided:
51	(1) The operator pumps a volume of cement equal to or

1	<u>greater than 120% of the calculated annular space.</u>
2	(2) The operator circulates cement using the
3	displacement method.
4	(3) The location of cement within the annular space, as
5	determined by logging, and the function of the casing string
6	satisfy the requirements of subsection (b) and other
7	regulations prescribed by the department. To achieve
8	sufficient cement coverage in the annular space, the operator
9	may install a cement basket immediately above the depth of an
10	anticipated lost circulation zone and fill the annular space
11	by pumping from the surface if a casing and cementing plan
12	detailing the procedure is approved by the department.
13	(d) Procedure when coal has been removedIf a well is
14	drilled at a location where coal has been removed from one or
15	more coal seams, the well shall be drilled and cased to prevent
16	migration of gas or fluids into the seam from which coal has
17	been removed in a manner prescribed by regulation of the
18	department. The department and the coal operator, owner or
19	lessee shall be given at least 72 hours' notice prior to
20	commencement of work protecting the mine.
21	(e) Procedure when coal has not been removedIf a well is
22	drilled at a location where the coal seam has not been removed,
23	the casing shall be installed and permanently cemented in a
24	<u>manner prescribed by regulation to exclude gas or fluids from</u>
25	the coal seam, except gas or fluids found naturally in the seam
26	itself, and to enable monitoring the integrity of the production
27	casing.
28	<u>§ 3618. Protection of water supplies.</u>
29	<u>(a) General ruleIn addition to the requirements of</u>
30	subsection (c.1), a well operator who affects a public or
31	private water supply by pollution or diminution shall restore or
32	replace the affected supply with an alternate source of water
33	adequate in quantity or quality for the purposes served by the
34	<u>supply. The department shall ensure that the quality of a</u>
35	restored or replaced water supply meets the standards
36	established under the act of May 1, 1984 (P.L.206, No.43), known
37	as the Pennsylvania Safe Drinking Water Act, or is comparable to
38	the quality of the water supply before it was affected by the
39	<u>operator if that water supply exceeded those standards. The</u>
40	<u>Environmental Quality Board shall promulgate regulations</u>
41	necessary to meet the requirements of this subsection.
42	<u>(b) Pollution or diminution of water supplyA landowner or </u>
43	<u>water purveyor suffering pollution or diminution of a water</u>
44	<u>supply as a result of the drilling, alteration or operation of</u>
45	an oil or gas well may so notify the department and request that
46	an investigation be conducted. Within ten days of notification,
47	the department shall investigate the claim and make a
48	determination within 45 days following notification. If the
19	
чJ	department finds that the pollution or diminution was caused by
50	department finds that the pollution or diminution was caused by drilling, alteration or operation activities or if it presumes

```
(c), the department shall issue orders to the well operator
1
   necessary to assure compliance with subsection (a), including_
 2
   orders requiring temporary replacement of a water supply where
 3
 4
   it is determined that pollution or diminution may be of limited
 5
   duration.
       (b.1) (Reserved).
 6
7
       (b.2) Telephone number. -- The department shall establish a
   single Statewide toll-free telephone number that persons may use
8
9
   to report cases of water contamination which may be associated
   with the development of oil and gas resources. The Statewide
10
   toll-free telephone number shall be provided in a conspicuous_
11
12
   manner in the notification required under section 3611(b)_
   (relating to well permits) and on the department's Internet
13
14
   website.
15
      (b.3) Responses. -- The department shall develop appropriate
   administrative responses to calls received on the Statewide
16
   toll-free telephone number for water contamination.
17
       (b.4) Website.--The department shall publish, on its
18
   Internet website, lists of confirmed cases of subterranean water
19
20
   supply contamination that result from hydraulic fracturing.
       (b.5) Facility operation qualifications. -- The department
21
22
   shall ensure that a facility which seeks a National Pollutant
23
   Discharge Elimination System permit for the purposes of treating
24
   and discharging wastewater originating from oil and gas
   activities into waters of this Commonwealth is operated by a
25
   competent and qualified individual.
26
      (c) Presumption. -- Unless rebutted by a defense established
27
28
   in subsection (d), it shall be presumed that a well operator is
29
   responsible for pollution of a water supply if:
30
           (1) the water supply is within 1,000 feet of an oil or
31
       <u>gas well; and</u>
32
           (2) the pollution occurred within six months after
33
       completion of drilling or alteration of the oil or gas well.
      (c.1) Requirement. -- If the affected water supply is within
34
   the rebuttable presumption area as provided in subsection (c)
35
36
   and the rebuttable presumption applies, the operator shall
37
   provide a temporary water supply if the water user is without a
   readily available alternative source of water. The temporary_
38
39
   water supply provided under this subsection shall be adequate in
   guantity and guality for the purposes served by the supply.
40
       (d) Defenses.--To rebut the presumption established under
41
42
   subsection (c), a well operator must affirmatively prove any of
43
   the following:
44
           (1) the pollution existed prior to the drilling or
       alteration activity as determined by a predrilling or
45
46
      prealteration survey;
           (2) the landowner or water purveyor refused to allow the
47
       operator access to conduct a predrilling or prealteration_
48
49
       survey;
50
           (3) the water supply is not within 1,000 feet of the
51
      well;
```

1	(4) the pollution occurred more than six months after
2	<u>completion of drilling or alteration activities; and</u>
3	(5) the pollution occurred as the result of a cause
4	<u>other than the drilling or alteration activity.</u>
5	<u>(e) Independent certified laboratoryAn operator electing</u>
6	<u>to preserve a defense under subsection (d)(1) or (2) shall</u>
7	<u>retain an independent certified laboratory to conduct a</u>
8	predrilling or prealteration survey of the water supply. A copy
9	of survey results shall be submitted to the department and the
10	landowner or water purveyor in the manner prescribed by the
11	<u>department.</u>
12	(f) Other remedies preservedNothing in this section shall
13	<u>prevent a landowner or water purveyor claiming pollution or</u>
14	diminution of a water supply from seeking any other remedy at
15	<u>law or in equity.</u>
16	<u>§ 3619. Use of safety devices.</u>
17	Any person engaged in drilling an oil or gas well shall equip
18	it with casings of sufficient strength, and other safety devices
19	as are necessary, in the manner prescribed by regulation of the
20	department, and shall use every effort and endeavor effectively
21	to prevent blowouts, explosions and fires.
22	<u>§ 3619.1. Well control emergency response.</u>
23	(a) ContractsThe department may enter into contracts with
24	well control specialists in order to provide adequate emergency
25	response services in the event of a well control emergency. The
26	department shall make available, upon request by a county,
27	information relating to contracts with well control specialists.
28	(b) Civil immunityExcept as set forth in subsection (c),
29	a well control specialist with which the department has entered
20 21	liphility for actions taken in good faith to carry out its
33	contractual obligations
22 22	(c) NonapplicabilitySubsection (b) shall not apply to
37	damage arising from any of the following:
2 <u>7</u> 2 5	$\frac{\text{damage arising from any of the contract under subsection (a)}{(1)}$
36	(2) An intentional tort
37	(3) Gross negligence
38	§ 3620 Plugging requirements
39 39	(a) General rule Conventional wells shall be plugged in
40	accordance with this act. Prior to abandoning a well, the owner
41	or operator shall plug it in the manner prescribed by regulation
42	of the department to stop vertical flow of fluids or gas within
4.3	the well bore, unless the department has determined that the
44	flow is an acceptable artesian flow of freshwater, the well is
45	on inactive status or it has been approved by the department as
46	an orphan well. If the department determines that a prior owner
47	or operator received economic benefit, other than economic
48	benefit derived only as a landowner or from a royalty interest,
49	after April 18, 1979, from an orphan well or an unregistered
50	well, the owner or operator shall be responsible for plugging
51	the well. In the case of a gas well penetrating a workable coal

seam which was drilled prior to January 30, 1956, or which was 1 permitted after that date but not plugged in accordance with 2 this chapter, if the owner or operator or a coal operator or an 3 4 agent proposes to plug the well to allow mining through it, the gas well shall be cleaned to a depth of at least 200 feet below 5 the coal seam through which mining is proposed and, unless 6 7 impracticable, to a point 200 feet below the deepest mineable_ coal seam. The gas well shall be plugged from that depth in 8 9 accordance with the regulations of the department. (b) Areas underlain by coal. -- Prior to the plugging and 10 11 abandonment of a well in an area underlain by a workable coal 12 seam, the well operator or owner shall notify the department and the coal operator, lessee or owner and submit a plat showing the 13 14 location of the well and fixing the date and time plugging will 15 commence, which shall be not less than three working days, nor more than 30 days, after the notice is received, to permit 16 17 representatives of the persons notified to be present at the plugging. Notice and the right to be present may be waived by 18 the department and the coal operator, lessee or owner, but 19 20 waiver by the coal operator, lessee or owner shall be in writing and a copy shall be attached to the notice of abandonment filed 21 22 with the department under this section. Whether or not 23 representatives attend, if the well operator has fully complied 24 with this section, the well operator may proceed, at the time fixed, to plug the well in the manner prescribed by regulation 25 of the department. When plugging has been completed, a 26 certificate shall be prepared and signed, on a form to be 27 28 furnished by the department, by two experienced and qualified 29 people who participated in the work setting forth the time and manner in which the well was plugged. One copy of the 30 31 certificate shall be mailed to each coal operator, lessee or 32 owner to whom notice was given by certified mail and another_ 33 shall be mailed to the department. (c) Abandoned wells. -- Prior to abandonment of a well, except 34 35 an uncompleted bore hole plugged immediately upon suspension of 36 drilling in an area not underlain by a workable coal seam, the 37 well operator shall notify the department of the intention to plug and abandon the well and submit a plat showing the location 38 39 of the well and fixing the date and time at which plugging will commence, which shall be not less than three working days, nor 40 more than 30 days, after the notice is received, to permit a 41 42 department representative to be present at the plugging. The notice or waiting period may be verbally waived by the 43 44 department. In noncoal areas where more than one well has been drilled as part of the same development project and the wells 45 46 are now to be plugged, the department shall be given three working days' notice prior to plugging the first well of the 47 48 project, subject to waiver of notice described in subsection 49 (b). In the plugging of subsequent wells, no additional notice 50 shall be required if plugging on the project is continuous. If plugging of subsequent wells is delayed for any reason, notice 51

shall be given to the department of continuation of the project. 1 2 Whether or not a representative attends, if the well operator has fully complied with this section, the well operator may 3 4 proceed, at the time fixed, to plug the well in the manner prescribed by regulation of the department. When plugging has 5 been completed, a certificate shall be prepared, on a form to be 6 7 furnished by the department, by two experienced and qualified people who participated in the work setting forth the time and 8 9 manner in which the well was plugged. A copy of the certificate 10 shall be mailed to the department. 11 (d) Wells abandoned upon completion of drilling.--If a well_ is to be abandoned immediately after completion of drilling, the 12 13 well operator shall give at least 24 hours' notice, confirmed by certified mail, to the department and to the coal operator, 14 15 lessee or owner, if any, fixing the date and time when plugging will commence. Notice and the right to be present may be waived 16 17 by the department and the coal operator, lessee or owner, if 18 any. Whether or not representatives of the department or coal operator, lessee or owner, if any, attend, if the well operator 19 20 has fully complied with the requirements of this section, the well operator may proceed, at the time fixed, to plug the well_ 21 22 in the manner provided by regulation of the department. The well 23 operator shall prepare the certificate of plugging and mail 24 copies of the same as provided in subsection (b). 25 (e) Orphan and abandoned wells.--If a well is an orphan well or abandoned without plugging or if a well is in operation but_ 26 not registered, the department may enter upon the well site and 27 28 plug the well and sell equipment, casing and pipe at the site 29 which may have been used in production of the well in order to recover the costs of plugging. The department shall make an 30 31 effort to determine ownership of a well which is in operation 32 but has not been registered and provide written notice to the 33 owner of pending action under this subsection. If the department cannot determine ownership within 30 days, it may proceed under 34 35 this subsection. Costs of plugging shall have priority over all 36 liens on equipment, casing and pipe, and the sale shall be free 37 and clear of those liens to the extent that the cost of plugging exceeds the sale price. If the amount obtained for casing and 38 39 pipe salvaged at the site is inadequate to pay for plugging, the owner or operator of the abandoned or unregistered well shall be 40 41 liable for the additional costs. 42 (f) Environmental Good Samaritans. -- A person undertaking the plugging of an orphan well or abandoned well without a 43 44 responsible owner or operator with approval from the department under 27 Pa.C.S. Ch. 81 (relating to good samaritan), including 45 46 by way of a grant or payment from the Commonwealth Financing 47 Authority, shall not be subject to the notice requirements of 27 48 Pa.C.S. § 8105(b) (relating to eligibility and project 49 inventory) provided that the surface landowner is notified and 50 grants access to the well. Notice to the department and the 51 surface landowner shall be provided on forms developed by the

2021/90MAB/HB1144A00943

1	department. When plugging has been completed, a certificate
2	shall be prepared and signed on a form to be furnished by the
3	department by two experienced and qualified individuals who
4	participated in the work and set forth the time and manner in
5	which the well was plugged. A copy of the certificate shall be
6	provided to the department.
7	(g) Persons who voluntarily plug an orphan or abandoned well
8	in accordance with this section
9	(1) Persons who voluntarily plug an orphan well or
10	<u>abandoned well without a responsible owner or operator may</u>
11	<u>either:</u>
12	(i) Apply to the Commonwealth Financing Authority,
13	<u>on forms developed by the Commonwealth Financing</u>
14	<u>Authority, for a payment per well plugged payable from</u>
15	the Marcellus Legacy Fund established under section 2315
16	(relating to Statewide initiatives) according to the
17	following schedule:
18	(A) \$10,000 for each well 2,000 feet or less
19	below ground surface.
20	(B) \$20,000 for each well between 2,001 and
21	3,000 feet below ground surface.
22	(C) \$30,000 for each well greater than 3,000
23	feet below ground surface.
24	(ii) Be credited for each plugged well in the form
25	of a permit-fee waiver for any succeeding conventional
26	well permit application.
27	(2) Persons who voluntarily plug an orphan well or
28	abandoned well without a responsible owner or operator and
29	receive payment under this section shall not be disqualified
30	from liability protections under 27 Pa.C.S. Ch. 81.
31	(h) NotificationWith respect to the owner of a workable
32	coal seam, if any, notification shall be accomplished under this
33	section by sending notice to the persons to whom tax notices for
34	the workable coal seams are sent, as indicated in the assessment
35	books, if available, or as indicated in the records of the
36	recorder of deeds office in the county in which such seams are
37	located. If certified mail or notification is returned
38	undeliverable, the applicant shall include a completed affidavit
39	attesting to the attempted delivery, which shall satisfy the
40	notification requirements under this section.
41	(i) DefinitionFor purposes of this section, the term
42	"owner" does not include the owner or possessor of surface real
43	property, on which an abandoned well is located, who did not
44	participate or incur costs in and had no right of control over
45	the drilling or extraction operation of the abandoned well.
46	<u>§ 3621. Alternative methods.</u>
47	<u>A well operator may request permission to use a method or</u>
48	material other than those required by this chapter and
49	applicable regulations for casing, plugging or equipping a well
50	in an application to the department which describes the proposed
51	alternative in reasonable detail and indicates the manner in

1 2	which it will accomplish the goals of this chapter. Notice of filing of the application shall be given by the well operator by
3	certified mail to any affected coal operators, who may, within
4	15 days after the notice, file objections to the proposed
5	alternative method or material. If no timely objections are
6	filed or raised by the department, the department shall
7	determine whether to allow use of the proposed alternative
8	method or material.
9	§ 3622. Well reporting requirements.
10	(a) General ruleEach well operator shall file with the
11	department, on a form provided by the department, an annual
12	report specifying the amount of production, on the most well-
13	specific basis available, along with the status of each well.
14	except that in subsequent years only changes in status must be
15	reported Except for home use wells wells producing less than
16	50 mcf per year or 10 barrels of oil per year shall be evaluated
17	for future utility by the operator and the results of this
18	evaluation shall be included in the production report. The
19	department may require a well to be plugged if the operator does
20	not demonstrate that the well has adequate future utility. The
21	Commonwealth may utilize reported information in enforcement
22	proceedings in making designations or determinations under
22	section 1927-A of the act of April 9 1929 (P. 177 No. 175)
20	known as The Administrative Code of 1929 or in aggregate form
25	for statistical purposes
25	(b) Collection of data
20	(1) Well operators shall maintain a record of each well
28	drilled en altered
20 29	(2) A record containing the information required by the
30	department shall be filed within 30 days after drilling of a
31	upli
32	$\frac{W \in \pm \pm}{2}$
22	the well is capable of production a completion report
37	containing any additional required information shall be filed
2 T 2 T	and shall be maintained by the department
35	(1) The well operator shall within 90 days of
30	completion or recompletion of drilling submit a conv of any
38	electrical radioactive or other standard industry logs which
20 20	have been run
10	(5) Upon request by the department within one year the
д0 Л1	well operator shall file a copy of drill stem test charts
12 12	formation water analysis porosity permeability or fluid
42 // 3	saturation measurements core analysis and lithologic log or
ч <u>)</u> Л Л	sample description or other similar data as compiled. No
11 15	information shall be required unless the well operator had it
16	compiled in the ordinary course of business and
д7	interpretation of data under this paragraph is not required
/ 2 8	to be filed
т0 Д Q	(b 1) Report contents
ユン 50	(1) The completion report shall contain the energies
51	(1) The complection report Shart Contain the operator's
JT	Stimulation record, the Stimulation record Shall include all

1	of the following:
2	(i) A descriptive list of the chemical additives in
3	the stimulation fluids, including any acid, biocide,
4	<u>breaker, brine, corrosion inhibitor, crosslinker,</u>
5	<u>demulsifier, friction reducer, gel, iron control, oxygen</u>
6	<u>scavenger, Ph adjusting agent, proppant, scale inhibitor</u>
7	and surfactant.
8	(ii) The trade name, vendor and a brief descriptor_
9	of the intended use or function of each chemical additive
10	in the stimulation fluid.
11	(iii) A list of the chemicals intentionally added to
12	the stimulation fluid, by name and chemical abstract
13	service number.
14	(iv) The maximum concentration, in percent by mass,
15	of each chemical intentionally added to the stimulation_
16	fluid.
17	(v) The total volume of the base fluid.
18	(vi) The pump rates and pressure used in the well.
19	(vii) The total volume of recycled water used.
20	(2) The well record shall identify whether methane was
21	encountered in other than a target formation.
22	<u>(b.2) Trade secret or confidential proprietary</u>
23	informationWhen an operator submits its stimulation record
24	under subsection (b.1), the operator may designate specific
25	portions of the stimulation record as containing a trade secret
26	or confidential proprietary information. The department shall
27	prevent disclosure of a designated trade secret or confidential
28	proprietary information to the extent permitted by the act of
29	February 14, 2008 (P.L.6, No.3), known as the Right-to-Know Law,
30	<u>or other applicable State law.</u>
31	<u>(c) Drill cuttings and core samplesUpon notification by</u>
32	the department prior to commencement of drilling, the well
33	operator shall collect any additional data specified by the
34	department, including representative drill cuttings and samples
35	from cores taken and any other geological information that the
36	<u>operator reasonably can compile. Interpretation of the data is</u>
37	<u>not required to be filed.</u>
38	<u>(d) Retention and filingData required under subsection</u>
39	(b) (5) and drill cuttings required under subsection (c) shall be
40	retained by the well operator and filed with the department no
41	more than three years after completion of the well. Upon
42	request, the department shall extend the deadline up to five
43	years from the date of completion of the well. The department
44	shall be entitled to utilize information collected under this
45	subsection in enforcement proceedings, in making designations or
46	determinations under section 1927-A of The Administrative Code
4 /	OI 1929 and in aggregate form for statistical purposes.
48 40	<u>> 3023. Notification and effect of Well transfer.</u>
49 50	in uniting within 20 down in a form dimental by we well the
5U 51	in writing within 30 days, in a form directed by regulation, of
JТ	<u>sare, assignment, transier, conveyance of exchange by of to the</u>

1	<u>owner of the well. A transfer shall not relieve the well owner</u>
2	<u>or operator of an obligation accrued under this chapter, nor</u>
3	<u>shall it relieve the owner or operator of an obligation to plug</u>
4	<u>the well until the requirements of section 3625 (relating to </u>
5	bonding) have been met, at which time the transferring owner or
6	<u>operator shall be relieved from all obligations under this</u>
7	chapter, including the obligation to plug the well.
8	§ 3624. Coal operator responsibilities.
9	(a) General rule
10	(1) At any time prior to removing coal or other
11	underground material or extending the workings in a coal mine_
12	within 500 feet of an oil or gas well of which the coal
13	operator has knowledge or an approved well location of which
14	the coal operator has knowledge, the coal operator shall
15	forward, by certified mail, to or file with the well operator_
16	and the department a copy of the relevant part of the coal
17	operator's maps and plans which it is presently required by
18	law to prepare and file with the department, showing the
19	pillar which the coal operator proposes to leave in place
20	around each oil or gas well in the projected workings.
21	(2) Following the filing of maps and plans, the coal
22	operator may proceed with mining operations in the manner
23	projected on the maps and plans, but the coal operator shall
24	not remove any coal or cut any passageway within 150 feet of
25	<u>a well or approved well location until written approval has</u>
26	been granted as provided in this section.
27	(3) If, in the opinion of the well operator or the
28	department, the plan indicates that the pillar proposed to be
29	<u>left around a well or approved well location is inadequate to</u>
30	protect either the integrity of the well or the public health
31	and safety, the well operator affected shall attempt to agree
32	with the coal operator upon a suitable pillar, subject to the
33	<u>approval of the department, but, failing to agree, the well</u>
34	<u>operator may, within 10 days from receipt of the plan, file</u>
35	<u>objections in accordance with section 3651 (relating to</u>
36	<u>conferences) to the proposed plan indicating the size of the</u>
37	<u>pillar to be left with respect to each well.</u>
38	(4) If no objections are filed within the 10-day period
39	or if none are raised by the department, the department shall
40	grant approval to the coal operator reciting the following:
41	(i) The filing of the maps or plans.
42	<u>(ii) That no objections have been made to the plan.</u>
43	<u>(iii) That the pillar proposed to be left for each</u>
44	well is approved in the manner as projected.
45	<u>(b) Objections</u>
46	<u>(1) If objections are filed by a well operator or are</u>
47	raised by the department, the department shall direct that a
48	<u>conference be held in accordance with section 3651 within 10</u>
49	days of the filing of the objections.
50	(2) At the conference the coal operator and the person
51	who has filed the objections shall attempt to agree upon a

2021/90MAB/HB1144A00943 - 28 -

1	proposed plan showing the pillar to be left around each well,
2	which will satisfy the objections and be approved by the
3	department, and if the plan is agreed upon, the department
4	shall grant approval to the coal operator reciting the filing
5	of the plan and that the pillar to be left for each well is
6	approved as agreed upon.
7	(3) If no plan showing the pillar to be left with
8	respect to each well can be agreed upon at the conference,
9	the department shall, by an appropriate order, determine the
10	pillar to be left with respect to the well.
11	(4) In a proceeding under this section, the department
12	shall follow as nearly as possible the original plan filed by
13	the coal operator. The department shall not require the coal
14	operator to leave a pillar in excess of 100 feet in radius,
15	except that, if it is established that unusual conditions
16	<u>exist requiring the leaving of a larger pillar, the</u>
17	<u>department may require a pillar up to but not exceeding 150</u>
18	<u>feet in radius.</u>
19	(5) The pillar to be left with respect to each well as
20	<u>determined by the department shall be shown on the maps or</u>
21	plans on file with the department as provided in subsection
22	<u>(a) and the department shall approve the pillar to be left</u>
23	for each well.
24	(c) Pillars of reduced sizeApplication may be made at any
25	<u>time to the department by a coal operator to leave a pillar of</u>
26	less size than that shown on the plan filed by the operator or
27	approved or determined by the department under the provisions of
28	this section. If an application is filed, the department may,
29	following the procedure prescribed in this section, by an
30	<u>appropriate order, determine a different plan showing a pillar</u>
31	<u>of less size with respect to all wells covered by the </u>
32	application and shall grant approval for the pillar to be left
33	with respect to each well.
34	(d) ViolationNo coal operator shall, without the written
35	approval of the department after notice and opportunity for
36	hearing as prescribed in this section, remove any coal or cut
37	any passageway so as to leave a pillar of less size with respect
38	to an oil or gas well than that approved by the department under
39	this chapter.
40	(e) ConstructionNothing in this chapter shall be
41	construed to require a well operator to pay for a coal pillar
42	required by law to be left around a well drilled prior to April
43	18, 1985. A requirement for a coal operator to leave a pillar of
44 45	<u>coal of a certain size around a well drifted after April 18,</u>
45	1985, Shall hot in any way affect the rights which the coal
40	operator would have had prior to April 18, 1985, to obtain
4/ 10	payment for the coar, nor any outy of right which the Well
40 / 0	operator of rand owner may have had prior to April 18, 1985, to
マン ち ()	(f) Mining through plugged wolls A coal operator who
51	intends to mine through a plugged werrs. A coar operator who

1	<u>plan to completely remove a pillar from around the well in</u>
2	accordance with subsection (a). This plan shall be subject to
3	the requirements of this section. No coal operator may mine
4	through a plugged oil or gas well of which the coal operator has
5	<u>knowledge until written approval has been granted by the</u>
6	<u>department in accordance with this section.</u>
7	(g) Establishment of conditionsThe Bureau of Deep Mine
8	<u>Safety in the department shall have the authority to establish</u>
9	the conditions under which the department may approve a coal
10	<u>operator's plan to mine through a plugged oil or gas well.</u>
11	<u>§ 3625. Bonding.</u>
12	(a) General ruleThe following shall apply:
13	(1) Upon filing an application for a well permit and
14	before continuing to operate any oil or gas well, the owner
15	or operator thereof shall file with the department a bond for
16	the well and the well site on a form to be prescribed and
17	furnished by the department. Any bond filed with an
18	application for a well permit or any bond filed with the
19	<u>department for a well in existence on or after the effective</u>
20	<u>date of this act shall be payable to the Commonwealth and _</u>
21	<u>conditioned that the operator shall comply with the</u>
22	requirements of this act, the act of June 22, 1937 (P.L.1987,
23	No.394), known as The Clean Streams Law, the act of May 31,
24	<u>1945 (P.L.1198, No.418), known as the Surface Mining</u>
25	<u>Conservation and Reclamation Act, the act of July 7, 1980</u>
26	(P.L.380, No.97), known as the Solid Waste Management Act,
27	<u>the act of January 8, 1960 (1959 P.L.2119, No.787), known as</u>
28	the Air Pollution Control Act, and the act of November 26,
29	<u>1978 (P.L.1375, No.325), known as the Dam Safety and</u>
30	Encroachments Act. The department may require additional bond
31	amounts for the well and well site should such as increase be
32	determined by the department to be necessary to meet the
33	requirements of this act. The amount of the bond required
34	shall be in an amount determined by the secretary based upon
35	the total estimated cost of the Commonwealth of completing
36	well plugging activities according to the permit granted to
3/	the well and well site and such measures as are necessary to
38	prevent adverse effects upon the environment. The bond amount
39	shall reflect the additional cost to the Commonwealth which
40	may be entailed by being required to bring personnel and
41	equipment to the site. All permits shall be bonded for at
4Z 4 2	<u>1001 - 1000.</u>
43 ЛЛ	(2) The minimum bond amount required by this chapter may
44 15	<u>be adjusted by the Environmental Quality Board to reflect the</u>
ч5 Л6	plugging
-0 //7	(3) Liability under the bond shall continue until the
48	well has been properly plugged in accordance with this
49	chapter and for a period of one year after filing of the
50	certificate of plugging with the department Each bond shall
51	be executed by the operator and a corporate surety licensed
<u> </u>	so encouced by the operator and a corporate barety ricenbed

2021/90MAB/HB1144A00943 - 30 -

1	to do business in this Commonwealth and approved by the
2	<u>secretary. In lieu of a corporate surety, the operator may</u>
3	deposit with the department:
4	(i) cash;
5	<u>(ii) certificates of deposit or automatically</u>
6	renewable irrevocable letters of credit, from financial
7	<u>institutions chartered or authorized to do business in</u>
8	this Commonwealth and regulated and examined by the
9	Commonwealth or a Federal agency, which may be terminated
10	<u>at the end of a term only upon 90 days' prior written</u>
11	notice by the financial institution to the permittee and
12	the department;
13	<u>(iii) negotiable bonds of the United States</u>
14	<u>Government or the Commonwealth, the Pennsylvania Turnpike</u>
15	Commission, the General State Authority, the State Public
16	<u>School Building Authority or any municipality within the</u>
17	<u>Commonwealth; or</u>
18	<u>(iv) United States Treasury Bonds issued at a</u>
19	<u>discount without a regular schedule of interest payments</u>
20	<u>to maturity, otherwise known as Zero Coupon Bonds, having</u>
21	<u>a maturity date of not more than ten years after the date</u>
22	<u>of purchase and at the maturity date having a value of </u>
23	not less than the applicable amount under paragraph (1).
24	The cash deposit, certificate of deposit, amount of the
25	<u>irrevocable letter of credit or market value of the</u>
26	securities shall be equal at least to the sum of the
27	bond.
28	(4) The secretary shall, upon receipt of a deposit of
29	cash, letters of credit or negotiable bonds, immediately
30	place the same with the State Treasurer, whose duty it shall
31	<u>be to receive and hold the same in the name of the</u>
32	Commonwealth, in trust, for the purpose for which the deposit
33	<u>is made.</u>
34	(5) The State Treasurer shall at all times be
35	responsible for custody and safekeeping of deposits. The
36	<u>operator making the deposit shall be entitled from time to</u>
37	time to demand and receive from the State Treasurer, on the
38	written order of the secretary, the whole or any portion of
39	<u>collateral deposited, upon depositing with the State</u>
40	<u>Treasurer, in lieu of that collateral, other collateral of</u>
41	classes specified in this section having a market value at
42	<u>least equal to the sum of the bond, and also to demand,</u>
43	receive and recover the interest and income from the
44	negotiable bonds as they become due and payable.
45	<u>(6) If negotiable bonds on deposit under this subsection</u>
46	mature or are called, the State Treasurer, at the request of
47	the owner of the bonds, shall convert them into other
48	negotiable bonds, of classes specified in this section,
49	designated by the owner.
50	(7) If notice of intent to terminate a letter of credit
51	is given, the department shall give the operator 30 days'

1 written notice to replace the letter of credit with other 2 acceptable bond quarantees as provided in this section. If 3 the owner or operator fails to timely replace the letter of 4 credit, the department shall draw upon and convert the letter 5 of credit into cash and hold it as a collateral bond 6 <u>guarantee.</u> (b) Release. -- No bond shall be fully released until the 7 requirements of subsection (a) and section 3623 (relating to 8 9 notification and effect of well transfer) have been fully met. 10 Upon release of bonds and collateral under this section, the 11 State Treasurer shall immediately return to the owner the 12 specified amount of cash or securities. 13 (c) Noncompliance.--If a well owner or operator fails or refuses to comply with subsection (a), regulations promulgated 14 15 under this chapter or conditions of a permit relating to this_ chapter, the department may declare the bond forfeited and shall 16 17 certify the same to the Attorney General, who shall proceed to enforce and collect the full amount of the bond and, if the well 18 owner or operator has deposited cash or securities as collateral 19 20 in lieu of a corporate surety, the department shall declare the collateral forfeited and direct the State Treasurer to pay the 21 22 full amount of the funds into the Well Plugging Restricted 23 Revenue Account or to sell the security to the extent forfeited 24 and pay the proceeds into the Well Plugging Restricted Revenue 25 Account. If a corporate surety or financial institution fails to pay a forfeited bond promptly and in full, the corporate surety 26 or financial institution shall be disqualified from writing 27 28 further bonds under this chapter or any other environmental law 29 administered by the department. A person aggrieved by reason of 30 forfeiting the bond or converting collateral, as provided in_ 31 this section, shall have a right to appeal to the Environmental 32 Hearing Board in the manner provided by law. Upon forfeiture of a blanket bond for a violation occurring at one or more well 33 sites, the person whose bond is forfeited shall, within ten days 34 of the forfeiture, submit a replacement bond to cover all other 35 36 wells of which the person is an owner or operator. Failure to 37 submit the replacement bond constitutes a violation of this 38 section as to each of the wells owned or operated by the person. 39 (d) Reservation of remedies.--All remedies for violations of this chapter, regulations adopted under this chapter and 40 41 conditions of permits are expressly preserved. Nothing in this 42 section shall be construed as an exclusive penalty or remedy for violations of law. No action taken under this section shall 43 44 waive or impair any other remedy or penalty provided in law. (e) Change of law. -- Owners or operators who have failed to 45 46 meet the requirements of this section prior to August 1, 1992, 47 shall not be required to make payments under this section on a 48 retroactive basis as a condition of obtaining a permit under 49 this chapter, nor shall the failure be deemed a violation of 50 this chapter. 51 (f) Definition.--As used in this section, the term "well

<pre>2 necessary for or incidental to drilling, production or plugging 3 a well. 5 SUBCHAPTER C 5 ENFORCEMENT AND REMEDIES 6 Sec. 7 3651. Conferences. 8 3652. Public nuisances. 9 3653. Enforcement orders. 10 3654. Restraining violations. 11 3654.1. Well control emergency response cost recovery. 12 3655. Penalties. 13 3656. Civil penalties. 13 3656. Civil penalties. 13 3656. Civil penalties. 13 3657. Existing rights and remedies preserved and cumulative 15 remedies authorized. 13 3658. Inspection and production of materials, witnesses. 16 3658. Inspection and production of materials, witnesses. 17 depositions and rights of entry. 18 3650. Collection of fines and penalties. 19 3660. Collection of fines and penalties. 19 3662. Inspection reports. 29 3651. Conferences. 20 4 direct interest in a matter subject to this chapter may, at any. 20 time, request that a conference be held to discuss and attempt 20 to resolve by mutual agreement a matter arising under this 20 chapter. Unless otherwise provided, conferences shall be held 20 parties. A representative of the department shall attend the 21 conference and the department may make recommendations. An 22 agreement reached at a conference shall be consistent with this 23 chapter and, if approved by the department shall be reduced 24 to writing and shall be effective, unless reviewed and refeated 25 by the department within ten days after the conference. The 26 parties. The scheduling of a conference shall be held to the 27 on file by the department shall be reduced 28 yithin generated at a conference shall be furnished to the 29 parties. The department and copies shall be held the 20 articles. The department act of present shall be furnished to the 29 parties. The department approved by the department shall be kept. 20 on file by the department shall be furnished to the 20 parties. The department and copies shall be furnished to the 21 proceeding under this section. 3617 (relating to protection of fresh 23 approved by the collective bargaining 24 representative of em</pre>	1	site" means areas occupied by all equipment or facilities
 a well. SUPCHAPTER C ENFORCEMENT AND REMEDIES Sec. 3651. Conferences. 3652. Public nuisances. 3653. Enforcement orders. 3654. Restraining violations. 3655. Penalties. 3655. Penalties. 3655. Penalties. 3656. Civil penalties. 3657. Existing rights and remedies preserved and cumulative remedies authorized. 3658. Inspection and production of materials, witnesses. a659. Unlawful conduct. 3660. Collection of fines and penalties. 3661. Third-party liability. 3662. Inspection reports. § 3651. Conferences. a10. General rule.—The department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this conference and the department shall attend the parties. A representative of the department shall he reduced but discuss and shall be given by the department shall be reduced to writing and shall be effective, unless reviewed and rejected by the department and cosis shall be reduced. to right a autority to issue orders to compel compliance. with this chapter. f) Notification.—When a coal operator is to be notified of a proceeding under this section. Shall be furnished to the parties. The scheduling of a conference shall be consistent with this chapter and, if approved by the department shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an arceement approved by the department shall be kept. f) Notification.—When	2	necessary for or incidental to drilling, production or plugging
4 SUBCHAPTER C 5 ENFORCEMENT AND REMEDIES 6 Sec. 7 3651. Conferences. 9 3652. Public nuisances. 9 3653. Enforcement orders. 10 3654. Restraining violations. 11 3655. Penalties. 13 3656. Civil penalties. 13 3656. Civil penalties. 13 3656. Collection and production of materials, witnesses. 17 depositions and rights of entry. 18 3659. Unlawful conduct. 19 3660. Collection of fines and penalties. 3661. Third-party liability. 13 3652. Conferences. 14 direct interest in a matter subject to this chapter may, at any. 15 time, request that a conference be held to discuss and attempt 16 to resolve by mutual agreement a matter arising under this. 17 and notice shall be given by the department to all interested 17 and notice shall be given by the department shall be reduced 17 to resolve by mutual agreement and comies shall be theld 18 to resolve by mutual	3	<u>a well.</u>
5 ENFORCEMENT AND REMEDIES 3651. Conferences. 3651. Conferences. 3653. Enforcement orders. 3654. Restraining violations. 3654. Restraining violations. 3655. Enforcement orders. 3656. Givil penalties. 3657. Existing rights and remedies preserved and cumulative remedies authorized. 3658. Inspection and production of materials, witnesses. 7 depositions and rights of entry. 3659. Unlawful conduct. 3660. Collection of fines and penalties. 3661. Conferences. 3651. Conferences. 3661. Inspection reports. \$ 3551. Conferences. 362. (a) General ruleThe department or any person having a. 4 direct interest in a matter subject to this chapter may, at any. 5 time, request that a conference be held to discuss and attempt 6 conferences. 9 and notice shall be given by the department to all interested 9 parties. A representative of the department to all interested. 9 conferenc	4	SUBCHAPTER C
 6 Sec. 3651. Conferences. 3652. Public nuisances. 3653. Enforcement orders. 3654. Restraining violations. 3654. Restraining violations. 3655. Penalties. 3656. Civil penalties. 3656. Civil penalties. 3657. Existing rights and remedies preserved and cumulative remedies authorized. 3658. Inspection and production of materials, witnesses. 3660. Collection of fines and penalties. 3660. Collection of fines and penalties. 3661. Third-party liability. 3662. Inspection renorts. \$ 3651. Conferences. \$ addition of the department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided. conferences shall be held within 90 days after a request is received by the department, and notice shall be diven by the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept. on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department simultaneously ashall send a	5	ENFORCEMENT AND REMEDIES
 7 3651. Conferences. 8 3652. Public nuisances. 9 3653. Enforcement orders. 10 3654. Restraining violations. 11 3654.1. Well control emergency response cost recovery. 13 3655. Penalties. 13 3656. Civil penalties. 13 3657. Existing rights and remedies preserved and cumulative remedies authorized. 16 3658. Inspection and production of materials, witnesses. 17 depositions and rights of entry. 18 3659. Unlawful conduct. 18 3660. Collection of fines and penalties. 18 3660. Collection of fines and penalties. 18 3661. Third-party liability. 18 3662. Inspection reports. 19 3661. Conferences. 10 3662. Inspection reports. 10 3662. Inspection reports. 10 3662. Inspection reports. 11 3662. Inspection reports. 12 3 6351. Conferences. 13 (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any. 14 time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this. 13 chapter. Unless otherwise provided, conferences shall be held 14 within 90 days after a request is received by the department, and notice shall be given by the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department adminest represent shall be kept on file by the department approved by the department shall be kept on file by the department approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter.<th>6</th><th><u>Sec.</u></th>	6	<u>Sec.</u>
 8 3652. Public nuisances. 9 3653. Enforcement orders. 1 3654. Restraining violations. 1 3654.1. Well control emergency response cost recovery. 1 3655. Civil penalties. 1 3656. Civil penalties. 1 3657. Existing rights and remedies preserved and cumulative remedies authorized. 1 3658. Inspection and production of materials, witnesses. 1 depositions and rights of entry. 1 3650. Collection of fines and penalties. 1 3660. Collection of fines and penalties. 2 3661. Third-party liability. 2 3661. Third-party liability. 2 3651. Conferences. 2 (a) General ruleThe department or any person having a 2 direct interest in a matter subject to this chapter may, at any. 2 time, request that a conference be held to discuss and attempt 2 to resolve by mutual agreement a matter arising under this 2 chapter. Unless otherwise provided, conferences shall be held 2 within 90 days after a request is received by the department, and notice shall be given by the department to all interested 2 parties. A representative of the department, shall attend the 2 conference and the department may make recommendations. An 2 agreement reached at a conference shall be furnished to the parties. The scheduling of a conference shall be kept. 3 of the department within ten days after the conference. The 3 record of an agreement approved by the department shall be kept. 3 of the department's authority to issue orders to compel compliance. 3 with this chapter. 4 (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. 5 3552. Public nuisances. 4 violation of section 3617 (relating to protection of fresh groundwate	7	<u>3651. Conferences.</u>
 9 3653. Enforcement orders. 10 3654. Restraining violations. 13 3654.1. Well control emergency response cost recovery. 13 3656. Civil penalties. 13 3657. Existing rights and remedies preserved and cumulative remedies authorized. 16 3658. Inspection and production of materials, witnesses, depositions and rights of entry. 18 3650. Collection of fines and penalties. 3661. Third-party liability. 3662. Inspection reports. § 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department to all interested to have a shall be effective, unless reviewed and rejected to ythe department and the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this schapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of secti	8	<u>3652. Public nuisances.</u>
10 3654. Restraining violations. 11 3654.1. Well control emergency response cost recovery. 3655. Penalties. 3656. Civil penalties. 3657. Existing rights and remedies preserved and cumulative remedies authorized. 3658. Inspection and production of materials, witnesses, account of fines and remedies of entry. 3659. Unlawful conduct. 3660. Collection of fines and penalties. 3661. Third-party liability. 3662. Inspection reports. \$ 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt. to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department to all interested parties. A representative of the department shall be reduced to writing and shall be effective, unless reviewed and rejected. by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department is suchority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 5352. Public nuisances. 4 violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to any of th	9	<u>3653. Enforcement orders.</u>
11 3654.1. Well control emergency response cost recovery. 12 3655. Penalties. 13 3656. Civil penalties. 14 3657. Existing rights and remedies preserved and cumulative 15 remedies authorized. 13 1859. Unlawful conduct. 13 3650. Collection of fines and penalties. 13 3660. Collection of fines and penalties. 13 3660. Collection of fines and penalties. 13 3660. Collection of fines and penalties. 13 3661. Third-party liability. 13 3662. Inspection reports. 14 3662. Inspection reports. 15 3 3651. Conferences. 16 General ruleThe department or any person having a 16 General ruleThe department or any person having a 17 direct interest in a matter subject to this chapter may, at any 18 time, request that a conference be held to discuss and attempt 19 to resolve by mutual agreement a matter arising under this 10 chapter. Unless otherwise provided, conferences shall be held 10 within 90 days after a request is received by the department, 10 and notice shall be given by the department shall attend the 10 conference and the department may make recommendations. An 11 agreement reached at a conference shall be conference. The 12 record of an agreement approved by the department shall be reduced 14 to writing and shall be effective, unless reviewed and rejected 15 by the department and copies shall be furnished to the 16 parties. The scheduling of a conference shall have no effect on 16 the department's authority to issue orders to compel compliance 16 with this chapter. 17 (b) NotificationWhen a coal operator is to be notified of 26 a proceeding under this section, the department simultaneously 27 shall send a copy of the notice to the collective bargaining 26 representative of employees of the coal operator. 27 53652. Public nuisances. 28 A violation of section 3617 (relating to protection of fresh. 29 groundwater and casing requirements), 3618 (relating to 20 protection of water supplies), 3619 (relating to use of safety 29 devices) or 3620 (relating to plugging requirements), or a 20 regulation, order, term or co	10	<u>3654. Restraining violations.</u>
12 3655. Penalties. 13 3656. Civil penalties. 3657. Existing rights and remedies preserved and cumulative 15 remedies authorized. 16 3658. Inspection and production of materials, witnesses. 17 depositions and rights of entry. 3659. Unlawful conduct. 18 3650. Collection of fines and penalties. 3661. Third-party liability. 21 3662. Inspection reports. 25 3651. Conferences. 3 (a) General ruleThe department or any person having a. direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual arreement a matter arising under this c chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department to all interested parties. A representative of the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. S 5.25. Public nuisances. A violation of section 3617 (relating to protection of fresh. groundwater and cosping requirements), 3618 (relating to any of these sections constitutes a public nuisance.	11	<u>3654.1. Well control emergency response cost recovery.</u>
33556. Civil penalties. 3657. Existing rights and remedies preserved and cumulative remedies authorized. 3658. Inspection and production of materials, witnesses, depositions and rights of entry. 3658. Inspection of fines and penalties. 3660. Collection of fines and penalties. 3661. Third-party liability. 3662. Inspection reports. \$ 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this Chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department, it shall be reduced to writing an shall be effective, unless reviewed and rejected by the department with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and cospite requirements), 3618 (relating to may of those sections constitutes a public nuisance.	12	<u>3655. Penalties.</u>
14 3657. Existing rights and remedies preserved and cumulative remedies authorized. 13 3658. Inspection and production of materials, witnesses, depositions and rights of entry. 18 3659. Unlawful conduct. 19 3660. Collection of fines and penalties. 3651. Third-party liability. 3662. Inspection reports. 2 § 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department to all interested agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department approved by the department, shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	13	<u>3656. Civil penalties.</u>
15 remedies authorized. 16 3658. Inspection and production of materials, witnesses, 17 depositions and rights of entry. 18 3659. Unlawful conduct. 19 3660. Collection of fines and penalties. 20 3661. Third-party liability. 21 3652. Inspection reports. 25 3651. Conferences. 21 (a) General ruleThe department or any person having a 23 direct interest in a matter subject to this chapter may, at any 25 chapter. Unless otherwise provided, conferences shall be held. 26 within 90 days after a request is received by the department, and notice shall be given by the department to all interested 26 parties. A representative of the department shall attend the 27 conference and the department may make recommendations. An 28 agreement reached at a conference shall be furnished to the 29 parties. The scheduling of a conference shall be furnished to the 20 parties. The scheduling of a conference shall have no effect on 21 on file by the department and copies shall be furnished to the 22 parties. The scheduling of a conference shall have no effect on 23 hedepartment's	14	3657. Existing rights and remedies preserved and cumulative
16 3658. Inspection and production of materials, witnesses, depositions and rights of entry. 3660. Collection of fines and penalties. 3661. Third-party liability. 3662. Inspection reports. \$ 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department to all interested agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be functions. An garties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugding requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	15	<u>remedies authorized.</u>
17depositions and rights of entry.183659. Unlawful conduct.193660. Collection of fines and penalties.203661. Third-party liability.213662. Inspection reports.22§ 3551. Conferences.23(a) General ruleThe department or any person having adirect interest in a matter subject to this chapter may, at anytime, request that a conference be held to discuss and attemptto resolve by mutual agreement a matter arising under thischapter. Unless otherwise provided, conferences shall be heldwithin 90 days after a request is received by the department,and notice shall be given by the department to all interestedparties. A representative of the department, it shall be reducedto writing and shall be effective, unless reviewed and rejectedby the department within ten days after the conference. Therecord of an agreement approved by the department shall be kepton file by the department and copies shall be furnished to theparties. The scheduling of a conference shall have no effect onthe department's authority to issue orders to compel compliancewith this chapter.(b) NotificationWhen a coal operator is to be notified ofa proceeding under this section, the department simultaneouslyshall send a copy of the notice to the collective bargainingrepresentative of employees of the coal operator.§ 3652. Public nuisances.A violation of section 3617 (relating to use of safetydevices) or 3620 (relating to plugging requirements), or arepresentative of employees of the c	16	3658. Inspection and production of materials, witnesses,
18 <u>3659. Unlawful conduct.</u> 19 <u>3660. Collection of fines and penalties.</u> 3661. Third-party liability. 362. Inspection reports. § <u>3651. Conferences.</u> (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided. conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugding requirements), or a regulation, order, term or condition of a permit relating to any of those sections co	17	depositions and rights of entry.
19 3660. Collection of fines and penalties. 20 3661. Third-party liability. 21 3662. Inspection reports. 25 \$ 3651. Conferences. 26 (a) General ruleThe department or any person having a 27 time, request that a conference be held to discuss and attempt 28 to resolve by mutual agreement a matter arising under this 29 chapter. Unless otherwise provided, conferences shall be held 29 within 90 days after a request is received by the department, 29 and notice shall be given by the department to all interested 29 parties. A representative of the department shall attend the 20 conference and the department may make recommendations. An 29 agreement reached at a conference shall be consistent with this 20 chapter and, if approved by the department, is hall be reduced 20 to writing and shall be effective, unless reviewed and rejected 21 by the department approved by the department shall be kept 22 on file by the department and copies shall be furnished to the 23 parties. The scheduling of a conference shall have no effect on 24 the department's authority to issue orders to compel compliance 25 with this chapter. 26 (b) NotificationWhen a coal operator is to be notified of 27 a proceeding under this section, the department simultaneously 35 shall send a copy of the notice to the collective bargaining 25 representative of employees of the coal operator. 3 6 2 5 2 Public nuisances. 3 A violation of section 3617 (relating to protection of fresh 3 of those sections constitutes a public nuisance. 3 of those sections constitutes a public nuisance.	18	3659. Unlawful conduct.
3661. Third-party liability. 3662. Inspection reports. \$ 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. S 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	19	3660. Collection of fines and penalties.
3662. Inspection reports. § 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. S 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to pluging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	20	3661. Third-party liability.
§ 3651. Conferences. (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. 5 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	21	3662. Inspection reports.
 (a) General ruleThe department or any person having a direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any 	22	§ 3651. Conferences.
direct interest in a matter subject to this chapter may, at any time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	23	(a) General ruleThe department or any person having a
time, request that a conference be held to discuss and attempt to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	24	direct interest in a matter subject to this chapter may, at any
to resolve by mutual agreement a matter arising under this chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	25	time, request that a conference be held to discuss and attempt
chapter. Unless otherwise provided, conferences shall be held within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	26	to resolve by mutual agreement a matter arising under this
within 90 days after a request is received by the department, and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	27	chapter. Unless otherwise provided, conferences shall be held
and notice shall be given by the department to all interested parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	28	within 90 days after a request is received by the department,
parties. A representative of the department shall attend the conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	29	and notice shall be given by the department to all interested
conference and the department may make recommendations. An agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	30	parties. A representative of the department shall attend the
agreement reached at a conference shall be consistent with this chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	31	conference and the department may make recommendations. An
chapter and, if approved by the department, it shall be reduced to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	32	agreement reached at a conference shall be consistent with this
to writing and shall be effective, unless reviewed and rejected by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	33	chapter and, if approved by the department, it shall be reduced
by the department within ten days after the conference. The record of an agreement approved by the department shall be kept on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	34	to writing and shall be effective, unless reviewed and rejected
36 record of an agreement approved by the department shall be kept 37 on file by the department and copies shall be furnished to the 38 parties. The scheduling of a conference shall have no effect on 39 the department's authority to issue orders to compel compliance 40 with this chapter. 41 (b) NotificationWhen a coal operator is to be notified of 42 a proceeding under this section, the department simultaneously 43 shall send a copy of the notice to the collective bargaining 44 representative of employees of the coal operator. 45 § 3652. Public nuisances. 46 A violation of section 3617 (relating to protection of fresh 47 groundwater and casing requirements), 3618 (relating to 48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance.	35	by the department within ten days after the conference. The
on file by the department and copies shall be furnished to the parties. The scheduling of a conference shall have no effect on the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	36	record of an agreement approved by the department shall be kept
38 parties. The scheduling of a conference shall have no effect on 39 the department's authority to issue orders to compel compliance 40 with this chapter. 41 (b) NotificationWhen a coal operator is to be notified of 42 a proceeding under this section, the department simultaneously 43 shall send a copy of the notice to the collective bargaining 44 representative of employees of the coal operator. 45 § 3652. Public nuisances. 46 A violation of section 3617 (relating to protection of fresh 47 groundwater and casing requirements), 3618 (relating to 48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance.	37	on file by the department and copies shall be furnished to the
the department's authority to issue orders to compel compliance with this chapter. (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. \$ 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance.	38	parties. The scheduling of a conference shall have no effect on
40 with this chapter. 41 (b) NotificationWhen a coal operator is to be notified of 42 a proceeding under this section, the department simultaneously 43 shall send a copy of the notice to the collective bargaining 44 representative of employees of the coal operator. 45 § 3652. Public nuisances. 46 A violation of section 3617 (relating to protection of fresh 47 groundwater and casing requirements), 3618 (relating to 48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance.	39	the department's authority to issue orders to compel compliance
 (b) NotificationWhen a coal operator is to be notified of a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance. 	40	with this chapter.
 a proceeding under this section, the department simultaneously shall send a copy of the notice to the collective bargaining representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance. 	41	(b) NotificationWhen a coal operator is to be notified of
 43 shall send a copy of the notice to the collective bargaining 44 representative of employees of the coal operator. 45 § 3652. Public nuisances. 46 A violation of section 3617 (relating to protection of fresh 47 groundwater and casing requirements), 3618 (relating to 48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance. 	42	a proceeding under this section, the department simultaneously
 representative of employees of the coal operator. § 3652. Public nuisances. A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance. 	4.3	shall send a copy of the notice to the collective bargaining
 45 § 3652. Public nuisances. 46 A violation of section 3617 (relating to protection of fresh 47 groundwater and casing requirements), 3618 (relating to 48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance. 	44	representative of employees of the coal operator.
 A violation of section 3617 (relating to protection of fresh groundwater and casing requirements), 3618 (relating to protection of water supplies), 3619 (relating to use of safety devices) or 3620 (relating to plugging requirements), or a regulation, order, term or condition of a permit relating to any of those sections constitutes a public nuisance. 	45	§ 3652. Public nuisances.
47 groundwater and casing requirements), 3618 (relating to protection of from 47 groundwater and casing requirements), 3618 (relating to 48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance.	46	A violation of section 3617 (relating to protection of fresh
48 protection of water supplies), 3619 (relating to use of safety 49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance.	47	groundwater and casing requirements). 3618 (relating to
49 devices) or 3620 (relating to plugging requirements), or a 50 regulation, order, term or condition of a permit relating to any 51 of those sections constitutes a public nuisance.	48	protection of water supplies), 3619 (relating to use of safety
50 <u>regulation, order, term or condition of a permit relating to any</u> 51 of those sections constitutes a public nuisance.	49	devices) or 3620 (relating to plugging requirements), or a
51 of those sections constitutes a public nuisance.	50	regulation, order, term or condition of a permit relating to any
	51	of those sections constitutes a public nuisance.

1	<u>§ 3653. Enforcement orders.</u>
2	(a) General ruleExcept as modified by subsections (b),
3	(c) and (d), the department may issue orders necessary to aid in
4	enforcement of this chapter. An order issued under this chapter
5	shall take effect upon notice, unless the order specifies
6	otherwise. The power of the department to issue an order under
7	this chapter is in addition to any other remedy available to the
8	department under this chapter or under any other law.
9	(b) Suspension and revocation
10	(1) The department may suspend or revoke a well permit
11	or well registration for any well:
12	(i) in continuing violation of any of the following:
13	(A) This chapter.
14	(B) The act of June 22, 1937 (P.L.1987, No.394),
15	known as The Clean Streams Law.
16	(C) The act of July 7, 1980 (P.L.380, No.97),
17	known as the Solid Waste Management Act.
18	(D) Any other statute administered by the
19	department.
20	(ii) the likely result of a violation is an unsafe
21	operation or environmental damage.
22	(2) A suspension order of the department shall
23	automatically terminate if the violation upon which it is
24	based is corrected by the operator to the satisfaction of the
25	department in order to bring the well into compliance with
26	this chapter.
27	(c) Written noticePrior to suspension or revocation of a
28	well permit or registration, the department shall serve written
29	notice on the well operator or its agent, stating specifically
30	the statutory provision, regulation or other reason relied upon,
31	along with factual circumstances surrounding the alleged
32	violation. If the department suspends or revokes the permit or
33	registration, the department may order the operator to cap the
34	well if the likely result of the violation is an unsafe
35	<u>operation or environmental damage.</u>
36	(d) Immediate ordersAn order of the department requiring
37	immediate cessation of drilling operations shall be effective
38	only if authorized by the secretary or a designee.
39	<u>(e) GrievancesA person aggrieved by a department order</u>
40	issued under this section shall have the right, within 30 days
41	of receipt of the notice, to appeal to the Environmental Hearing
42	Board.
43	<u>§ 3654. Restraining violations.</u>
44	<u>(a) General ruleIn addition to any other remedy provided</u>
45	in this chapter, the department may institute a suit in equity
46	<u>in the name of the Commonwealth for an injunction to restrain a</u>
47	violation of this chapter or rules, regulations, standards or
48	orders adopted or issued under this chapter and to restrain the
49	maintenance or threat of a public nuisance. Upon motion of the
50	Commonwealth, the court shall issue a prohibitory or mandatory
51	preliminary injunction if it finds that the defendant is

engaging in unlawful conduct, as defined by this chapter, or 1 conduct causing immediate and irreparable harm to the public. 2 The Commonwealth shall not be required to furnish bond or other 3 security in connection with the proceeding. In addition to an 4 injunction, the court in equity may level civil penalties as 5 specified in section 3656 (relating to civil penalties). 6 7 (b) District attorney. -- In addition to other remedies in this chapter, upon relation of the district attorney of a county 8 affected or upon relation of the solicitor of a municipality_ 9 10 affected, an action in equity may be brought in a court of competent jurisdiction for an injunction to restrain a violation 11 12 of this chapter or rules and regulations promulgated under this 13 chapter or to restrain a public nuisance or detriment to health. (c) Concurrent penalties. -- Penalties and remedies under this 14 15 chapter shall be deemed concurrent. Existence or exercise of one remedy shall not prevent the department from exercising another 16 17 remedy at law or in equity. (d) Jurisdiction.--Actions under this section may be filed 18 in the appropriate court of common pleas or in Commonwealth 19 20 Court, and those courts are hereby granted jurisdiction to hear actions under this section. 21 22 § 3654.1. Well control emergency response cost recovery. 23 <u>A person liable for a well control emergency is responsible</u> 24 for all response costs incurred by the department for well 25 control specialists to respond to the well control emergency. In an action before a court of competent jurisdiction, the 26 department may recover all its response costs, including the 27 28 cost of regaining control of the well, controlling the perimeter 29 of the well site, preparing water sprays, establishing trenches or dikes to capture runoff fluids and providing the resources_ 30 31 and equipment needs for the incident. 32 § 3655. Penalties. (a) General violation. -- A person violating a provision of 33 34 this chapter commits a summary offense and, upon conviction, 35 shall be sentenced to pay a fine of not more than \$500 or to 36 imprisonment of not more than 90 days, or both. Each day during 37 which the violation continues is a separate and distinct_ 38 offense. 39 (b) Willful violation. -- A person willfully violating a provision of this chapter or an order of the department issued 40 41 under this chapter commits a misdemeanor and, upon conviction, 42 shall be sentenced to pay a fine of not more than \$5,000 or to 43 imprisonment of not more than one year, or both. Each day during 44 which the violation continues is a separate and distinct 45 offense. 46 (c) Authority.--The department may institute a prosecution 47 against any person or municipality for a violation of this 48 <u>chapter.</u> 49 <u>§ 3656. Civil penalties.</u> In addition to other remedies available at law or in equity 50 51 for a violation of this chapter, a regulation of the department,

a departmental order or a permit condition, the department, may 1 assess a civil penalty regardless of whether the violation was 2 willful. The penalty shall not exceed \$25,000 plus \$1,000 for 3 4 each day during which the violation continues. In determining whether to assess a penalty or the amount of the penalty, the 5 department shall consider willfulness of the violation, damage 6 7 or injury to natural resources of this Commonwealth or their uses, endangerment of safety of others, the cost of remedying_ 8 9 the harm, savings resulting to the violator as a result of the 10 violation, whether the operator voluntarily plugged an orphaned 11 or abandoned well and any other relevant factor. When the 12 department proposes to assess a civil penalty, it shall notify 13 the person of the proposed amount of the penalty. The person charged with the penalty must, within 30 days of notification, 14 15 pay the proposed penalty in full or file an appeal of the assessment with the Environmental Hearing Board. Failure to 16 17 comply with the time period under this section shall result in a waiver of all legal rights to contest the violation or the 18 amount of the penalty. The civil penalty shall be payable to the 19 20 Commonwealth and collectible in any manner provided at law for collection of debts. If a violator neglects or refuses to pay 21 22 the penalty after demand, the amount, together with interest and 23 costs that may accrue, shall become a lien in favor of the 24 Commonwealth on the real and personal property of the violator, 25 but only after the lien has been entered and docketed of record by the prothonotary of the county where the property is 26 situated. The department may transmit to the prothonotaries of 27 28 the various counties certified copies of all liens. It shall be 29 the duty of each prothonotary to enter and docket the liens of 30 record in the prothonotary's office and index them as judgments 31 are indexed, without requiring payment of costs as a condition_ 32 precedent to entry. 33 § 3657. Existing rights and remedies preserved and cumulative remedies authorized. 34 35 Nothing in this chapter stops the Commonwealth or a district 36 attorney from proceeding in a court of law or in equity to abate 37 pollution forbidden under this chapter or a nuisance under existing law. It is hereby declared to be the purpose of this 38 39 chapter to provide additional and cumulative remedies to control activities related to drilling for or production of oil and gas 40 in this Commonwealth, and nothing contained in this chapter 41 42 abridges or alters rights of action or remedies existing, or which existed previously, in equity or under common or statutory 43 44 law, criminal or civil. Neither this chapter, the grant of a permit under this chapter nor an act done by virtue of this 45 46 chapter stops the Commonwealth, in exercising rights under common or decisional law or in equity, from suppressing a 47 48 nuisance, abating pollution or enforcing common law or statutory 49 rights. No court of this Commonwealth with jurisdiction to abate 50 public or private nuisances shall be deprived of jurisdiction in 51 an action to abate a private or public nuisance instituted by

1	any person on grounds that the nuisance constitutes air or water
2	pollution.
3	§ 3658. Inspection and production of materials, witnesses,
4	depositions and rights of entry.
5	(a) General ruleThe department may make inspections,
6	conduct tests or sampling or examine books, papers and records
7	pertinent to a matter under investigation under this chapter to
8	determine compliance with this chapter. For this purpose, the
9	duly authorized agents and employees of the department may at
10	all reasonable times enter and examine any involved property,
11	facility, operation or activity.
12	(b) AccessThe owner, operator or other person in charge
13	<u>of a property, facility, operation or activity under this</u>
14	chapter, upon presentation of proper identification and purpose
15	either for inspection or to remediate or otherwise respond to a
16	well control emergency, by agents or employees of the
17	department, shall provide free and unrestricted entry and
18	access. Upon refusal, the agent or employee may obtain a search
19	warrant or other suitable order authorizing entry and
20	inspection, remediation or response. It shall be sufficient to
21	justify issuance of a search warrant authorizing examination and
22	inspection if:
23	(1) there is probable cause to believe that the object
24	<u>of the investigation is subject to regulation under this</u>
25	<u>chapter; and</u>
26	<u>(2) access, examination or inspection is necessary to</u>
27	enforce the provisions of this chapter.
28	(c) WitnessesIn any part of this Commonwealth, the
29	department may subpoena witnesses, administer oaths, examine
30	witnesses, take testimony and compel production of books,
31	records, maps, plats, papers, documents and other writings
32	pertinent to proceedings or investigations conducted by the
33	department under this chapter. Upon refusal to obey a subpoena
34	by any person and on application of the department, a court may
35	enforce a subpoena in contempt proceedings. Fees for serving a
30 27	subpoena shall be the same as those paid to sherills for similar
27 20	(d) Dependition The department of a party to a proceeding
20	(d) Deposition The department of a party to a proceeding
10	perore the department may cause the deposition of a witness who
40	mannor proscribed by law for taking depositions in civil
41 12	actions
42 // 3	(a) Witness feeWitnesses summoned before the department
ч Э Л Л	shall be paid the same fees as are paid to witnesses in courts
11 45	of record of general jurisdiction Witnesses whose depositions
-5 16	are taken under this chapter and the officers taking those
47	depositions, shall be entitled to the same fees as those paid
48	for like services in court
49	(f) Purchasers Upon request. a purchaser of oil or gas
50	shall provide the department information necessary to determine
51	ownership of facilities from which the purchaser obtained oil or

1	gas. The information shall be kept confidential for a period of
2	five years, and the department may utilize it in enforcement
3	proceedings. The department may request information under this
4	section only when a well does not comply with section 3611(h)_
5	(relating to well permits).
6	§ 3659. Unlawful conduct.
7	It shall be unlawful for any person to:
8	(1) Drill, alter, operate or utilize an oil or gas well
g	without a permit or registration from the department as
10	required by this chapter or in violation of rules or
11	regulations adopted under this chapter, orders of the
12	department or a term or condition of a permit issued by the
13	department.
14	(2) Conduct an activity related to drilling for or
15	production of oil and gas:
16	(i) contrary to this chapter, rules or regulations
17	adopted under this chapter, an order of the department or
18	<u>a term or condition of a permit issued by the department;</u>
19	or
20	<u>(ii) in any manner as to create a public nuisance or</u>
21	adversely affect public health, safety, welfare or the
22	environment.
23	<u>(3) Refuse, obstruct, delay or threaten an agent or</u>
24	employee of the department acting in the course of lawful
25	performance of a duty under this chapter, including, but not
26	limited to, entry and inspection.
27	(4) Attempt to obtain a permit or identify a well as an
28	orphan well by misrepresentation or failure to disclose all
29	relevant facts.
30	(5) Cause abandonment of a well by removal of casing or
31	equipment necessary for production without plugging the well
32	in the manner prescribed under section 3620 (relating to
33	plugging requirements), except that the owner or operator of
34	a well may temporarily remove casing or equipment necessary
35	for production, but only if it is part of the normal course
36	of production activities.
37	§ 3660. Collection of fines and penalties.
38	Fines and penalties shall be collectible in a manner provided
39	by law for collection of debts. If a person liable to pay a
40	penalty neglects or refuses to pay after demand, the amount,
41	together with interest and costs that may accrue, shall be a
42	judgment in favor of the Commonwealth on the person's property,
43	but only after the judgment has been entered and docketed of
44	record by the prothonotary of the county where the property is
45	situated. The department may transmit to prothonotaries of the
46	various counties certified copies of all judgments, and it shall
47	be the duty of each prothonotary to enter and docket them of
48	record in the prothonotary's office and index them as judgments
49	are indexed, without requiring payment of costs as a condition
50	precedent to entry.
51	§ 3661. Third-party liability.

1	<u>If a person other than a well operator renders a service or</u>
2	<u>product to a well or well site, that person is jointly and</u>
3	severally liable with the well owner or operator for violations
4	<u>of this chapter arising out of and caused by the person's _</u>
5	actions at the well or well site, in accordance with State law.
6	§ 3662. Inspection reports.
7	The department shall post inspection reports on its publicly
8	accessible Internet website. The inspection reports shall
9	include:
10	(1) The nature and description of violations.
11	(2) The operator's written response to the violation, if
12	available.
13	(3) The status of the violation.
14	(4) The remedial steps taken by the operator or the
15	department to address the violation.
16	SUBCHAPTER D
17	MISCELLANEOUS PROVISIONS
18	3671. Well plugging funds.
19	3672. (Reserved).
20	3673. Effect on department authority.
21	3673.1. Relationship to solid waste and surface mining.
22	3673.2. Relationship to the coal and gas resource coordination.
23	3673.3. Local ordinances.
24	3674. Regulations.
25	§ 3671. Well plugging funds.
26	(a) AppropriationFines and civil penalties collected
27	under this chapter shall be deposited into the Abandoned Well
28	Plugging Fund. Permit fees collected under this chapter shall be
29	appropriated to the department to carry out the purposes of this
30	chapter.
31	(b) SurchargeTo aid in indemnifying the Commonwealth for
32	the cost of plugging abandoned wells, a \$50 surcharge shall be
33	added to the permit fee established by the department under
34	section 3611 (relating to well permits) for new wells. Money
35	collected as a result of the surcharge shall be paid into the
36	Abandoned Well Plugging Fund and expended by the department to
37	plug abandoned wells threatening the health and safety of
38	persons or property or pollution of waters of this Commonwealth.
39	(c) Orphan Well Plugging FundThe following shall apply:
40	<u>(1) A \$100 surcharge for wells to be drilled for oil</u>
41	production and a \$200 surcharge for wells to be drilled for
42	gas production are added to the permit fee established by the
43	<u>department under section 3611 for new wells. The surcharges</u>
44	shall be placed in the Orphan Well Plugging Fund and expended
45	by the department to plug orphan wells. If an operator
46	rehabilitates a well abandoned by another operator or an
47	orphan well, the permit fee and the surcharge for the well
48	shall be waived.
49	(2) The department shall study its experience in
50	implementing this section and shall report its findings to
51	the Governor and the General Assembly by one year after

1	promulgation. The report shall contain information relating
2	<u>to the balance of the fund, number of wells plugged, number</u>
3	of identified wells eligible for plugging and recommendations
4	<u>as to alternative funding mechanisms.</u>
5	<u>(d) Supplements to fundsThe Abandoned and Orphan Well</u>
6	Plugging Funds may be supplemented by appropriations from the
7	Federal Government, the General Assembly or State or local
8	government or from any private source.
9	<u>§ 3672. (Reserved).</u>
10	<u>§ 3673. Effect on department authority.</u>
11	<u>This chapter does not affect, limit or impair any right or</u>
12	authority of the department under the act of June 22, 1937
13	(P.L.1987, No.394), known as The Clean Streams Law; the act of
14	<u>January 8, 1960 (1959 P.L.2119, No.787), known as the Air</u>
15	Pollution Control Act; the act of November 26, 1978 (P.L.1375,
16	No.325), known as the Dam Safety and Encroachments Act; or the
17	act of July 7, 1980 (P.L.380, No.97), known as the Solid Waste
18	Management Act.
19	<u>§ 3673.1. Relationship to solid waste and surface mining.</u>
20	<u>(a) General ruleThe obligation to obtain a permit and </u>
21	post a bond under Articles III and V of the act of July 7, 1980
22	(P.L.380, No.97), known as the Solid Waste Management Act, and
23	to provide public notice under section 1905-A(b)(1)(v) of the
24	<u>act of April 9, 1929 (P.L.177, No.175), known as The</u>
25	Administrative Code of 1929, for any pit, impoundment, method or
26	facility employed for the disposal, processing or storage of
27	residual wastes generated by the drilling of an oil or gas well
28	or from the production of wells which is located on the well
29	site, shall be considered to have been satisfied if the owner or
30	operator of the well meets the following conditions:
31	(1) the well is permitted under the requirements of
32	<u>section 3611 (relating to well permits) or registered under</u>
33	<u>section 3613 (relating to well registration and </u>
34	<u>identification);</u>
35	(2) the owner or operator has satisfied the financial
36	<u>security requirements of section 3625 (relating to bonding)</u>
37	<u>by obtaining a surety or collateral bond for the well and </u>
38	well site; and
39	(3) the owner or operator maintains compliance with this
40	<u>chapter and applicable regulations of the Environmental</u>
41	<u>Quality Board.</u>
42	<u>(b) Noncoal surface miningObligations under the act of</u>
43	December 19, 1984 (P.L.1093, No.219), known as the Noncoal
44	Surface Mining Conservation and Reclamation Act, or a regulation
45	promulgated under the Noncoal Surface Mining Conservation and
46	Reclamation Act, for any borrow area where minerals are
47	extracted solely for the purpose of oil and gas well
48	development, including access road construction, shall be
49	considered to have been satisfied if the owner or operator of
50	the well meets the conditions imposed under subsection (a)(1)
51	and (2) and maintains compliance with this chapter and

1	applicable regulations of the Environmental Quality Board.
2	<u>(c) Solid Waste Management ActThis section does not</u>
3	diminish or otherwise affect duties or obligations of an owner
4	or operator under the Solid Waste Management Act. This section
5	does not apply to waste classified as hazardous waste under the
6	Solid Waste Management Act or the Resource Conservation and
7	<u>Recovery Act of 1976 (Public Law 94-580, 90 Stat. 2795, 42</u>
8	<u>U.S.C. § 6901 et seq.).</u>
9	(d) DefinitionAs used in this section, the term "well
10	site" means areas occupied by all equipment or facilities
11	necessary for or incidental to drilling, production or plugging
12	<u>a well.</u>
13	<u>§ 3673.2. Relationship to the Coal and Gas Resource</u>
14	Coordination Act.
15	(a) ApplicabilityThe requirements under section 5 of the
16	act of December 18, 1984 (P.L.1069, No.214), known as the Coal
17	and Gas Resource Coordination Act, for the issuance of a permit
18	under the former act of December 19, 1984 (P.L.1140, No.223),
19	known as the Oil and Gas Act, shall apply to this act.
20	(b) Construction Nothing in this act shall be construed to
21	change, repeal or otherwise affect the provisions of the Coal
22	and Gas Resource Coordination Act.
23	§ 3673.3. Local ordinances.
24	Except with respect to local ordinances adopted pursuant to
25	the act of July 31, 1968 (P.L.805, No.247), known as the
26	Pennsylvania Municipalities Planning Code, and the act of
27	October 4, 1978 (P.L.851, No.166), known as the Flood Plain
28	Management Act, all local ordinances purporting to regulate
29	conventional oil and gas operations regulated by this act are
30	hereby superseded. No local ordinance adopted pursuant to the
31	<u>Pennsylvania Municipalities Planning Code or Flood Plain</u>
32	Management Act shall contain provisions which impose conditions,
33	requirements or limitations on the same features of oil and gas
34	operations regulated by this act or that accomplish the same
35	purposes as set forth in this act. The Commonwealth, by this
36	section, preempts and supersedes the regulation of conventional
37	oil and gas operations as herein defined.
38	<u>§ 3674. Regulations.</u>
39	The Environmental Quality Board shall promulgate regulations
40	to implement this chapter.
41	<u>CHAPTER 37</u>
42	ANNUAL FEE
43	<u>Sec.</u>
44	<u>3701. Annual fee.</u>
45	<u>§ 3701. Annual fee.</u>
46	The Environmental Quality Board shall establish annual fees
47	for all wells that have not been granted inactive status or are
48	plugged and abandoned. These fees shall bear a reasonable
49	relationship to the costs of the Department of Environmental
50	Protection associated with administering Chapters 32 (relating
51	to development) and 36 (relating to conventional development).

1 Section 3. This act shall take effect in 60 days.