

2.4.5 Legacy Impacts

Legacy Issues Workgroup

Two significant legacy issues for Pennsylvania are abandoned mine lands (AML) and abandoned oil and gas wells. For hundreds of years, coal was mined in Pennsylvania with little thought of environmental consequences and without robust regulation of environmental impacts. It is estimated that hundreds of thousands of oil and gas wells have been drilled in Pennsylvania since 1859. Both legacy activities have left Pennsylvania with environmental damage as well as health and safety risks as pollutants continue to enter the air, land, and water.

Pennsylvania's history of addressing abandoned coal mine issues extends back into the 1960s through legislation and programs to eliminate stream pollution from abandoned as well as active coal mining operations. The Department of Environmental Protection's (DEP's) Well Plugging Program¹ was established under the authority of Pennsylvania's Oil and Gas Act (1984) which was succeeded by the Pennsylvania Oil and Gas Act (Act 13 of 2012)². Further information may be found on the DEP webpage entitled Laws, Regulations and Guidelines³.

Although neither abandoned mines nor abandoned oil and gas wells were addressed as specific statewide priorities in the 2009 State Water Plan Update, the implications of these problems, among other legacy issues, spurred the 2022 State Water Plan Update statewide committee to form a Legacy Issues Workgroup to investigate the subjects.

During this 2022 Update, the Legacy Issues Workgroup narrowed their focus to these two legacy issues with a goal to offer recommendations to improve upon the efforts already underway at the Federal and commonwealth levels. The workgroup examined Pennsylvania's legacy of mining and oil/gas well development and considered past and current approaches in addressing the myriad of environmental problems these legacies continue to pose today. After reflecting on the status of programs and decades of cleanup efforts, the Legacy Issues Workgroup offers the following recommendations for DEP's consideration in support of federal and commonwealth efforts to sustain, extend, and improve acid mine drainage (AMD) treatment, other AML programs, as well as identify and plug abandoned and orphaned oil and gas wells.

Full treatises on these subjects are available in [Appendix D](#) under the documents entitled "Overview of Pennsylvania's Coal Mining Legacy" and "Overview of the Oil and Gas Industry – the Legacy Well".

Consider the following sources for more information on the Pennsylvania's mining legacy/AML and abandoned and orphan wells.

¹ Department of Environmental Protection, Abandoned and Orphan Well Program
<https://www.dep.pa.gov/Business/Energy/OilandGasPrograms/OilandGasMgmt/LegacyWells/Pages/default.aspx>

² Department of Environmental Protection, Oil and Gas, Title 58, Oil and Gas
<https://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/OilGasReports/2012/act13.pdf>

³ Department of Environmental Protection, Office of Oil and Gas Management, Laws, Regulations and Guidelines
<https://www.dep.pa.gov/Business/Energy/OilandGasPrograms/OilandGasMgmt/Pages/Laws,-Regulations-and-Guidelines.aspx>

- PA's Mining Legacy and AML⁴
- Rewriting Pennsylvania's Legacy – Abandoned and Orphan Well Program¹

Legacy Coal Mining Recommendations

The water quality impacts from coal mining are primarily attributable to mine drainage associated with abandoned mines and coal refuse sites. Long-term treatment of mine drainage through active and passive systems is essential to improve water quality in AMD affected streams, and sustainable funding is needed to maintain such treatment. Additionally, it is important to recognize the role nonprofit organizations play in the operation of treatment facilities and to continue to push for federal Good Samaritan legislation to prevent these organizations from becoming liable under law for mine discharges they are not responsible for causing.

DEP should continue to support efforts, including federal legislation, that provide additional funding, in a set-aside account, for addressing AML sites. It should be noted that DEP has been actively preparing for a prospective influx of funding from the federal level to support a set-aside account.

1. DEP should continue to issue grants and develop maintenance funding for small treatment systems.
2. To the fullest extent possible, DEP should consider regionalization and consolidation of treatment systems, if economically feasible.
3. To the fullest extent possible, DEP should consider ways to develop sustainable funding for long-term treatment of AMD from any abandoned source.
4. DEP should support efforts to pass a Community Relations Partnership Act at the federal level, to protect Good Samaritans.
5. DEP should ensure that adequate moneys are in the AMD set-aside account. These moneys need to be:
 - Encumbered to provide for long-term water treatment for the mine drainage treatment facilities built.
 - These moneys should be tied to interest or investment earning accounts where the revenues are equal to or more than the funds needed to provide the treatment requirements.

Legacy Well Recommendations

1. DEP should continue to support efforts, including federal legislation, that provide additional funding for identifying and addressing oil and gas wells (inactive, abandoned, and orphan) in order to expand the magnitude and scope of the work the agency is currently conducting. Examples of such legislation include bills that amend "Section 349 of the Energy Policy Act of 2005 (42 U.S.C. 15907)" by providing funding for the states for the following purposes:
 - To identify and characterize undocumented orphan wells on state and private land.
 - To rank orphan wells based on factors including: (I) public health and safety; (II) potential environmental harm; and (III) other land use priorities.
 - To decommission orphan wells located on state-owned or privately owned land.

⁴ Department of Environmental Protection, PA's Mining Legacy and AML
<https://www.dep.pa.gov/Business/Land/Mining/AbandonedMineReclamation/AMLProgramInformation/Pages/PAs-Mining-Legacy-and-AML.aspx>

- To make information regarding the use of funds received under the proposed federal bill available on a public website.
- To measure and track: (I) emissions of methane and other gases associated with orphan wells; and (II) contamination of ground water or surface water associated with orphan wells.
- To remediate soil and restore native species habitat that has been degraded due to the presence of orphan wells and associated pipelines, facilities, and infrastructure.
- To remediate land adjacent to orphan wells and decommission or remove associated pipelines, facilities, and infrastructure.
- To identify and address any disproportionate burden of adverse human health or environmental effects of orphan wells on communities of color, low-income communities, and tribal and indigenous communities.

It should be noted that DEP has been actively preparing for a prospective influx of funding from the federal level or other sources to take advantage of these potential opportunities.

2. DEP, as part of its Climate Change Program efforts, should look to generate revenues associated with the decommissioning of legacy wells by acquiring carbon credits and selling them. Pound for pound, the comparative impact of methane (CH₄) is 25 times greater than carbon dioxide (CO₂) over a 100-year period⁵ which should provide a means of generating carbon credits that can be sold in the marketplace.
3. In addition, DEP should continue to explore opportunities for third parties to decommission legacy wells and obtain carbon offsets for sale in the open carbon market.
4. DEP should continue to coordinate with third parties to decommission legacy wells and evaluate efficiencies that will lower costs for decommissioning without affecting long-term plug performance.

⁵ U.S. Environmental Protection Agency, Overview of Greenhouse Gases
<https://www.epa.gov/ghgemissions/overview-greenhouse-gases#CH4-reference>