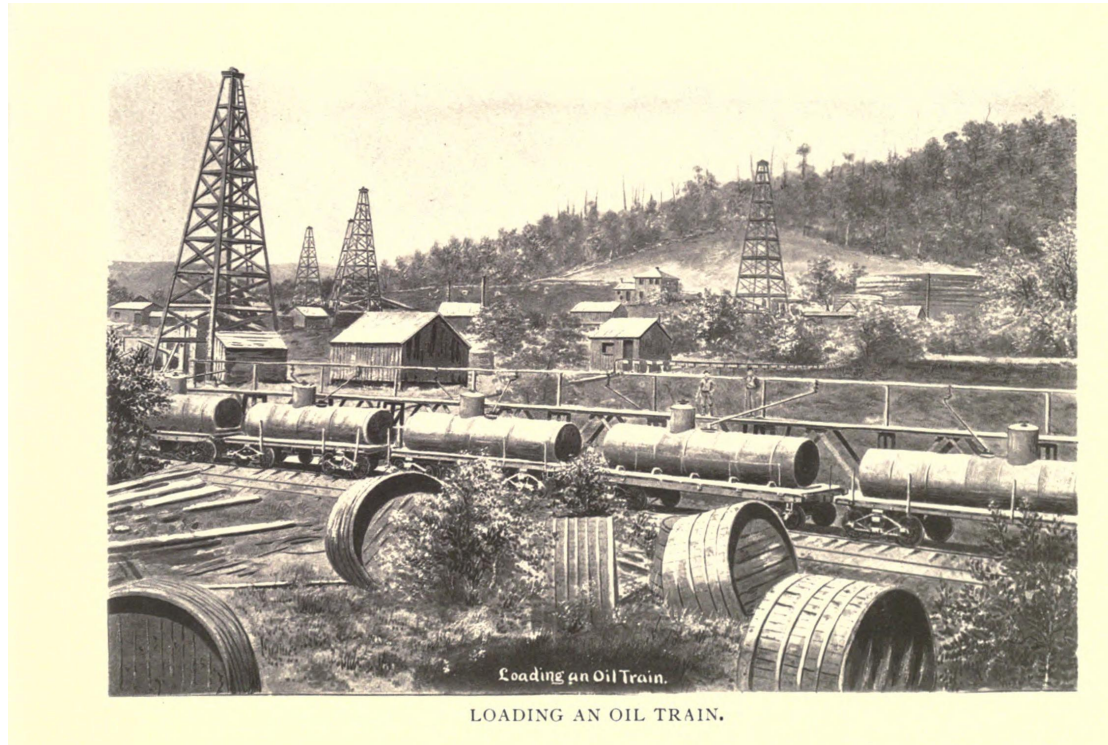


Acceptable Risks in Pennsylvania's Historic Oil and Gas Region?

Save Our Streams PA November 19, 2012



In a 2009 [Department of Environmental Protection](#) (draft) report titled Stray Natural '[Gas Migration Associated with Oil and Gas Wells](#)', dozens of incidents of stray gas migration incidences are detailed, many are associated with abandoned oil and gas wells [1](#)

One of the most tragic natural gas migration incidents happened in Jefferson County, when the bodies of a couple and their 17 month old grandson were found buried in the debris of their home after methane migrated from abandoned wells near active operations.

In 2010 The Pennsylvania (PA) Department of Environmental Protection (PADEP) volunteered to have its hydraulic fracturing program reviewed by The [State Review of Oil and Natural Gas Environmental Regulations](#). Inc, (STRONGER).[2](#)

STRONGER reviews regulations, identifies issues and makes recommendations to the state to address identified issues. The review team was comprised of three team members and four official observers. The three team members were: Lori Wrotenbery, Oil and Gas Conservation Division of the Oklahoma Corporation Commission; Wilma Subra, Subra Co., New Iberia, Louisiana; and Jim Collins, Independent Petroleum Association of America. The official observers were: Tom Au, Pennsylvania Chapter of the Sierra Club; Steve Rhoads, East Resources; Brad Field, Division of Mineral Resources of the New York Department of Environmental Conservation; and Dave Rectenwald, U.S. Environmental Protection Agency.

According to STRONGER, the review began with a questionnaire that was prepared by the STRONGER Board which was intended to capture the status of Pennsylvania's Hydraulic Fracturing Guidelines.

Following the review, STRONGER compiled a review report which made recommendations for improvements in the regulations which govern hydraulic fracturing. One of recommendations STRONGER made to the Pennsylvania Department of Environmental Protection was the following;

*The review team recommends that DEP consider whether there are areas or situations in which wells (active and abandoned) in the vicinity of hydraulic fracturing operations provide pathways for fluid movement into groundwater. In such areas or situations, DEP should require operators to identify and eliminate these potential pathways for fluid movement into groundwater before conducting hydraulic fracturing operations.*²

August of 2102 The Office of Oil and Gas Management (OOGM) [Technical Advisory board's 'Summary of Proposed Conceptual Changes \(with brief justifications\)' Draft report](#) recommended the following changes to Title 25 Pa. Code Chapter 78 : “Propose adding a requirement that a well operator identify on the well permit application the location of abandoned gas or oil wells within 1000 feet of the entire well bore length.” It continued; “This requirement comports with a recommendation made by STRONGER to prevent communication between wells.”¹⁸

On March 8, 2011, Tom Corbett, established the Governor’s Marcellus Shale Advisory Commission. The purpose of the Commission was to develop a comprehensive, proposal for the responsible and environmentally sound development of Marcellus Shale. This commission was comprised of industry stakeholders, members from the environmental community, natural gas industry, local government representatives and state government officials.³

One of the responsibilities of the commission was to review the existing and proposed statutes, legislation, regulation and policies that regulate or affect Marcellus Shale natural gas development and to provide “analysis and recommendations.” and to submit a final report on before July 22, 2011. The commission’s final report recognized abandoned wells provide pathways for contamination stating; New wells drilled through a formation that has previously been drilled and fractured present a potential pathway for groundwater contamination. This potential pathway for contamination must be addressed through the application of well casing and construction standards.⁴

Casing standards may improve, however improved casings do not eliminate the risks abandoned wells pose or prevent them from becoming pathways for natural gas or fluids when they are situated in the vicinity of lateral bores and fracture zones of unconventional wells.⁵



In 2010 The Pennsylvania Environmental Council raised the issue of orphaned/abandoned wells as potential pollution migration hazards, as well as the benefit of providing incentives to operators to plug or remediate such wells on/near proposed drilling sites, in its 2010 Policy Report. PEC also recommended enhanced site analysis (including the identification of site hazards like abandoned/orphaned wells) its 2011

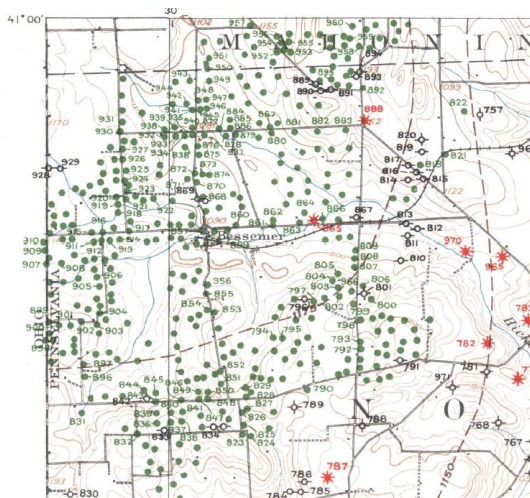
Legislative Proposal to prevent pollution incidents.[6](#)

Natural gas migration associated with abandoned wells has long been recognized, by the PADEP and the industry as causing groundwater contamination.[7](#)

Regulations that govern unconventional Shale gas exploration have not been updated to address abandoned oil and gas wells which may be located near lateral bores and fracture zones of the new wells. These risks are significantly increased when drilling and hydraulic fracturing takes place in close proximity to them.[8](#)

Some operators voluntarily plug abandoned wells but they are *not* required to locate and plug the abandoned wells near the lateral bore and fracture zone of new unconventional wells.[9](#)

According to Eugene Pine of the PADEP there may be between 350,000 and 500,000 wells drilled in PA since 1959. There are approximately 8,400 known abandoned wells..[10](#) According to Oil and Gas Technical Advisory Board member Gary Slagel, there are close to 70,000 operating wells in the Commonwealth.



There are an unknown number of lost abandoned oil and gas wells in Pennsylvania. Location information is unknown to the PADEP, planning commissions, emergency management officials and operators.[10](#)

According to USGS maps there are approximately 1000 wells within a six mile radius in the vicinity of [Dale and Maggie Henry's farm](#) which is located in Lawrence County, PA.[12](#)

It may seem to the [Henrys. Shell \(the operator\) who constructed the unconventional well pad](#) near their farm has a Laissez-faire attitude [toward the abandoned wells](#), but that may not be the case. If regulations required operators to locate and plug nearby abandoned wells, the additional funding required for locating and plugging the abandoned wells may render the Bessemer Oil and Gas field and many other fields throughout Pennsylvania economically prohibitive for Shale gas extraction.[13](#)



Well plugging may cost anywhere from \$10,000 to over \$700,000, depending on the condition of the well, depth and location.[13](#)

Locating abandoned wells that have had their wellheads and related infrastructure removed is sometimes difficult and the cost to locate them may (and sometimes does) exceed the cost to plug the wells.[14](#)

In some Pennsylvania early fields little evidence of historic drilling remains. The Henry's farm, the Borough of Bessemer, Mt Jackson and North Beaver Township have been developed over the Bessemer Oil and Gas field.

According the New Castle News “ Thousands of hopeful property owners have signed contracts for mineral rights leasing...”¹⁵

Shell recently conducted extensive surveys on the Henry farm, attempting to locate the abandoned wells which are identified on a USGS map but according to Kimberly Windon, business communications manager, Shell has not located legacy wells on the Henry farm.¹⁶

Location and depth information for many historic wells have been recorded by the United States Geological Survey and have been identified on [maps](#), property deeds and in early industry publications.

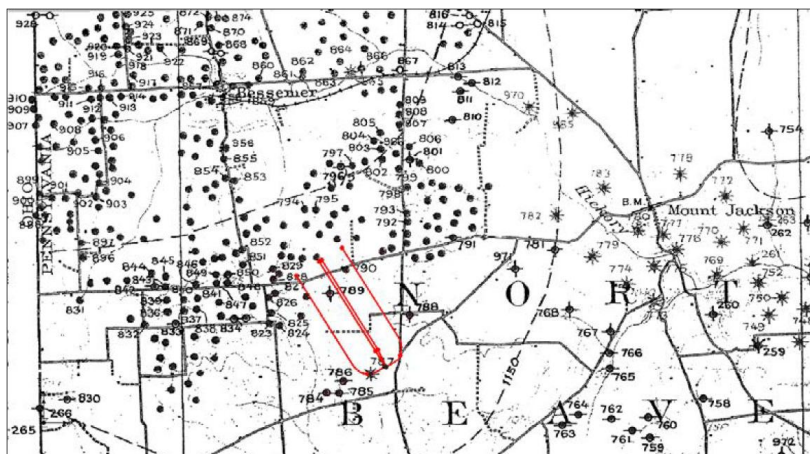


FIGURE 1 - Abandoned oil and gas wells (black) near the footprint of the proposed horizontal gas wells (red)

Well locations identified on early USGS maps¹² and information from early industry publications has not been reconciled with the PA Department of Environmental Protection's data base. The information gap allows permits to be authorized in the historic oil and gas fields of PA.

After two [homes exploded in McKean County](#), PA on March 28, 2011, Pennsylvania's Senator Bob Casey wrote to the Department of Energy Secretary Steven Chu; "I am deeply alarmed to learn of yet another gas-migration-related explosion in Pennsylvania," urging the secretary to "coordinate with local, state, and other federal entities to ensure that appropriate actions to protect public health are implemented."¹⁷



For the most part, in areas where wells have been dismantled and little or no evidence remains above the surface, wells may go unnoticed by landowners, emergency management officials for years without ever causing problems.

According to the New Castle News, Kimberly Windon, business communications manager for Shell said “We encourage people to call our community hotline number to report any problems, and we can have someone come out and take a look,” That toll-free number is (877) 842-7308.



Recently a group of protestors, organized by the [Shadbush Environmental Justice Collective](#) helped raise awareness to the abandoned wells located on the Henry farm when they [demonstrated in front of Shell's well pad](#) which was constructed above the historic oil and gas field. This gained the attention of the [state police](#), who sent **27 troopers and a helicopter** to watch over the situation.



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Related links:

1. Stray Natural Gas Migration Associated With Oil and Gas Wells
<https://docs.google.com/open?id=0BwV75wo6lhJPWWNjNFBsaVdRLVU>
2. Pennsylvania Hydraulic Fracturing State Review by STRONGER
<http://www.strongerinc.org/sites/all/themes/stronger02/downloads/PA%20HF%20Review%20Print%20Version.pdf>
3. The Governor's Marcellus Shale Advisory Commission
http://www.portal.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_785_708_0_43/http%3B/pubcontent.state.pa.us/publishedcontent/publish/global/files/executive_orders/2010_2019/2011_01.pdf
4. Final Report (Page 75)
http://files.dep.state.pa.us/PublicParticipation/MarcellusShaleAdvisoryCommission/MarcellusShaleAdvisoryPortalFiles/MSAC_Final_Report.pdf
5. Shell's Tioga County Methane Geyser Captured On Video
<http://stateimpact.npr.org/pennsylvania/2012/06/28/shells-tioga-county-methane-geyser-captured-on-video/>
6. The Pennsylvania Environmental Council
<http://marcellus.pecpa.org/wp-content/uploads/2012/03/PEC-Act-13-Comparative-Analysis-March-2012.pdf>
7. Natural Gas Migration Problems in Western Pennsylvania
<http://www.pittsburghgeologicalsociety.org/naturalgas.pdf>
8. Act 13 http://www.portal.state.pa.us/portal/server.pt/community/act_13/20789
9. DEP's Abandoned and Orphaned Well Plugging Program was created to plug abandoned wells that have the potential to cause health, safety, or environmental concerns.
<http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/AbandonedOrphanWells/WellPluggingProgram.pdf>

10. OIL AND GAS TECHNICAL ADVISORY BOARD MEETING minutes, August 15, 2012

<http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/OilGasReports/2012/TAB%20MEETINGS/TABMinutes08-15-2012DRAFT.pdf>

11. Shaky Ground: Farmer fears for future as gas drilling begins near scores of abandoned well sites

"I thought Vietnam was the last war I was ever going to have to protest."

<http://www.pghcitypaper.com/pittsburgh/shaky-ground-farmer-fears-for-future-as-gas-drilling-begins-near-scores-of-abandoned-well-sites/Content?oid=1567222>

12. The USGS Map identifying the location of the wells in the Bessemer oil and gas field:

<https://docs.google.com/open?id=0BwV75wo6lhJPV0k1RVg4Zm9wOEE>

Economic Incentives and Regulatory Framework for Shale Gas Well Site Reclamation in Pennsylvania

13. <http://pubs.acs.org/doi/abs/10.1021/es2021796>

14. NETL Uses Helicopter Magnetic Surveys to Locate Abandoned Oil and Gas Wells in Pennsylvania

<http://prod-mmedia.netl.doe.gov/netlog/?p=159>

15. Shale Boom, Part 1: Activity escalating in Lawrence County

<http://www.ncnewsonline.com/shale/x253559513/Shale-Boom-Part-1-Activity-escalating-in-Lawrence-County>

16. Shell addresses concerns for Henry organic farm

<http://www.ncnewsonline.com/opinion/x983001946/Shell-addresses-concerns-for-Henry-organic-farm>

17. Senator Casey's letter to DOE secretary

<http://www.casey.senate.gov/newsroom/press/release/?id=c7091fea-fc47-42bc-90ea-d35e886e53df>

18. [Technical Advisory board's 'Summary of Proposed Conceptual Changes \(with brief justifications\)' Draft report](#)

19. Shadbush Environmental Justice Collective <http://shadbushcollective.org/>