

## Helter-Skelter Shale Gas Permitting in Pennsylvania

In the January 2009-September 2013 period 13,491 gas wells were authorized and 6,626 drilled in Pennsylvania's Marcellus Shale formation<sup>1</sup>, rapidly spreading heavy industry across forests, farmlands, and residential neighborhoods. Many tens of thousands more wells are expected to be drilled across most of the Commonwealth during the next few years before this boom ends. These are not traditional shallow gas wells but heavy industry.

The responsibility for overseeing the environmental impacts of this industry rests with the Pennsylvania Department of Environmental Protection (PADEP), the agency whose mission is to implement the environmental laws and regulations that have been established to safeguard citizens' rights to clean air and water in accordance with the provisions of our State Constitution.

A recent review<sup>2</sup> of a PADEP permit application for a Marcellus gas-related activity in rural Elkland Township, Sullivan County, in the broader context of the regulatory process reveals disturbing facts about the adequacy of current State oversight of this industry to properly identify and minimize adverse environmental impacts. Some summary criticisms are below; details and recommendations for corrective actions are attached.

Marcellus Shale gas development approvals have been chopped into small bits which seldom receive detailed review. Permits are being issued without proper inventory of affected resources, impact analysis, or serious consideration of alternatives to avoid or minimize damages. Short-term damages from sediment, traffic, noise, chemical spills, and air pollution due to this heavy industry are not being fully acknowledged. Long-term regional and cumulative changes to watersheds, airsheds, and communities from access roads, well pads, and pipelines are being ignored. Full restoration of damages being inflicted, even if it could be accomplished, is not being implemented by industry or demanded by regulators.

Natural gas is a useful and profitable energy source. Numerous players in the gas industry are competing to bring deep gas resources to market as fast and as cheaply as they can. That is to be expected of profit-driven corporate entities. But the PADEP should be providing the balance to ensure that natural gas extraction is not being done at the expense of the people and environment of Pennsylvania.

Our review reveals failures of State governance when faced with shale gas development. Budget and manpower cuts are a contributing factor, but PADEP is not doing its job. It is failing to implement its existing regulations, much less seeking strengthened ones to close loopholes. It's not protecting this generation of 12 million Pennsylvanians, much less future generations who will be saddled with the persisting legacy of natural gas impacts, just as we inherited thousands of miles of acid mine drainage in streams devastated by unregulated coal mines in years past.

From years of regulatory experience and an actual Marcellus Shale gas pipeline encroachment permit review, here focused on PADEP permits are 21 recommendations to protect the public and to begin to make regulation of gas extraction transparent and effective. A protective framework for environmental regulation exists in Pennsylvania, but it is riddled with loopholes and is applied to the gas industry less strictly than to other commercial or industrial developments. Following this concise list, I discuss the

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<sup>1</sup> Numbers updated from PADEP Office of Oil and Gas Management online data on 7 November 2013.

<sup>2</sup> Kunz, Stephen P. 2011. Comments on DSEA Permit application E5729-014 (Chesapeake Appalachia). Prepared for the Foundation for Pennsylvania Watersheds. Schmid & Company, Inc., Consulting Ecologists. Media PA. 24 p. <http://www.schmidco.com/Comments%20to%20PADEP%20re%20Chesapeake%20App.pdf>

specific gas activities reviewed and background for these recommendations at greater length, adding several other recommendations directed at entities other than PADEP.

### **Recommendations**

- Remind PADEP permit and enforcement staff that their job is to protect the public and the environment, not to minimize the time or expense of permit review. Permits are not to be issued prior to full disclosure of plans, identification of affected resources, and establishment of enforceable conditions for maximal resource protection.
- Place all gas-related permit applications, issued permits, and enforcement actions online in an electronic database accessible by the public.
- Disclose all gas well permit applications and approvals and stream encroachment general permit registrations via notices in the *Pennsylvania Bulletin*.
- Include in public notices the type of stream encroachment proposed for pipelines. Distinguish use of existing road culverts from proposed underground borings and from new surface crossings.
- Establish a procedure within PADEP to select a significant number of permit applications for file and onsite audit, to ascertain trends in the adequacy of permit processing.
- Require completion of a thorough Environmental Assessment for every individual Chapter 105 permit application for gas-related activities, rather than waiving substantive assessment in advance.
- Disallow 100-acre watershed threshold waiver [25 *Pa. Code* 105.12(a)(2)] in all Special Protection (HQ and EV) watersheds, requiring instead individual Chapter 105 encroachment applications to provide full regulatory review.
- Disallow registration of Chapter 105 encroachment general permits in Special Protection (HQ and EV) waters, requiring individual encroachment applications instead.
- Require inventory of all known Special Protection streams (HQ or EV) within 500 feet of well pads plus any streams proposed for gas facility encroachment, with no less data than required in PADEP's 2005 Technical Guidance Document 563-2000-655 for coal mine watersheds, as part of every gas facility application.
- Make an attained use determination at every stream proposed for impact by gas activities as required per 25 *Pa. Code* 93.4c(a)(1), instead of relying upon designated uses published in Chapter 93. This is especially important in forested watersheds not already designated as Special Protection waters, many of which have not been studied but may warrant special protection status.
- Require a completed Jurisdictional Determination from the Army Corps of Engineers for every site or corridor where wetlands or other waters potentially might be affected as part of every gas well and gas well-related (road or pipeline) encroachment permit application.
- Require disclosure of all related facilities and activities in each gas well project application including well pads, access roads; pipelines; expected drilling and fracking water requirements, water source, and planned wastewater disposal.

- Require disclosure of all land and water disturbances necessary for each well or well pad, including access roads and pipelines, so that projects do not fall below size thresholds for full environmental review and cumulative impacts can be assessed.
- Require construction of impermeable floors and containment dikes at each well pad sufficient to contain any spilled fluids or chemicals and prevent their release outside the pad.
- Require plans that identify and protect steep slopes in erosion and sediment control applications for well pads, roads, and pipelines.
- Return erosion/sedimentation review and inspection responsibility to county conservation districts in order to strengthen pre-approval plan review and increase field inspections during construction activity.
- Require detailed accounting of proposed tree clearing, with plans and timetable for forest restoration, as part of each gas well, erosion/sedimentation, and encroachment application.
- Require consideration of efficient joint use of infrastructure (roads, pipelines) by adjacent wells even if proposed by different applicants.
- Require all gathering and water pipelines to follow existing road corridors to the maximum extent practicable, with thorough justification for departures from existing roads.
- Increase application fees to provide proper staffing of permit review, site inspection, and enforcement.
- Impose penalties for the submission of false information in permit applications.

### **Background Discussion**

Serious questions have been raised concerning an encroachment permit sought from PADEP for above-ground, temporary water lines to serve shale gas wells 1 mile northeast of the Chesapeake Appalachia Benspond gas well pad in Elkland Township, Sullivan County, the third-least populous county in the Commonwealth.<sup>3</sup> This typical individual federal-state joint permit application would allow construction of two, 16-inch plastic water lines nearly 2 miles long crossing at least seven Exceptional Value streams and four wetlands. In places the lines will require clearing of new corridors down presently forested steep (>50%) slopes adjacent to streams that support native wild trout, characteristic of the glaciated Endless Mountains region of the Allegheny Plateau. PADEP has the legal obligation to prevent all degradation in Exceptional Value waters, which are the best in the Commonwealth and comprise Clean Water Act Tier 3 nationally outstanding waters. Public as well as private lands are to be affected by the proposed water lines. Data in the application are incomplete and internally contradictory. They give little insight into what is to be built or why. Neither water lines nor gas-

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<sup>3</sup> The letter cited in Footnote 2 was submitted to PADEP during the comment period following a notice published in the *Pa. Bulletin* on 23 July 2011. This particular permit application was selected for review because 1) the affected streams are all classed by PADEP as Exceptional Value, the best streams in the Commonwealth, 2) this application is typical of many nearby, 3) the extent of regulated waters and wetlands after Corps field review increased sevenfold from the area initially flagged by the same consultant during 2010 for the same gas company in a nearby road corridor, and 4) most of the proposed alignment was accessible for inspection on Boy Scouts of America property or State Game Lands.

gathering pipelines were mentioned in the application or drilling permit approved for the Benspond wells and well pad.

Such concerns arose after substantial effort had been expended to obtain and review actual application documents in PADEP files relating to the Benspond well pad and water lines. A formal public notice had been issued, because the proposed water line crossings would not fit into the PADEP waivers or general permits for stream encroachments that generate no public notice at all.<sup>4</sup> PADEP public notices give latitude and longitude and stream name, but make no distinction between crossings of streams along roads atop existing culverts (with no additional disturbance) and new crossings that will entail substantial direct disturbance of stream banks. Such details regarding potential for environmental damage must be gleaned from an application's text and drawings. The subject application does not explain why alternatives were not proposed, such as a longer route following existing roads or any of several shorter routes that could avoid most of the proposed crossings of streams, wetlands, and public lands.

That this particular encroachment application attracted any public attention came as a surprise to PADEP reviewers, who appear to regard such facilities as qualifying routinely for approval after minimal review.<sup>5</sup> They apparently had used their discretionary authority to decide in advance that no Environmental Assessment would be required. (The Environmental Assessment is the central focus of any individual joint permit application.) Secondary impacts, such as the possibility the water lines introduce for spills of polluting substances near the Exceptional Value streams, are not addressed in the application at all.

How PADEP will respond to comments, and whether they will require significant revisions to this particular application prior to approval, cannot be predicted. They expect to process this application for federal Clean Water Act Section 404 approval as a Category 2 activity under Pennsylvania Statewide Programmatic General Permit 4. That category requires no review by the Army Corps of Engineers or federal commenting agencies. The water line construction is being reviewed in isolation from water withdrawal, wastewater disposal, gas wells and well pads, access roads, and gas-gathering pipelines, all of which activities are essential to gas production and without which the water lines have no purpose.

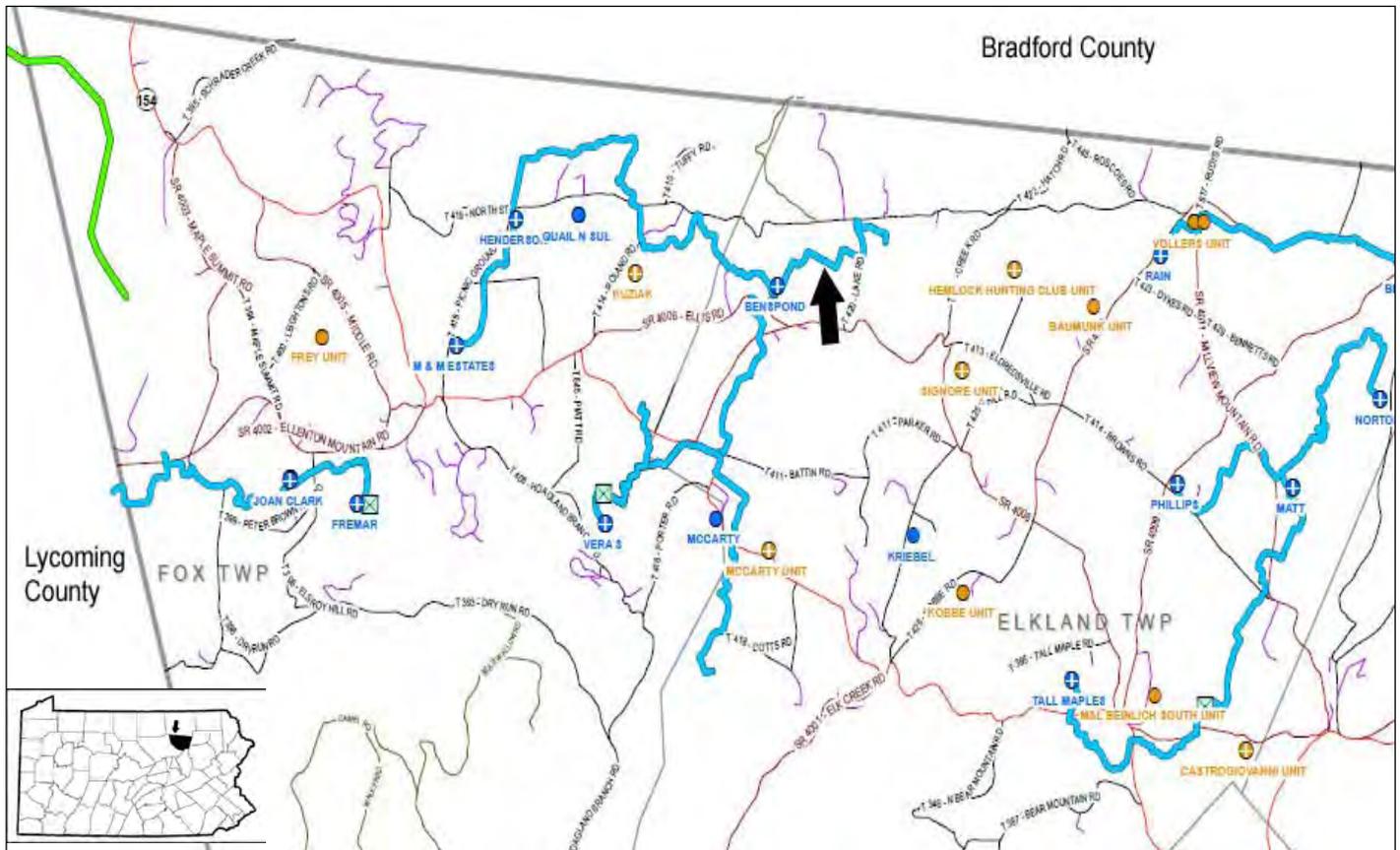
The subject application is but one among many similar applications in Elkland Township and other municipalities now experiencing shale gas development.<sup>6</sup> The highly fragmented nature of PADEP

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<sup>4</sup> Gas well drilling permit applications are not noticed, nor is their approval reported, in the *Pennsylvania Bulletin*. Unlike stormwater erosion and control general permits, planned use of stream encroachment general permits is no longer noticed.

<sup>5</sup> A two-year review of recent PADEP permits that included numerous discussions with PADEP staff concluded "that **stormwater management regulations and policies for oil and gas exploration and extraction facilities operating in Pennsylvania are less comprehensive, significantly less strict, and are subject to far less regulatory review than virtually any other construction or industrial activity in the state. The current regulatory process for review, approval, and operation of oil and gas exploration and extraction facilities fails to ensure design and implementation of both erosion control and stormwater management measures that are sufficient to protect water quality.**" (p. 25) Delaware Riverkeeper Network. 2011. Protecting Pennsylvania's cleanest streams: A review of Pennsylvania's antidegradation policies and program with recommendations for improvements. Bristol PA. 78 p.  
[http://www.delawareriverkeeper.org/resources/Reports/DRN\\_Rpt\\_Protecting\\_PAs\\_Cleanest\\_Streams.pdf](http://www.delawareriverkeeper.org/resources/Reports/DRN_Rpt_Protecting_PAs_Cleanest_Streams.pdf)

<sup>6</sup> PADEP has reported in the *Pa. Bulletin* recent applications from one company (Chesapeake Appalachia) for temporary surface fresh water lines to cross **68 Exceptional Value streams and 51 wetlands** in this vicinity: E5729-002 (4 EV streams) and E5729-003 (3 EV streams) on 25 December 2010; E5729-004 (7 EV streams and 5 wetlands) and E5729-005 (2 EV streams and 1 wetland) on 29 January 2011; E5729-006 (3 EV streams and 6 wetlands) and E5729-007 (10 EV streams and 5 wetlands) on 12 February 2011; E5729-009 (2 EV streams and 3 wetlands), E5729-010 (3 EV streams and 1 wetland), and E5729-011 (12 EV streams and 7 wetlands) on 9 April 2011; E5729-012 (9 EV streams and 10 wetlands) on 25 June 2011; E5729-013 (2 EV streams) on 16 July 2011; and E5729-014 (8 EV streams and 4 wetlands) on 23 July 2011. Approvals for



**Figure 1.** Excerpt from a September 2011 Sullivan County Planning map showing existing roads and aspects of proposed natural gas development in northern Elkland and Fox Townships. Proposed water lines are the thick blue corridors linking the well pads denoted by round circles (blue = Chesapeake Appalachia, orange = Chief). The Benspond well pad erosion control plan was to replace existing forest with 19.3 acres of impervious surface on its 12.8-acre site and infiltrate all stormwater runoff onsite through the gravel well pad and access road (no contradiction was noted by PADEP during its expedited review). The pad is to accommodate the industrial equipment necessary for creating six wells spaced 15 to 20 feet apart at the land surface. For the most part, the water lines depicted here will not follow existing roads. Square symbols indicate planned freshwater storage reservoirs for hydrofracking. One gathering pipeline (thick green line) has been announced for this vicinity; no produced gas can be marketed until such pipelines have been constructed to each well pad. New access roads to serve well pads are not shown, and the horizontal extent of wells below ground also is not indicated.

permitting of Marcellus shale gas projects lacks coherence and transparency. It is impossible for the public to comprehend what is being done as natural gas development is being authorized in bits and pieces. Public notices in the *Pennsylvania Bulletin* provide a bare minimum of information concerning the location of proposed impacts to acknowledged streams and wetlands, whose limits have not been established by formal jurisdictional determination involving agency field inspection. Questions from neighbors to the Benspond well pad regarding the extent of wetlands at risk were not addressed prior to construction of the access road and well pad.

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permits E5729-002 and E5729-003 were noticed in the *Pa. Bulletin* on 12 February 2011; for E5729-004, E5729-005, E5729-007, and E5729-009 on 7 May 2011; for E5729-009 and E5729-011, on 16 July 2011. The public notices and permits give no hint of any interconnections among any of the pipelines in these individual applications.

Access to permit files to enable review requires either personal visits to district offices to inspect files by appointment or the delay and cost of agency photocopying. The normal 30-day notice period is brief for obtaining and reviewing file documents and providing thoughtful comments. Public access to private lands planned for development may be restricted. In the Benspond water lines application, fragmentary and contradictory information is altogether inadequate for effective environmental review. This application should never have been deemed administratively complete. PADEP has the opportunity to correct the obvious deficiencies during its review of this permit. At present every application needs similar review and comment.

Together, such piecemeal approvals are leading to an interconnected system of “temporary” pipelines constructed for the purpose of conveying fresh water for gas well hydrofracturing in northern Elkland Township. One storage reservoir is to be associated with the network that includes the Benspond well pad (Figure 1). Because only fresh water is to be conveyed by the pipelines, apparently no produced water from the Benspond wells is going to be reused at other pads. No plans were provided showing any proposed diversions of stormwater, which apparently will run down the excessively steep, cleared slopes into Exceptional Value Elk Creek. The erosion control plan for the water lines addresses only the streams and wetlands themselves, not the approaches to those regulated features. All stormwater from the well pad is to be infiltrated to groundwater within the gravel pad and access road. This means that spilled pollutants can escape into the shallow glacial soils, with likely transport to streams.

The water lines at each stream and wetland crossing are to remain in place no more than six months after installation, when a second round of impact by construction equipment will be needed to remove them from the streams and wetlands. Yet the water pipes installed beneath public roads appear to be permanent and unlikely to be removed after six months. The unregulated storage reservoirs also appear to be permanent. No plans to restore forest after use of the “temporary” corridors are mentioned in the application, and no measures to prevent invasion by non-native weeds were identified. Whether the crossings will need to be reinstalled for subsequent rounds of new well drilling and hydrofracturing (or for repeated stimulation of any wells) at the well pads is not discussed. Two of six authorized wells were drilled at the Benspond pad during the summer of 2011; then the drill rig was relocated to another site. The Brule well pad at the end of the subject water lines is not mentioned in the water lines application. No application for that pad or its wells had been submitted prior to the water lines application.

It is noteworthy that the several proposed water pipelines do not consistently follow existing roads and already disturbed corridors (Figure 1). How they are to relate to the permanent gathering pipelines that will be necessary to get gas from each well pad to market is not mentioned in the applications or permit files. Various sizes of pipes and widths of corridors appear in the several water line applications.

In contrast, various permit applications nearby address both water lines and natural gas pipelines, some seeking to construct both kinds of pipes permanently underground within the same disturbance corridors.<sup>7</sup> Several companies appear to have recognized a need to consider pipelines as part of their well infrastructure. But PADEP does not require disclosure of impacts from the entire operation when granting well permits and encroachment approvals. Rather, individual parts of the gas development are

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<sup>7</sup> Notices of PADEP approval of permanent infrastructure crossing **64 streams and 76 wetlands**, for example, appeared in the *Pa. Bulletin* on 16 July 2011: E0829-012 (Talisman Energy, 5 streams and 7 wetlands nearby in Bradford County); E5929-008 (SWEPI, 10 wetlands and 4 streams in Tioga County); E5929-10 (SWEPI, 1 wetland and 1 stream in Tioga County); E5929-011 (SWEPI, 10 wetlands and 8 streams in Tioga County); E5929-012 (SWEPI, 1 wetland crossing in Tioga County); and E5829-003 (LASER Northeast Gathering Co., 47 wetlands and 46 streams in Susquehanna County). These applications include both gas gathering and water lines. These are but a few illustrative applications for shale gas development encroachments into streams and wetlands.

viewed independently, despite the fact that none would have independent utility in the absence of the others. As a result, it is possible to keep gas developments below the minimum thresholds that have been established for detailed regulatory scrutiny prior to permit approval, despite the immense potential for environmental damage posed by these activities in combination. The high probability of spills and accidents is confirmed by the multiple violations reported at virtually every shale gas well pad, despite the limited staff resources allocated by PADEP to site inspection once construction is underway.<sup>8</sup>

Shale gas development entails the construction of thousands of wells which must be linked by roads and pipelines. This industrialization is yielding tremendous fragmentation of privately owned forests and disruption of Pennsylvania watercourses. Clearly, every practicable effort is not being made to cluster the disturbance from gas facilities along existing road and utility corridors or to keep them maximally away from streams and dwellings. Where existing road culverts can be used for crossing streams, no additional disturbance is necessary, and future maintenance is facilitated by easy access. Borings can take pipelines beneath streams and wetlands without disruption, but loss of drilling mud to streambeds from improper borings has been reported.

Under its existing regulations PADEP has sufficient authority to require extensive site information and sufficient detail regarding construction to analyze gas development projects before granting permits. Absent public demand for PADEP to protect the environment or the public, however, the requisite information is not being provided and effective review cannot occur.

PADEP must post applications, permit texts, and enforcement records online for ready consultation by the affected public. Each application must provide site-specific information on what is to be built and why the proposed alternative facilities are the most practicable and environmentally protective.

PADEP must require that formal Jurisdictional Determinations from the Army Corps of Engineers be provided as part of every application for well pad, stream encroachment, and erosion and sediment control approval. These reviews can be obtained early in the planning process for shale gas development and must routinely provide critical input into the selection of specific land for development. Enforcements against unauthorized fill for gas development in wetlands and other waters are growing in number, are easily avoidable, and should become altogether unnecessary.<sup>9</sup>

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<sup>8</sup> The Pennsylvania Land Trust Association (PALTA) in 2010 reported on **1,435 violations** of Marcellus gas well permits recorded by PADEP over the 30-month period 2008 through mid 2010. These violations arose from 43 drillers during a period when more than 3,600 permits were issued. At least two thirds of the violations (952) were deemed by PALTA as likely to entail significant impacts, primarily on water resources. Given the track record of PADEP in monitoring compliance with its permits, the statistics provided to PALTA must be regarded as a minimum estimate of actual violations at Marcellus Shale gas wells statewide. This one-time PALTA effort to classify violations was not based on any independent analysis of PADEP files or any on-ground inspections, just a thoughtful review of PADEP spreadsheets. Tallied by drilling company, the **43 permittees averaged from 0.8 to 11.0 violations per well**. More than 370 violations were reported for faulty pollution prevention and wastewater containment, more than 150 violations for illegal discharge of industrial waste, and 54 violations for improper casings and faulty blowout controls. It is extraordinary that this number of violations was *recorded*, given the minimal information currently required by PADEP in applications for Marcellus Shale gas wells and its small number of field inspectors. The statistics appear not to address any violations associated with access roads or gas pipelines. Truckers hauling materials and wastes to and from gas wells accrued many hundreds of additional violations over the period, also not included in the PALTA tally, resulting in the temporary banishment by State Police of many trucks and operators from public roads because of their direct threat to public safety. More recent data suggest that the number of violations is increasing.

<sup>9</sup> Recent enforcements against unauthorized encroachments into wetlands by gas activities include Seneca Resources Corp. PADEP File # ESX 09-117-0017; Chesapeake Fitzsimmons PADEP File # 37-015-20306; Chesapeake Elevation USACE File NAB-2010-01771-P09; and Chesapeake Lundy USACE File NAB-2011-021509-P09.

Agency regulators must have sufficient time to inspect every site for proposed gas activities prior to permit approval, and thereafter at appropriate times to observe critical activities most likely to affect the environment. All waters that warrant Special Protection have not been identified, and existing use determinations are supposed to be made for every permit decision, but seldom are. By itself, labeling of a stream as High Quality or Exceptional Value does nothing to insure its protection. Thus a protocol for ongoing permittee monitoring of all Special Protection streams close to shale gas activities must be developed as a PADEP Technical Guidance Document, with online posting of findings in each stream. Where actual spills or other pollution occurs at a well pad, the monitoring of affected Special Protection waters should be extended for ten years.

PADEP must disallow the applicability of the small-watershed waiver [25 Pa. Code 105.12(a)(2)] in watersheds containing the tributaries to Exceptional Value and High Quality streams which on paper require Special Protection. This waiver affords no protection at all to Special Protection headwaters below the minimum drainage area threshold of 100 acres. Yet the quality of such waters is critical to maintain water quality and the biota that support fisheries downstream.<sup>10</sup> There is virtually no literature documenting any successful recovery of stream biota following disturbance by fossil fuel activities, even after the passage of many years and significant expenditure of public money to restore a semblance of natural conditions.<sup>11</sup> General permits for encroachments into Special Protection waters also should be disallowed, with individual permits, thorough environmental assessments, and public notice required instead.

More broadly, PADEP should exercise precautionary discretion and suspend all permitting of shale gas development in Special Protection watersheds, until there is convincing scientific documentation that gas activities do not cause degradation of water quality.<sup>12</sup> At present resource damage by gas development is common, as are spills and regulatory violations. The industry should be forced to demonstrate first its ability to protect Pennsylvania environments from degradation in NON-Special Protection watersheds. Only then might gas development reasonably be considered in the watersheds of High Quality and Exceptional Value streams. Current PADEP approvals that allow the industry to “practice” using new technology that damages the best streams of the Commonwealth constitute an irresponsible violation of its trusteeship of public resources.

Applications for PADEP permits need careful outside review, such as that made of the Benspond water lines application, on behalf of the affected public (see Footnote 1). PADEP should institute its own permanent procedure for statistically selecting gas-related permits for audit, so that trends in adequacy can be identified and steps taken to secure prompt correction of oversights before permits are issued. A

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<sup>10</sup> Jackson, John B. 2009. Understanding stream conditions: Lessons from an 11-year study of macroinvertebrates in eastern Pennsylvania’s Schuylkill River watershed, with a focus on exceptional-value and high-quality streams. Stroud Water Research Center. Avondale PA. 27 p. <http://www.stroudcenter.org/research/projects/schuylkill/index.shtml>

<sup>11</sup> Bernhardt, Emily S., and Margaret A. Palmer. 2011. River restoration: the fuzzy logic of repairing reaches to reverse catchment scale degradation. *Ecological Applications* 21(6):1926-1931. Stout, Benjamin M. III. 2004. Do headwater streams recover from longwall mining impacts in northern West Virginia? West Virginia Water Research Institute. Morgantown WV. 33 p.

<sup>12</sup> Ongoing research to date by the Academy of Natural Sciences of Philadelphia has shown increasing chemical pollutants and decreasing stream biota in proportion to the extent of Marcellus shale gas development in otherwise comparable Pennsylvania watersheds. <http://www.ansp.org/research/pcer/projects/marcellus-shale-prelim/index.php>

significant number of permit applications should be selected for file and onsite audit to expose weaknesses in current PADEP practice and alert applicants, consultants, and agency reviewers to what is unacceptable information for permit review. Once the word gets around that the public is not asleep and indifferent, the gas industry will have proper applications prepared, so that it can secure permits quickly.

Permits improperly issued must be appealed timely to the Environmental Hearing Board by concerned citizens. If it becomes likely that unprotective permits are going to be appealed, the gas industry will heed the message and have its applications prepared correctly, and PADEP staff will learn to make sure that impacts have been identified and avoided or minimized before they grant approval.

For resource protection to occur, permit files must be examined timely by reviewers qualified and experienced in PADEP permits. File review must be supplemented by in-field inspection. Unless PADEP reviewers are directed to take permit responsibilities seriously, their performance will be judged merely on volume of approvals issued. As illustrated by the Benspond water lines application, outside review of permit applications at present is sorely needed. Additional examples should be investigated, beginning with the large number of affected Exceptional Value streams already permitted in Sullivan County, which together pose great potential for cumulative impacts. PADEP is not getting the industry to minimize potential damage during the design and planning of shale gas development.

Given the potential damage to aquatic resources posed by shale gas development, outside review priority should be assigned to those gas well and related encroachment permits affecting Exceptional Value and High Quality waters, which are supposed to gain Special Protection from PADEP but often do not. Comments must be submitted to PADEP during the permit review period, and permits must be reviewed upon approval. Appeals to the Environmental Hearing Board must be taken expeditiously for permits improperly issued despite requests to PADEP, wherever environmental damage is likely to exceed the practical minimum.

PADEP must be urged (1) to require permit applications that accurately and fully describe each proposed shale gas development in a coherent way and (2) to place every gas-related application, permit, and enforcement file online in its entirety to facilitate public review. Now that virtually all applications are prepared electronically, posting of this information will reduce the workload of PADEP file staff even as it greatly simplifies the process of file review both within and outside the agency. According to the Governor's Marcellus Shale Commission, new legislation is needed further to strengthen regulatory controls.<sup>13</sup>

Many other opportunities exist to strengthen Pennsylvania shale gas requirements to increase environmental protection, beyond what is observable in the Benspond permit records. The use of obsolete open pits on well pads for temporary storage of produced water and well cuttings should be prohibited, and enclosed tanks required instead. The use of obsolete flares at well pads for disposal of flowback into the atmosphere should be prohibited, with capture and sale of gas required instead. Condensate collectors and pressure regulating valves that release natural gas to the atmosphere should be prohibited. Well drilling permit applications should include pre-drilling sample results from all water wells within no less than 1 mile of proposed shale gas wells, measured from the entire well bore, not just the wellhead.

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<sup>13</sup> Schmid, James A. 2011. Written expansion of remarks to Citizens Marcellus Commission, Harrisburg PA, 26 September. Schmid & Company, Inc., Consulting Ecologists. Media PA. 10 p. <http://pennbpc.org/sites/pennbpc.org/files/CMSC-HBG-Schmid.pdf>

Inspections and enforcement actions must be strengthened, especially in Special Protection watersheds, at least until a general moratorium on gas-related permits is imposed in such streams. Permits must clearly set forth the protective conditions required, and frequent inspections should become routine. Violations and accidental spills should become subject to fines sufficiently large to strongly discourage their commission. At present the penalties for environmental damage in the Pennsylvania gas fields are so small as to represent negligible costs of doing business as usual and offer no deterrent for damage to Special Protection waters.

Given the slow pace at which PADEP improves its ability to regulate new technologies for resource extraction---as demonstrated clearly by shale gas drilling and longwall (high extraction) underground coal mining<sup>14</sup>---timely outside review of the actual permit review and enforcement cases is vital to protect the public interest. PADEP is under tremendous pressure from industry and from industry-supported elected officials to expedite its approvals and to promote fossil fuel production. PADEP standards for carefully designed projects and for properly completed applications at present are very low. The penalties it imposes on industry for actions that damage the public health, welfare, and the environment are insufficient to attain compliance or achieve effective environmental protection. Hence there is a critical need for vigilance on the part of the public and by foundations committed to the public good to watchdog the actions of this regulatory agency at the present time.

Existing review of PADEP program administration by the US Environmental Protection Agency has proved inadequate for addressing deficiencies in the regulation of fossil fuel extraction. As previously noted, an expanded role should be played by the Army Corps of Engineers in field-confirming delineations of streams and wetlands and in reviewing applications for more than de minimis activities in Waters of the United States. Supplemental efforts to regulate the shale gas industry by the Susquehanna and Delaware River Basin Commissions have not yet begun to fill the regulatory gaps left by PADEP.

After a few years of careful scrutiny of PADEP permit and enforcement actions, and after PADEP takes obvious practical steps to make its regulatory actions transparent and accessible to the public via the internet, it may become possible for the public to rely upon its public servants to protect the public's rights "to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment" as promised in Article 1, Section 27, of the Pennsylvania Constitution. But at present, wholesale damage is underway in this Commonwealth, which the State Government---mesmerized by hopes of financial gain---is unable or unwilling to regulate.

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<sup>14</sup> Schmid & Company, Inc., Consulting Ecologists. 2010. Protection of water resources from longwall mining is needed in southwestern Pennsylvania. Prepared for the Citizens Coal Council. Media PA. 195 p. <http://www.schmidco.com/Final%20Report%2026%20July%202010.pdf> Schmid & Company, Inc., Consulting Ecologists. 2011. The increasing damage from underground coal mining in Pennsylvania, a review and analysis of the PADEP's Third Act 54 Report. Prepared for the Citizens Coal Council. Media PA. 50 p. <http://www.schmidco.com/17April2011SchmidAct54Analysis.pdf>

## Postscripts

PennFuture filed an appeal of the Benspond-Brule frackwater lines permit. The first two well permits were issued for the Brule well pad in January 2012.

Significant discrepancies in PADEP recordkeeping regarding Marcellus wells were reported by the Pittsburgh Post-Gazette: <http://www.post-gazette.com/pg/12008/1202172-503.stm>

The passage of Act 13 of 2012 provides weak regulation of natural gas, deprives municipalities of whatever power they might have had to regulate oil and gas activities, and provides minimal revenue to the Commonwealth. The bill has 174 pages:

<http://www.ctbpls.com/www/PA/11R/PDF/PA11RHB01950CC1.pdf>

<http://www.sierraclub.org/pressroom/downloads/FrackingMythbustersFactSheet.pdf>

Act 13 was appealed and the implementation of the challenged sections were stayed. Argument was heard by Commonwealth Court on 11 April 2012.

<http://www.slideshare.net/MarcellusDN/lawsuit-to-overturn-pennsylvania-marcellus-drilling-law-act-13>. The Court (4 to 3 vote---2 D and 2 R to overturn, 3 R in dissent) held five provisions of the Act unconstitutional in July. Opinion and dissent are here: <http://c4409835.r35.cf2.rackcdn.com/2012/207/900/commonwealth-court-ruling.pdf>

PADEP appealed the next day to PA Supreme Court. That put the Commonwealth Court decision on hold. On 16 August President Judge Pellegrini of Commonwealth Court reversed the stay, so overturn of municipal regulations and DEP discretion to grant waivers remain invalid unless and until there is a Supreme Court reversal of Commonwealth Court.

## July 2012

Chesapeake, joined by DEP, moved to dismiss PennFuture's timely appeal of the approval of the Benspond to Brule water lines permit to the Environmental Hearing Board. In July the EHB denied Chesapeake's motion, and the appeal began moving forward again with discovery and depositions. Mark Szybist sought much information from DEP on their Marcellus well approvals, in an effort to understand what they have (or have not) been doing to review impacts prior to granting approvals. Discovery was postponed pending disposition of the motion to dismiss. Szybist pressed for a resolution of the key issues of approval granted without environmental review. He also continued settlement discussions through which this water line would be rerouted in ways we suggested to reduce impacts. The policy and procedural issues here probably outweigh the potential environmental impacts of this single water line, unless it were to spill frackwater into the EV stream, as some water lines have done.

The EHB opinion rejecting Chesapeake's motion addresses some difficult issues concerning general permits. (No longer are general permit registrations noticed in the Pennsylvania Bulletin, as they once were, so the public has no way of knowing about them.) Here a major issue arises concerning the DEP's role in issuing Clean Water Act federal approvals on behalf of the Corps of Engineers, as well as state water quality certifications per Section 401 of the CWA. Trial would have helped, as these are key issues in actual administration of environmental regulation in Pennsylvania. EHB decisions have major consequences for permit processing by DEP. The EHB decision on Chesapeake's motion to dismiss is here:

[https://docs.google.com/viewer?a=v&pid=gmail&attid=0.1&thid=1387ce1b72bcecec&mt=application/pdf&url=https://mail.google.com/mail/u/0/?ui=3D2%26ik%3D0e19811bdc%26view%3Datt%26th%3D1387ce1b72bcecec%26attid%3D0.1%26disp%3Dsafe%26realattid%3Df\\_h4kahhb30%26zw&sig=AHIEtbSzn5Fvh3C0ikD5I7D2Td9yjE0gGQ&pli=1](https://docs.google.com/viewer?a=v&pid=gmail&attid=0.1&thid=1387ce1b72bcecec&mt=application/pdf&url=https://mail.google.com/mail/u/0/?ui=3D2%26ik%3D0e19811bdc%26view%3Datt%26th%3D1387ce1b72bcecec%26attid%3D0.1%26disp%3Dsafe%26realattid%3Df_h4kahhb30%26zw&sig=AHIEtbSzn5Fvh3C0ikD5I7D2Td9yjE0gGQ&pli=1)

August 2012

Apparently Chesapeake decided it could not prevail in our appeal of this permit to EHB, so withdrew its application. PADEP has canceled the permit.

Hence no legal precedent can be set. At least the probable damage to EV Elk Creek itself will not occur from this formerly proposed line. But we did get a strong decision from the Board denying Chesapeake's motion to dismiss the appeal. It's clear that the permittees and the Department will lose the next time such an appeal is brought to the EHB. A permit approval more important to the industry than this one should be appealed, as the issues raised are universal.

Permit withdrawal of course is standard industry practice in Pennsylvania. It serves to minimize adverse court decisions when permit approvals are challenged. Several years ago the appeal of the mining permit for Vesta 84 Mine in Washington County became moot after the application was withdrawn. In such cases the burden lies with appellants to make a case, but then the permittee can withdraw the application without spending any resources to defend it.

A win on the Benspond case would have had major ramifications for Marcellus permitting, as the issues at stake go far beyond this two-mile long water line. PADEP probably advised Chesapeake to withdraw the permit, as they would not want to have to do real reviews of such permit applications in the future, which they strenuously seek to avoid. A new application could be submitted at any time.

January 2013

The Brule well pad was under construction in 2012, and an application for additional wells at the Benspond pad was submitted in January 2013.

June 2013

Minimal PADEP penalties fail to dissuade gas drillers from damaging EV streams in Lycoming County when constructing a 30-inch gathering pipeline:

<http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287?id=20001&typeid=1>

December 2013

Chief Justice Castile's decision for the PA Supreme Court set a major precedent for environmental protection in Pennsylvania pursuant to Article 1, Section 27, of the State Constitution. Commonwealth Court's overturn of parts of Act 13 were upheld, and the case was remanded for further decisionmaking based on broadened standing to challenge additional parts of Act 13.