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*Via email: [DEP.comments@wv.gov](mailto:DEP.comments@wv.gov)*

Public Information Office  
West Virginia Department of Environmental Protection  
Office of Oil and Gas  
601 57th St., S.E. Charleston, WV 25304

**RE: Trout Unlimited Comments on West Virginia Department of Environmental Protection's Legislative Rule, SERIES 8, Rules Governing Horizontal Well Development**

To Whom It May Concern:

Trout Unlimited (TU) is encouraged that the West Virginia Department of Environmental Protection (DEP) has taken measures to improve the state's management of horizontal well development through its proposed legislative rule (hereafter "rule").<sup>1</sup> Although definitely a step in the right direction, the proposed rules fall short of providing an adequate level of protection for West Virginia's streams, rivers and other water resources.

Specifically, the rule adds language to the DEP's Office of Oil and Gas permitting program that requires a well operator to include the following elements in a permit application: an erosion and sediment control plan; a well site safety plan; and an engineer-certified site construction plan. These are critical planning components that are necessary for effective and efficient management of potential impacts related to natural gas development. However, to protect West Virginia's water resources, additional regulations and standards are required. TU's recommendations for improving specific aspects of the rule are detailed below.

### **Best Management Practices**

TU supports the proposed new operational language that instructs companies to protect the quality and quantity of surface and ground water systems both during and after drilling

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<sup>1</sup> W. Va. CSR 35-8-1 et seq.

operations and during reclamation. Specifically, the rule requires the use of best management practices (BMPs) during oil and gas development operations to prevent, to the extent practicable, additional contributions of suspended or dissolved solids to stream flow or runoff outside the permit area. However, the rule fails to provide guidance on or a reference to what BMPs are deemed acceptable. Additionally, sections 12.2 and 12.3 reference “excessive sedimentation” but fail to explain what the DEP may or may not consider excessive. TU recommends that the DEP (1) define “excessive sedimentation” and how DEP intends to measure sedimentation rates, (2) develop a BMP technical document that addresses natural gas development-related impacts specific to West Virginia, and (3) require operators to implement, at a minimum, the pertinent methods outlined therein.

### **Cementing, Casing and Pressure Testing**

TU supports section 9.2, which requires the operator to construct “all horizontal wells in a manner that will provide for control of the well at all times, prevent the migration of gas and other fluids into the fresh groundwater and coal seams, and prevent pollution of or diminution of fresh groundwater.”<sup>2</sup> The heightened casing and cementing standards are a critical first step to reducing the likelihood of the migration of gas and fluids into our state’s fresh ground water and coal seams.

Sections 9.2.b.6. and 9.2.f.2, addressing when pressure testing and when an intermediate casing may be required, are overly ambiguous. These critical stages of well development are necessary to ensure well integrity and preservation of water quality. Yet, the language in both of these sections leaves the discretion to the Chief to determine if and when these steps may be needed, without any indication as to what criteria the Chief will use to make the determination. TU recommends either removing this discretion altogether or providing the specific criteria that the DEP will use to make this determination.

### **Waste Management and Disclosure**

Importantly, the rule also adds some basic disclosure requirements that are necessary for the protection of West Virginia’s water resources and trout populations. TU is encouraged by the section 10.1 requirement that a well operator disclose the chemicals it anticipates using in the hydraulic fracturing process and, upon well completion, the listing of additives as well as the concentration of chemicals actually used. However, the rule fails to establish a clear timeframe for when the post-fracturing disclosure must occur. The rule requires only that the list be included in the completion report, pursuant to W. Va. Code § 22-6-22, within a “reasonable time” after the completion of the drilling. To provide necessary information to emergency personnel and conservation officers in the event of a spill or accident, this rule should establish a firm 24-hour reporting deadline for submission of a well completion report.

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<sup>2</sup> W. Va. CSR 35-8, Section 9.2

Further, the proposed rule fails to expressly prohibit land application of any return fluids from drilling or hydraulic fracturing at Marcellus Shale wells—a prohibition that DEP adopted on July 30, 2010 (“July 30, 2010 Return Fluids Memorandum”) that was continued by the Governor’s Executive Order, dated July 12, 2011. TU urges the DEP to amend the regulations to expressly prohibit the land application of drilling-related wastes from Marcellus Shale gas development.

TU agrees that thorough and accurate record-keeping is integral to ensuring that the health of West Virginia’s rivers and streams are not compromised by irresponsible gas development. Toward that end, the rule requires operators to provide detailed records of flowback quantities, and methods of management and disposal of wastewater.<sup>3</sup> Proper record-keeping will help to ensure that drill cuttings and drilling mud are disposed of in an approved solid waste facility.

Unfortunately, the discretion reserved to the agency in section 12 weakens the new waste management storage standards proposed earlier this year. Section 12.4.g. requires that all waste material stored in a pit shall be disposed of in accordance with W. Va. Code § 22-6A-8(g)(2), which simply calls for all drill cuttings and drilling mud to be disposed of in a manner that meets the Secretary’s approval.<sup>4</sup> There is no indication of what the Secretary may or may not approve—leaving the public in the dark about how drilling waste will be treated and disposed of.

With regard to drinking water supplies and streams, the rule does not include expanded setbacks, nor does the rule reference the well location restrictions established as part of the Horizontal Well Control Act. If this rule is intended to implement the Horizontal Well Act, it must include, as the Act did, a setback from water resources. TU recommends adding the following language from the Act to this rule:

“No well pay may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream.”

TU recommends that DEP take this opportunity to further clarify the aforementioned concerns, to provide adequate protection for West Virginia’s water resources.

### **Water Withdrawals**

The rule requires a permit applicant to submit a water management plan if it intends to use more than 210,000 gallons of water during any thirty-day period—a significant improvement

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<sup>3</sup> W. Va. CSR 35-8, Section 9.1.b.3.

<sup>4</sup> In its entirety, W. Va. Code § 22-6A-8(g)(2) provides that “with respect to disposal of cuttings at the well site, all drill cuttings and associated drilling mud generated from horizontal well sites shall be disposed of in an approved solid waste facility, or if the surface owner consents, the drill cuttings and associated drilling mud may be managed on-site in a manner approved by the secretary.”

over the previous requirement that a drilling company merely report withdrawals through a web-based reporting system if it intends to use at least 750,000 gallons to hydraulically fracture a well in any given month. Water management plans will provide useful information about the water sources used during drilling-related processes, including: whether the source is surface or ground water; the specific location of each anticipated withdrawal; the anticipated volume of each withdrawal and the anticipated months withdrawals will be made; and the planned management and disposition of wastewater from fracturing and production activities. TU supports the enhanced planning requirements for surface water withdrawals—including identification of designated and existing water uses, as well as the methods to be used to minimize significant adverse impacts to aquatic life. TU also supports the requirement that applicants demonstrate, prior to withdrawing water from a stream or river, that sufficient in-stream flow will be available immediately downstream of the point of withdrawal.

In particular, TU applauds the DEP's introduction of a mechanism for limiting impacts from gas drilling-related water withdrawals. Under proposed section 5.6.d, as part of the agency's approval of a proposed Water Management Plan, the agency "will provide to the operator both a minimum stream flow requirement at a specified USGS-operated stream gauging station, and a minimum pass-by flow requirement that must be maintained immediately downstream of each proposed withdrawal point."<sup>5</sup> Operators that receive withdrawal thresholds from the agency must adhere to both the minimum gauge reading and the downstream pass-by flow requirements. These measures significantly improve the water management framework outlined in the August, 2011 Emergency Rule, which did not provide for minimum passby flow requirements. Additionally, TU commends the requirement that operators must "verify, using methods deemed acceptable to the Secretary, that sufficient flow exists to protect designated uses of the stream" within 24 to 48 hours prior to withdrawing water.<sup>6</sup>

Despite the aforementioned significant improvements, the proposed rule fails to address many critical areas of concern relating to water withdrawals and thus does not provide the necessary protections for West Virginia's water resources from gas drilling.

First, the water plan requirement still provides no limitations on the sources, methods, location, or timing of withdrawals for drilling operations. The rule provides no criteria to guide the agency's development of minimum gauge readings and pass-by flow requirements for proposed withdrawals. The timing and location of water withdrawals are critical factors in determining the extent of impacts on coldwater fisheries. For example, if a water withdrawal is permitted on a coldwater stream during low flow conditions or during critical spawning or rearing periods, trout populations could be impacted. By not specifically addressing these factors, the rule falls far short of addressing impacts on trout populations and it creates regulatory uncertainty by leaving too much to agency discretion. Further, section 5.6.b.c.2.

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<sup>5</sup> W. Va. CSR 35-8, Section 5.6.d.

<sup>6</sup> W. Va. CSR 35-8, Section 9.1.b.1

requires the water management plan to demonstrate, using methods acceptable to the Secretary, “that sufficient in-stream flow will be available immediately downstream of the point of withdrawal.”<sup>7</sup> Yet, there is no guidance as to what methods the Secretary may or may not find acceptable. The rule indicates that sufficient flow exists when a “pass-by flow that is protective of the identified use of the stream is preserved immediately downstream of the point of withdrawal.” However, the rule fails to address what may or may not qualify as “protective,” nor does it provide any detail on what passby flow methodology will be used. TU recommends that DEP incorporate a passby flow methodology into this rule, to provide for clear and consistent application of streamflow protections. Further, TU recommends that DEP establish passby flow standards based upon ecological flows—determined on a monthly, seasonal basis to account for natural variations in hydrologic conditions. By doing so, DEP will be allowing safe levels of water to be withdrawn, while protecting the natural variability of a stream that trout and other aquatic species rely upon for various life stages. The omission of specific criteria for the minimum gauge readings and pass-by flows is a critical flaw that must be remedied, in order to protect West Virginia waterways. To ensure the adequacy and consistent application of these stream flow protections, the rules should establish a method for determining the amount of water necessary to protect a stream’s designated uses.

Second, the proposed flow protections are undermined by the absence of any mechanisms for their enforcement. This is a significant problem, as it may disincentive compliance. At a minimum, TU recommends revising the rules to provide for frequent and routine monitoring of gauge readings. Where stream gauges are absent, TU recommends that DEP require the well operator to install and maintain a real-time monitoring device. Additionally, TU recommends that that DEP establish clear and meaningful penalties for violations.

Third, the proposed rule overlooks the fact that, unlike other large-scale water uses in the state, virtually all water withdrawn for hydraulic fracturing is consumed. The proposed rule provides no oversight or mechanism for imposing limitations on withdrawals for hydraulic fracturing below the 210,000 gallon threshold. Because water used for hydraulic fracturing is never returned to the stream, the cumulative impacts of unrestricted withdrawals less than 210,000 gallons for this purpose could be substantial. TU recommends that the DEP follow the example of other interstate commissions overseeing water withdrawals—such as the Susquehanna River Basin Commission and the Delaware River Basin Commission—and require all consumptive uses of water for gas development, regardless of size, to be reviewed and approved by DEP.

Additionally, the rule does not take into account the impact of inter-basin transfers on the hydrology of a watershed, as there is no requirement that water be used in basin, or that wastewater must be recycled or reused. Perhaps more importantly, there is no requirement that the DEP consider the cumulative impacts of proposed withdrawals—largely because West

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<sup>7</sup> W. Va. CSR 35-8, Section 5.6.b.c.2

Virginia is lacking a water withdrawal permitting structure. To assure that the necessary protections for West Virginia's water resources, TU strongly recommends that DEP establish an actual permit system for all consumptive uses of water from West Virginia's streams, rivers, and other waterways, including those withdrawals not related to oil and gas development. Only then will West Virginia be able to comprehensively assess the impacts of water withdrawals on local watersheds.

### **Additional Protections Needed for Headwater Streams**

Special requirements for hydraulic fracturing withdrawals are needed for the protection of small headwater streams. The water-demanding, water-consuming nature of this activity gives it the potential to create adverse and cumulative adverse effects to the water resources of West Virginia, regardless of whether individual projects met or fell below the 210,000 gallon regulatory threshold. Most significantly, what makes this industry unique is the fact that it engages in water-demanding activity in remote, often environmentally sensitive headwater areas. Quantities of water that could otherwise be considered inconsequential on a major tributary can represent an important component of the flow regime in headwater areas.

The importance of protecting West Virginia's headwaters cannot be overstated. Headwater streams are the state's primary sources of water. They serve as a critical hydrologic link between the surrounding landscape and larger, downstream surface waters. Every important aspect of the river ecosystem, the river geomorphic system, and the river chemical system begins in headwater streams. This is because the headwaters constitute a majority of the area of a watershed, receiving the majority of the precipitation in a watershed, and therefore provide the majority of the baseflow to the river system.

Migratory aquatic species require access to headwaters to complete critical parts of their life cycle (e.g., spawning and rearing). Headwaters function as the hydrological and ecological anchors of stream networks, providing high water quality and quantity, sediment control, and nutrients for downstream reaches. These multiple functions make headwaters extremely sensitive to anthropogenic disturbances, such as changes in land use and disruptions to natural hydrologic flow regimes. Alterations to the natural hydrologic regime can impact natural recharge rates from surface water to groundwater or, conversely, groundwater baseflow to headwater channels. The pumping of groundwater in headwater areas can lower storage levels and induce flow of water from the stream to the groundwater well, resulting in an even higher rate of loss of baseflow to the stream. Reductions in streamflow can affect the stream-side vegetation that is critical to maintaining wildlife habitat and in enhancing the quality of surface water. Pumping-induced changes in the flow direction to and from streams affect temperature, oxygen levels, and nutrient concentrations in the stream, which in turn impairs aquatic life in the stream.

In short, withdrawals of ground or surface waters in headwater areas will dramatically impact not only local ecosystem functions, but also downstream flows and water quality. To protect

valuable and irreplaceable headwater streams, TU recommends that water withdrawals be prohibited from headwater streams that have a drainage area of less than 50 square miles.

### **Conclusion**

Finally, as noted throughout these comments, the proposed rule contains numerous sections where overly broad discretion has been granted to the DEP, without sufficient criteria and other information to explain when a variance or additional condition may be required. In addition to sections already identified, sections 5.1.j.; 5.4.a.; 5.6.b.c.2.; 9.2.d.5.; 9.2.e.2 ; 9.2.j.; 12.1.; and the umbrella authority provided under section 35-8-14, provide unfettered discretion to the DEP. The lack of detail and criteria in these sections prevent the public from providing meaningful comment on the rule. TU recommends that DEP clearly identify the circumstances under which variances or exceptions may be provided by the DEP.

In summary, while the proposed rules add some needed protections for water resources in West Virginia, the changes do not go far enough. TU encourages the DEP to utilize this opportunity to strengthen all currently inadequate areas of the state's gas drilling regulations. Thank you for consideration of our comments and please do not hesitate to contact me (emaclin@tu.org or (703) 284-9437) or Katy Dunlap (kdunlap@tu.org or (607) 703-0256), if you have any questions.

Sincerely,



Elizabeth Maclin



Philip Smith