



Challenges of Oil and Gas Operations in Multiple States

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In today's environmental climate and ever changing sea of regulations, states are either drafting or revising their respective regulations designed to protect water resources during oil and gas exploration and production. This broad range of regulations drafted by individual states creates compliance challenges for oil and gas producers that operate in multiple states. Companies that operate throughout the Appalachian Basin have the potential to overlook differences that exist between state environmental regulatory programs. A focused comparison of Kentucky, Ohio, Tennessee, and West Virginia regulations designed to protect water resources during oil and gas exploration and production is discussed below.

Kentucky Regulations

Regulations related to protecting fresh water zones associated with oil & gas operations are discussed in several sections of the Kentucky Administrative Regulations (KAR).

401 KAR 5:037 Groundwater Protection Plans. This regulation was adopted to protect waters of the Commonwealth of Kentucky and to prevent pollution of waters of Kentucky and applies to a wide range of industries. The regulation requires oil and gas operators to prepare and maintain a Groundwater Protection Plan (GPP) for each well location. Generally, the GPP must be prepared prior to operations and must be updated every three years until the well is properly plugged and abandoned. The GPP addresses piping issues, fuel spills and leaks, mud pits, SPCC Dikes, spills outside the dike areas or around the wellhead, keeping tank batteries in good workable condition, and the proper closure of the production site. For more detail go to: <http://water.ky.gov/groundwater/pages/groundwaterprotectionplans.aspx>

805 KAR 1:020 Protection of Fresh Water Zones. This regulation addresses casing and cementing requirements to protect USDW fresh water zones from contamination associated with the production of oil and gas.

805 KAR 1:060 & 1:070 Plugging Wells (non-coal bearing and coal bearing, respectively). These regulations address the plugging and abandonment of all wells. Cement plugs are to be placed in such a manner as to protect the lowest know USDW fresh water zone up to a point that does not interfere with the plow zone in agricultural areas or to the surface.

805 KAR 1:110 Underground Injection Control. This regulation closely mirrors USEPA Region IV UIC regulations and is currently not enforceable by the Kentucky Division of Oil and Gas (KDOG) until the Kentucky program is granted primacy by Region IV. This administrative regulation establishes requirements for the drilling, casing, operation, plugging, construction,

conversion, and maintenance of Class II wells and the protection of fresh water zones from contamination associated with the production of oil and gas.

Currently Kentucky has no pending or proposed regulations to govern protection of groundwater resources associated with the drilling of unconventional wells within the Commonwealth of Kentucky other than the aforementioned regulations previously discussed.

Ohio Regulations 2012

Ohio Senate Bill 315 (effective March 22, 2012) has been referred to as one of the nation's toughest regulatory frameworks for overseeing the exploration of natural gas and oil. OSB 315 requires pre-drilling groundwater sampling within 1,500 feet of the proposed well and disclosure of the sampling results as part of permit applications. OSB 315 also expands testing requirements of 1,500 feet to both urban and rural areas. Prior to OSB 315 water wells were tested within 300 feet of oil and gas wells in urban areas, while water wells in rural areas were not required to be tested at all. For new horizontal wells, water sampling must be completed for all water wells within 1,500 feet of the proposed well head; however, the Ohio Department of Natural Resources reserves the authority "to revise the distance if necessary." As of this article, the meaning of that phrase is ill-defined. The Ohio Department of Natural Resources Division of Oil and Gas released their Best Management Practices (BMP) for Pre-Drilling Water Sampling in September, 2012. This document was drafted to summarize procedures and protocols to ensure water well samples are collected and tested as required by OSB 315. The BMPs were designed to ensure that valid samples are collected and tested to provide useful background data. Remember that the BMPs are not law, or regulation but guidance. Even so, the State will treat the BMPs as requirements and demand that water samples be collected and analyzed for barium, calcium, iron, magnesium, potassium, sodium, chloride, conductivity, pH, sulfate, alkalinity, and total dissolved solids.

West Virginia Regulations

West Virginia Title 35 Legislative Rule of the West Virginia Department of Environmental Protection – Oil and Gas Series 8 Rules governing Horizontal Well Development is the primary regulatory program for West Virginia operations.

In West Virginia, water supply testing is to be performed by an operator at the request of the surface owner or water purveyor. When requested, the operator needs to sample and analyze water from any existing water wells or developed springs used for consumption by people or domestic animals. Those water samples need to be collected at locations that are within 1,500 feet from the center of a proposed well pad. If no request is made of the operator, the operator still needs to sample and analyze water from known or existing water well or developed springs within 1,500 ft from the center of a proposed well pad. If more than one well or spring exists, the operator must select for sampling analysis one water well or spring in the operator's judgment that has the highest potential for being influenced by the oil and gas production. That decision needs to be carefully considered and usually will require input from a Hydrogeologist. Furthermore, if for any reason the operator is unable to sample water from within 1,500 feet of the well pad, the State may require the operator to sample existing water well or developed spring located up to 2,000 feet from the center of a proposed well pad.

Water samples are to be analyzed for several parameters in accordance with WV Title 35 Oil and Gas Series 8; benzene, toluene, ethylbenzene, and xylene (BTEX), chloride, total petroleum hydrocarbons, sodium, total dissolved solids, aluminum, arsenic, barium, iron,

manganese, pH, calcium, sulfate, dissolved methane, dissolved ethane, dissolved butane, dissolved propane, and any other parameters determined by the operator or the State to be appropriate.

Tennessee Regulations

Recently, the Tennessee Department of Environment and Conservation (TDEC) approved new regulations that will go into effect this summer for oil and gas wells that utilize 200,000 gallons or more of “water-based” liquids.

TDEC will give public notice via email to interested parties and post the request for a permit on their website. The permit applicant will provide the Public Notice of the proposed well to property owners within ½ mile of the proposed well head or any residence that has drinking water wells within a ½ mile radius of the proposed wellhead within 14 days of the TDEC Public Notice. In the case of a horizontal well, the ½ mile radius is measured from the *terminus* of the horizontal well bore. The owner of the drinking water well can request that the operator take samples of the well but must request this within 14 days of receiving the Public Notice from the applicant. If this request isn't received within the 14 days, then the applicant is under no obligation to sample the well. It is our experience that collecting and analyzing a sample may well still be advised.

If the well is sampled, then the operator is required to have the samples analyzed for Total Petroleum Hydrocarbons (TPH; a problematic analysis), BTEX pH, chlorides, Total Organic Carbon (TOC) and Total Dissolved Solids. Sample collection protocols shall be comparable to those specified in TDEC's “Quality System Standard Operating Procedure for Chemical and Bacteriological Sampling of Surface Water”. Sample analyses needs to be conducted by a certified laboratory utilizing standard methods and minimum detection levels consistent with Tennessee Department of Health laboratories.

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Although there are some similarities among each states baseline requirements, it is imperative the operators stay abreast of the nuances of the regulations and guidance in each state. The consequences for missing even a minor detail in the sampling process could prove to be extremely costly to the operator in the future.

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