

Business Impact Analysis - CSI
Division of Oil and Gas Resources Management (DOGRM)

1. The draft rules establish minimum, enforceable standards for the construction and mechanical integrity monitoring of all oil and gas wells drilled in Ohio.
2. Section 1509.17(B) of the Ohio Revised Code authorizes the Chief of the Division of Oil and Gas Resources Management to adopt rules that "...establish standards for constructing a well, for evaluating the quality of well construction materials, and for completing remedial cementing. In addition, the standards established in the rules shall consider local geology and various drilling conditions and shall require the use of reasonable methods that are based on sound engineering principles."
3. No.
4. The draft regulations proposed by DOGRM are considerably more thorough and detailed than the standards applied for constructing wells on state lands that are under federal management. Fortunately, the U.S. Department of Interior Bureau of Land Management has established a constructive working relationship with the DOGRM and routinely adopts more stringent state standards recommended by DOGRM as part of permit conditions applied to wells developed on federal lands in Ohio.
5. Proper construction of oil and gas wells and maintenance of wellbore integrity are critical to public safety and protection of groundwater resources.
6. The DOGRM rules will ensure protection of groundwater resources while minimizing impacts that can be caused by faulty well construction practices. The DOGRM will measure success by the absence of any groundwater contamination incidents associated with deficient or defective oil and gas well construction practices.
7.
 - ODNR, Division of Geological Survey
 - ODNR, Division of Soil and Water Conservation
 - Ohio Environmental Protection Agency, Division of Drinking and Groundwater
 - Ohio Oil and Gas Association
 - Southeastern Ohio Oil and Gas Association.

On October 28, 2011, draft rules were posted on the DOGRM website for informal review and comment. The DOGRM received comments from the following parties:

- (1) The Ohio Environmental Council
- (2) Devon Energy Production Co.
- (3) Northeast Ohio Gas Accountability Project
- (4) Environmentally Friendly Drilling
- (5) National Resource Defense Council, on behalf of:
 - Sierra Club,
 - Earthjustice,
 - Buckeye Forest Council,
 - Concerned Citizens of Portage County,
 - Center for health, Environment, and Justice,
 - Green Environmental Coalition,
 - Guernsey County Citizens Support on Drilling Issues,
 - Progress Ohio,
 - Fracking Interest Group,
 - Carroll Concerned Citizens, Inc.,
 - Concerned Citizens Ohio,
 - Environment Ohio,
 - Network for Oil and Gas Accountability and Protection.

8. The DOGRM received a number of constructive comments and requests for clarification from the parties listed above. The DOGRM revised, strengthened, and improved the clarity of the draft rules in response to these comments and questions.

9. The DOGRM developed a working draft rule proposal using a thorough, deliberative research process. Prior to drafting the proposed rule that was posted on the website for informal comment on October 28, 2011, The DOGRM considered input from the following sources:

- a. met with all DOGRM inspectors (more than 300 years of collective regulatory experience) to collect input on critical issues that should be addressed through regulatory standards;
- b. met with Ohio EPA Division of Drinking and Groundwater representatives to solicit input on oil and gas well construction practices, particularly for wells drilled near or within Source Water Protection Areas;

- c. reviewed Ohio groundwater investigation files over a 25-year period (1983 – 2007) to identify all cases in which well construction practice failures or deficiencies contributed to documented groundwater contamination. The rulemaking workgroup sought to ensure that all contributing factors were addressed decisively through rule standards;
- d. completed a review of Texas groundwater investigation files over a 16-year period (1993-2008) to identify all cases in which well construction practice failures or deficiencies contributed to groundwater contamination. This review included personal discussions with professional staff of the Texas Railroad Commission who were responsible for overseeing and conducting these groundwater investigations. During this period Texas led the nation in shale gas development with over 16,000 wells completed in the Barnett Shale play. The rulemaking workgroup sought to ensure that all contributing factors were addressed decisively through rule standards;
- e. completed a review of groundwater investigation summaries developed by the Pennsylvania DEP during the past ten years to identify cases in which well construction practice failures or deficiencies contributed to groundwater contamination. This review included personal discussions with professional staff of the Pennsylvania DEP who were responsible for overseeing and conducting these groundwater investigations. This review period spans the period of Marcellus shale gas development activity in Pennsylvania. The rulemaking workgroup sought to ensure that all contributing factors were addressed decisively through rule standards;
- f. a team of over twenty members of the DOGRM regulatory staff traveled to Pennsylvania and spent two days discussing regulatory issues and developments associated with shale gas development in the Marcellus play with their regulatory counterparts at the Pennsylvania DEP;
- g. through active state involvement in state associations including the Interstate Oil and Gas compact Commission (IOGCC) and the Groundwater Protection Council (GWPC), Ohio representatives participated in numerous conferences and roundtable discussions on regulatory developments pertaining to well construction, wellbore integrity, groundwater investigations and state regulatory developments related to shale gas development.
- h. completed a comparative analysis of state and federal well construction regulations for wells that may be stimulated by hydraulic fracturing including: Bureau of Land Management (BLM) rules for onshore oil and gas well construction, USEPA rules for Class I and II injection wells, as well as state rules

for oil and gas well construction including: PA, NY, WV, MI, TX, OK, ARK, WY, and ND. This comparative review of state well construction regulatory standards included most states with significant shale gas development activity;

- i. reviewed the following American Petroleum Institute (API) Recommended Practice documents that establish guidelines and material standards for well construction:
 - i. API Specification 5B, *Specification for Threading, Gauging, and Thread Inspection of Casing, Tubing, and Line Pipe Threads*,
 - ii. API Specification 5CT/ISO 11960, *Specification for Casing and Tubing*,
 - iii. API Specification 10A/ISO 10426-1, *Specification for Cements and Materials for Well Cementing*,
 - iv. API Recommended Practice 10B-2/ISO 10426-2, *Recommended Practice for Testing Well Cements*,
 - v. API Recommended Practice 10D-2/ISO 1042702, *Recommended Practice for Centralizer Placement and Stop Collar Testing*,
 - vi. API Technical Report 10TR1, *Cement Sheath Evaluation*,
 - vii. API Technical Report 10TR4, *Technical Report on Considerations Regarding Selection of Centralizers for Primary Cementing Operations*,
 - viii. API Recommended Practice 65-2, *Isolating Potential Flow Zones During Well Construction*.
- j. reviewed and addressed all recommendations for well construction practices outlined in the Groundwater Protection Council's publication: State Oil and Gas Regulations Designed to Protect Water Resources (May, 2009).
- k. incorporated an Ohio-customized version of the "Model Regulatory Framework" (MRF) (June 30, 2011 deliberative draft) as the foundation for Ohio regulatory standards. The MRF for hydraulically fractured hydrocarbon wells is the work-product of a joint project initiated in January, 2010 by the Environmental Defense Fund (EDF) and Southwestern Energy. While the MRF remains a draft product, it has been substantially vetted and reviewed by Environmental NGOs, and some operators. The MRF is intended to provide a blueprint for state government to consider as they create new regulatory standards or as they amend and update existing standards relative to oil and gas wells that are stimulated by hydraulic fracturing. The MRF workgroup selected specific regulatory topics including well construction standards, reviewed state regulations, and identified "best-in-class" state standards as well as effective

industry practices. These standards were merged to create a concise, working structure that addresses the substantive components of an effective regulatory system. The DOGRM customized the MRF draft to fit Ohio-specific geologic conditions and drilling practices.

10. Section 1509.17 of the Ohio Revised Code specifically directs the DOGRM to adopt rules that make sense within the context of Ohio geology and Ohio oil and gas industry drilling practices. When appropriate, the DOGRM borrowed concepts and language from other highly respected and successful state regulatory programs. However, the proposed standards were customized to make sense in Ohio.
11. The DOGRM believes that an effective regulatory framework is founded upon appropriate performance objectives that identify the critical outcomes for every oil and gas well that is constructed in Ohio. SB 165 established a modern and thorough set of enforceable performance objectives. As a result, every well must be constructed in a manner that:
 - a. protects and isolates all underground sources of drinking water (USDW), including all aquifers that have less than 10,000 milligrams per liter Total Dissolved Solids (TDS), whether those aquifers are currently developed for public or private water supplies, or may be developed for treatment and use in the future;
 - b. controls formation pressures and fluids to prevent fluid migration behind cemented casing strings;
 - c. isolates oil and gas reservoir fluids during well stimulation operations and throughout the productive life of the well;
 - d. isolates corrosive, sour-gas zones;
 - e. addresses over-pressurization of the surface-production casing annulus to prevent migration of natural gas into groundwater; and
 - f. protects underground miner safety when drilling in areas with active mines.

Section 1509.17(B) ORC authorizes the Chief of DOGRM to enact rules that establish specific well construction material and testing standards to fulfill these performance objectives.

12. Section 1509.02 of the Ohio Revised Code states that the DOGRM has exclusive authority to permit and regulate oil and gas operations including drilling and well construction. Therefore there are no duplicative regulations.

13. The DOGRM is preparing Standard Operating Procedures for well construction practices to foster consistent enforcement of the standards. Therefore, there are no other rules that are applicable to this topic.
14. a. Ohio oil and gas industry including well owners, drilling contractors, and service companies,
- b. More stringent material monitoring, testing, and reporting standards,
- c. The cost of drilling, ~~and~~ constructing, and monitoring a traditional oil and gas well in Ohio will increase from 0-15 percent. For example, the new standards mandate installation and cementing of an intermediate casing string in all wells drilled into the Knox Dolomite. Previously, owners had discretion with regards to setting an intermediate string. Many owners have always set an intermediate casing string as a precautionary measure for well control purposes. The rules will not impose additional costs for these owners. However, once mandated, the cost of setting, cementing, and logging this casing string could cost an additional \$50,000 for those owners who previously elected not to set this additional casing string. This represents an increase of approximately 10 percent when compared to the cost of constructing the same well without those additional safeguards.
- d. Agency estimate.
15. The DOGRM believes that minimum enforceable well construction and monitoring standards are necessary to protect public safety and the environment. The proposed standards codify standard industry practices that are time-tested and proven effective. Most wells are constructed in a manner consistent with the proposed standards; however, the DOGRM needs authority to enforce specific standards to ensure that all wells are properly constructed and that mechanical integrity is maintained throughout the productive life of every well. Compliance with these rule standards will prevent rare but potentially serious incidents, such as the stray gas incident in Bainbridge Township in 2008.
16. No.
17. The DOGRM takes a results-oriented approach to enforcement, recognizing that violations that threaten public health and safety are considerably more important than violations against bureaucracy. Nevertheless, the DOGRM will expect all owners to submit all required well construction records, as these records have important ramifications to future agency determinations that have public health and safety implications.
18. The DOGRM will continue to assign high priority to inspecting oil and gas well construction operations. DOGRM inspectors will assist small business owners through on-site compliance

assistance during inspections. Upon request, the DOGRM will work with OOGA and SEOOGA to address questions or conduct training sessions as necessary to foster consistent understanding and compliance with the rules.