



July 11, 2013

Wyoming Oil and Gas Conservation Commission
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Dear Supervisor Black,

Please accept these comments from the Wyoming Outdoor Council and the Environmental Defense Fund. The Wyoming Outdoor Council is Wyoming's oldest environmental advocacy organization. In much of our work, we advocate for policies that provide for Wyoming's energy development coupled with the necessary consideration and protection of public health and our state's inimitable and irreplaceable land and water resources. EDF's mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems.

We are very pleased to see the Commission moving forward with a state groundwater testing rule. It is clear that this rule can provide the state, industry, and Wyoming residents with important information about baseline groundwater quality and monitoring data as oil and gas development proceeds. This rule would help further establish Wyoming as one of the most proactive states on management of oil and gas operations and the protection of water resources. We commend the work that has been done in this effort and offer our strong support for the general approach outlined in the draft rule.

On the whole, the draft rule would create a strong, scientifically-valid groundwater testing program. It addresses and improves upon several problems identified in Colorado's similar, but less scientifically valuable, program. The Wyoming draft rule's statewide applicability, use of a radial approach without an artificial cap on the number of wells tested, ability to rely on the experienced technical staff of the WOGCC and their understanding of local hydrogeological conditions in reviewing and approving testing plans, and the use of a required Sampling and Analysis Protocol (SAP) are of special importance. In particular, Wyoming's proposed SAP, to our knowledge, is currently the most detailed guidance

provided by any state regarding how private wells should be sampled. And, it should be noted, the Wyoming rule does this all without costing operators any more than what they will need to spend to comply with Colorado's less valid program.

Upon reading the rule, there is some additional consideration we feel the Commission should make to ensure that the final rule is as optimally effective both in protecting water resources and human health and safeguarding operators who truly are "doing it right." The following are suggestions we feel should be included in the Commission's discussions of the final rule:

Overall Comments:

1. We believe the rule could benefit from clear statements of program and sampling objectives. We would suggest these paragraphs be added to either the rule or the SAP:

Purpose:

The Wyoming baseline ground water quality program's purpose is to establish baseline groundwater quality conditions around new oil and gas well locations and to monitor water quality in the vicinity of the oil and gas wells before and after drilling and completion activities have concluded. This information will enable all stakeholders to better discern and identify potential impacts to ground water quality from oil and gas operations. The targeted water sources are wells and springs that are permitted for beneficial use.

Sampling Objectives:

Ground water sampling is targeted at that portion of the aquifer acting as a source of beneficial use, including provision of drinking water. As such, it is imperative to sample fresh water from the aquifer and exclude changes to that water that may occur as it passes through any treatment system or storage container, including pressure tanks, water softeners, reverse osmosis systems, and pipes. A groundwater sample is considered representative of the aquifer being monitored when the well has been purged to remove stagnant water prior to collection of a sample for laboratory analysis. Purging can be considered complete when a sufficient volume of water has been removed from the well and stabilization of select groundwater parameters has been achieved. Achievement of stabilization of water quality parameters (temperature, pH, specific conductance) provides a sound scientific basis to indicate the presence of fresh water from the aquifer immediately adjacent to the pump intake. Use of low-flow purging (<1 L/min) is the preferred method for evaluating stabilization, with recordings of parameter values approximately every 3 minutes, typically using a flow-through cell. It has been observed that stabilization usually occurs in less than 3 well volumes (see calculation below) using this method and thus reduces the time required for purging and the volume of water withdrawn. Where this approach is not practical, the 3 well volume approach described below can be used.

2. Whenever possible, well logs and groundwater gradient survey information for all water wells sampled should be provided. This should include well construction

information including screened interval, screen and casing material, and if a surface casing seal exists (prevents surface material, including contaminants from migrating down the outside of the well casing).

Suggested Edits to the Groundwater Sampling and Testing Rule

3. Chapter 3, Section 8, paragraph c (iii)

The inclusion of monitoring wells and injection wells requires some clarification. Does this refer to all Class II injection wells? Is the intent to evaluate all monitoring wells in the state?

4. Chapter 3, Section 46, paragraph c

We would suggest adding a provision (vi), requiring consideration of equitable treatment of proximate landowners. Possible language to achieve this:

“Operators shall provide opportunities for landowners or owners of water sources, as applicable, who are similarly located with respect to a well identified in Chapter 3, Section 8, (c)(iii) to be included in the groundwater baseline sampling and monitoring program.”

This would help alleviate fairness concerns that may arise from landowners who are not selected to receive water testing as part of this program but who have water sources located at a similar distance from an oil or gas well as other water sources that are selected to receive water testing.

5. Chapter 3, Section 46, paragraph f

Clarify that samples should be taken during the same month *of the year*.

6. Chapter 3, Section 46, paragraph g.

Add to first line “All sampling, *evaluation, and reporting*, shall ...”

Further clarify this paragraph by adding “Appendix K shall be updated periodically to remain current with evolving, industry, *and* government, *and scientific* standards.”

7. Chapter 3, Section 46, paragraph h.

Edit the first line to read “Copies of all final laboratory analytical ~~results~~ *reports developed per SAP* and special coordinates of...”

Because the OGCC shares water quality regulatory responsibilities with the Department of Environmental Quality, and because one of the purposes of this rule is to address human health concerns regarding groundwater near oil and gas development, the DEQ must be included as a recipient of final laboratory analytical results and spatial coordinates of the Water Source.

The paragraph should be revised to read: “Copies of all final laboratory analytical results and spatial coordinates of the Water Source shall be provided to the Commission *and Department of Environmental Quality* within three (3) months of

sample collection. All analytical results and spatial coordinates of the Water Source will be made available to the public.”

8. Chapter 3, Section 46, paragraph i.

To further preserve the Supervisor’s powers to require other sampling and testing where necessary, this paragraph should begin with the cross reference “*Except as provided in paragraph (l)...*”

9. Chapter 3, Section 46, paragraph k

Edit this paragraph to read “The operator shall notify *the landowner*, the Supervisor and the Director of the Department of Environmental Quality...”

Add a provision (v) that would include required notification within 24 hours if sampling and testing results indicate any Maximum Contaminant Level (MCL) as set by the U.S. EPA has been violated.

10. Chapter 3, Section 46, paragraph m

To ensure that this lack of presumption runs both ways, we suggest an edit to this section to read “presumption *for or against* liability...”

We believe the word “probity” should be replaced with “*probative value*”

Suggested Edits to Appendix K

11. Overall

The sampling guidelines laid out here for water wells are very strong. Similarly robust sampling guidelines for springs should be included.

12. Section 2.3.1

The low flow purging method, referred to in the next section, should be defined up front and introduced earlier. The section on ‘stabilization of parameters method’ for well purging states that a minimum of six sets of water quality parameters be collected at an interval of ½ casing volume each. Usually these are collected with a flow cell and collected every three minutes. However, the way this is written operators will end up collecting the same volume (3 well volumes) as section ‘a’ but with addition of the water quality parameters.

The intent of using water quality parameters to ‘know’ when formation water is being accessed during purging is to use science to identify the fresh water and not use a blind three well casing volume approach. Indeed the value of the methods is that it usually takes less than three casing volumes to access fresh water, reducing the time to purge and the volume purged, while also obtaining the water quality parameters. The approach outlined here should be updated to use the best science and avoid waste of water resources.

Turbidity should be measured just before sample collection. This provides some qualitative measure of the purge effectiveness and is useful for the interpretation of data, especially metals data.

Also, measurement of static water level in the well and drawdown is important to understand casing volume but also to understand the yield quality of the well and to avoid pumping the well dry. Obviously, where wells are sealed or not accessible, this cannot be done. However, when it is possible to measure static water level it should be done and monitored while purging the well.

13. Table 1

Temperature should be included in the list even though it is one of the water quality parameters being measured. It is another key indicator to distinguish between stagnant well/home water and fresh formation water.

Arsenic should be considered for inclusion in the analyte list because it occurs naturally in many formations and its appearance in results can alarm the homeowner and cause misunderstandings as to where it originates.

We ask for clarification on the inclusion of bacterial analyses and phosphorus in this program.

The detection limit for selenium is also very low; typically a value of 0.007 to 0.010 is used to avoid the expense of going to ICP/MS for the analysis.

14. Section 2.3.2

This section could be stronger by requiring qualifications for sampling professionals. For example, a qualified professional engineer, geologist, or hydrologist.

15. Section 2.3.4

Amend to read: Sampler's *name* and signature

16. Section 2.3.5

Add: *Sampler(s) name(s) and affiliation*

17. Section 3.0

Following the first sentence, add: *A baseline sampling report shall be prepared following each sampling event. The report will include at a minimum a description of the rationale for selecting water sources sampled, document all field activities, summarize current and previous analytical results conducted as part of the baseline groundwater monitoring program, and present evaluation of analytical data presented (including QA/QC sample results).*

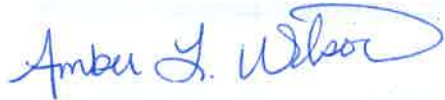
This paragraph should further be revised to read, "Copies of field documents, laboratory reports, *the Chain of Custody documentation from section 2.3.4 of this Appendix*, and the data quality review results shall be submitted to the WOGCC."

Conclusion

We would like to reiterate our sincere appreciation to the Commission and to Governor Mead and his staff for the efforts they have made in developing this rule. We hope that the suggestions we offer in this document will be given careful consideration for the sake of Wyoming's residents and our continued national status as leaders in energy development.

We look forward to continuing our involvement in this process as Wyoming moves toward implementation of an effective, scientifically-valid groundwater testing rule.

Sincerely,



Amber Wilson
Environmental Quality Coordinator
Wyoming Outdoor Council



Jon Goldstein
Senior Energy Policy Manager
Environmental Defense Fund

The Wyoming Chapter of the Sierra Club has also expressed support for these comments. This support is evidenced by the signature of their Chapter Director below.



Connie Wilbert
Chapter Director
Sierra Club, Wyoming Chapter