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Comments of Chesapeake Energy

Draft Science Advisory Board's Report, Review of EPA's Draft Hydraulic Fracturing Study Plan (Quality Review Draft)

Chesapeake Energy (Chesapeake) appreciates this opportunity to comment on the draft Science Advisory Board's (SAB) report, Review of EPA's Draft Hydraulic Fracturing Study Plan (Quality Review Draft) dated June 14, 2011.

Chesapeake is the second-largest producer of natural gas, a Top 20 producer of oil and natural gas liquids and the most active driller of new wells in the U.S. Headquartered in Oklahoma City, the company's operations are focused on discovering and developing unconventional natural gas and oil fields onshore in the U.S. Chesapeake owns leading positions in the Barnett, Haynesville, Marcellus and Bossier natural gas shale plays and in the Eagle Ford, Granite Wash and various other unconventional liquids-rich plays across the country.

Chesapeake has a vested interest in ensuring sound scientific and non-bias research is utilized during the Study, and, therefore, has provided comments that we believe will assist in accomplishing this goal. Based on the review of the SAB Review, Chesapeake offers the following comments.

1) Charge Question 1: Water Use in Hydraulic Fracturing

- a) Chesapeake believes it is important to reiterate water use and development is the responsibility of the states and their political subdivisions. State legislatures and courts have developed laws and regulations over the years to regulate allocation of water within their borders. In those instances where water resources

flow through or are available to multiple states, interstate compacts, commissions, or other similar organizations have been formed to cooperatively and successfully manage these resources.

- b) The SAB Review, like the Draft Study Plan, appears to ignore states' water rights, and in doing so appears to support a prioritization of beneficial uses that may be totally contrary to existing state laws, historic interstate agreements, and may impact private property rights. The SAB Review failed to bring to the EPA's attention the water management strategies and regulations that have developed over the years in state water planning processes.
- c) Chesapeake disagrees with the SAB's recommendation to add a post closure/well abandonment phase as a new component to the Study Plan because this phase of oil and gas development is not specific to hydraulic fracturing.
- d) Chesapeake disagrees with the SAB's recommendation to assess air impacts and chemical transportation because it is not within the scope of Congress' charge.
- e) Although Chesapeake agrees it is important to maintain healthy ecosystems, we believe it is outside the original Congressional directive to consider environmental flows within the scope of the Study.

2) Charge Question 2: Research Questions

- a) Chesapeake supports the SAB's acknowledgement of the "diverse nature of hydraulic fracturing operations around the country," and believes it is critical this fact is taken into consideration during the Study because the misunderstanding of this diversity could lead to an impractical EPA regulatory framework. The states are best positioned to both understand and regulate this diversity.
- b) Chesapeake agrees that it is important to assess and report uncertainty associated with the Study, and identify or estimate the uncertainty or confidence in all research conclusions.
- c) Chesapeake questions including environmental justice and cumulative community impact into the scope of the Study because it is believed to be beyond the Congressional request and contradictory to the SAB recommendation to conduct a well-focused Study. If indeed these questions must be addressed due to an administrative or regulatory requirement (i.e., NEPA), then the focus should remain only on potential impacts to drinking water resources from hydraulic fracturing as defined by the original Congressional directive and keeping with the SAB recommendations.
- d) The SAB clearly states that cumulative impacts may be beyond the scope of the Study, however, recommend the EPA should develop a framework for assessing cumulative impacts. Chesapeake recommends the mandated scope of the Study be maintained, and cumulative impact framework should not be included.

- e) Chesapeake agrees that an in-depth study of toxicity, the development of new analytical methods and tracers are not practical given the budget and schedule limitation of the Study.
- f) Chesapeake disagrees with the SAB's recommendation to add a post closure/well abandonment phase as a new component to the Study Plan because this phase of oil and gas development is not specific to hydraulic fracturing. Also see comment 1-c.
- g) Although Chesapeake agrees it is important to maintain healthy ecosystems, we believe it is outside the original Congressional directive to consider environmental flows within the scope of the Study. Also see comment 1-e.
- h) The SAB Review, like the Draft Study Plan, appears to ignore states water rights, and in doing so appears to support a prioritization of beneficial uses that may be totally contrary to existing state laws, historic interstate agreements, and may impact private property rights. The SAB Review failed to bring to the EPA's attention the water management strategies and regulations that have developed over the years in state water planning processes. Also see comment 1-b.

3) Charge Question 3: Research Approach

- a) Chesapeake agrees that data acquisition, analysis, management, and storage are significant and should be incorporated into the Study.
- b) Chesapeake recommends caution when relying on existing data because the industry is continuously improving (i.e., adopting "greener" chemicals used during hydraulic fracturing), and focusing on historic data may not capture the current industry practices. It is recommended the EPA work closely with industry partners to ensure the existing data and references collected are representative of current practices.
- c) Chesapeake supports the SAB recommendation to utilize scenario evaluation to examine "worst case scenario" and establish boundaries for subsequent research tasks. For example, if the worst case scenario in a given situation would lead to non-detectable levels of contamination, then monitoring for contaminants in that setting would waste precious resources.
- d) Chesapeake appreciates SAB providing EPA with additional peer-reviewed references to consider. However, Chesapeake would disagree with using references related to "public opinion," "views from the public," and "public perception" as part of the Study; for example, *Theodori, G.L. 2009. Public opinion on exploration and production of oil and natural gas in environmentally sensitive areas*. The Study should focus on science and not perception. We are also concerned the SAB did not comment on the references of questionable quality provided in the Draft Study Plan such as *Sumi, L. 2005. Our Drinking Water at Risk: What EPA and the oil and gas industry don't want us to know about hydraulic fracturing*.

- e) Although Chesapeake agrees it is important to maintain healthy ecosystems, we believe it is outside the original Congressional directive to consider environmental flows within the scope of the Study. Also see comment 1-e.
- f) Chesapeake agrees that an in-depth study of toxicity, the development of new analytical methods and tracers are not practical given the budget and schedule limitation of the Study. Also see comment 2-f.

4) Charge Question 4: Proposed Research Activities

a) Water Acquisition

- i) Chesapeake disagrees with the SAB's recommendation to consider expanding the definition of "drinking water resources" beyond 10,000 milligrams per liter (mg/L) or total dissolved solids (TDS). It is beyond the authority of the Study to change this definition which is actually part of the Safe Drinking Water Act's definition of an Underground Source of Drinking Water (USDW). The future technological and economical viability of providing drinking water from low quality aquifers such as this is purely speculation and will add no value to a scope that should be well focused.
- ii) Chesapeake believes it is important to distinguish between natural and hydraulic fracturing constituents when addressing Charge Question 4(a) because the presence of naturally occurring compounds identified as "contaminants" could be misinterpreted as hydraulic fracturing fluid entering a drinking water source.
- iii) Chesapeake disagrees with the inclusion of "vulnerability index" development in the Study scope as proposed by the SAB because the "vulnerability" of a give water supply is specific to the water supply and not hydraulic fracturing. The SAB recognized the risks of generalization in other parts of the report, however, neglected the same risk when proposing the development of this index.
- iv) Chesapeake agrees that parameters with established Maximum Contaminant Levels (MCLs) should be included in the Study analyses, however, has concerns associated with the SAB's discussion regarding MCLs because the following facts do not appear to be an acknowledged: 1) MCLs apply to post-treated public drinking water supplies and the Study will be investigating drinking water sources pre-treatment, and 2) MCLs are irrelevant when establishing baseline conditions. Therefore, Chesapeake recommends baseline conditions, coupled with an understanding of the dynamic conditions of aquifers and surface waters, and identification of all potential contributing sources, should be used to identify potential impacts to drinking water sources.
- v) Chesapeake believes it is important to reiterate water use and development is primarily the responsibility of the states and their political subdivisions. State legislatures and courts have developed laws and regulations over the years to regulate allocation of water within their borders. In those instances where

water resources flow through or are available to multiple states, interstate compacts, commissions, or other similar organizations have been formed to cooperatively and successfully manage these resources. Also see comment 1-a.

- vi) The SAB Review, like the Draft Study Plan, appears to ignore states water rights, and in doing so appears to support a prioritization of beneficial uses that may be totally contrary to existing state laws, historic interstate agreements, and may impact private property rights. The SAB Review failed to bring to the EPA's attention the water management strategies and regulations that have developed over the years in state water planning processes. Also see comment 1-b.
- vii) Chesapeake questions including environmental justice and cumulative community impact into the scope of the Study because it is believed to be beyond the Congressional request and contradictory to the SAB recommendation to conduct a well-focused Study. If indeed these questions must be addressed due to an administrative or regulatory requirement (i.e., NEPA), then the focus should remain only on potential impacts to drinking water resources from hydraulic fracturing as defined by the original Congressional directive and keeping with the SAB recommendations. Also see comment 2-d regarding environmental justice.
- viii) Chesapeake disagrees with the SAB's recommendation to assess air impacts and chemical transportation because it is not within the scope of Congress' charge. Also see comment 1-d.

b) Chemical Mixing

- i) Chesapeake recommends caution when relying on existing data because the industry is continuously improving (i.e., adopting "greener" chemicals used during hydraulic fracturing), and focusing on historic data may not capture the current industry practices. It is recommend the EPA work closely with industry partners to ensure the existing data and references collected are representative of current practices. Also see comment 3-b.
- ii) See comment 2-f regarding the development of new analytical methods. As presented in the EPA's Technical Workshop on Chemical and Analytical Methods, chloride and divalent cations have already been demonstrated as reliable indicators for the presence of produced water.
- iii) Chesapeake supports SAB's reference to the Ground Water Protection Council and Interstate Oil and Gas Compact Commission's Frac Focus website (www.fracfocus.org).

c) Well Injection

- i) Chesapeake agrees with the SAB comment that drilling and cementing of hydraulic fractured wells is not different then other industry wells, and, therefore, not specific to hydraulic fracturing. Therefore, Chesapeake recommends the EPA remove this phase from the Study scope to free up resources to focus on the Congressional request.

- ii) Chesapeake disagrees with the SAB's recommendation to select a shallow prospective case study site known to have faults because it would not be representative of current industry practices.
- d) Flowback and Produced Water
- i) Chesapeake agrees that it is important to define and differentiate flowback and produced water, and offers the following recommendations:
 - (1) Produced water - All water that is returned to the surface through a well borehole.
 - (2) Flowback water – A term used for produced water associated with the process of flowback. The process of flowback begins once produced water retrieval is initiated and commences at the time the temporary flowback equipment is removed from the site and replaced with permanent produced water management equipment. The duration of the flowback process varies from play to play and well to well.
 - ii) Chesapeake agrees that a risk assessment framework analysis should be used to assess and prioritize research activities given the limitation on the Study
 - iii) Chesapeake agrees that an in-depth study of toxicity, the development of new analytical methods and tracers are not practical given the budget and schedule limitation of the Study. Also see comment 2-f and 3-f.
- e) Wastewater Treatment and Waste Disposal
- i) Chesapeake believes there was unjustified emphasis on the surface disposal of produced wastewater to treatment plants in the SAB's Review. The quantity of produced water disposed of in publicly owned treatment works (POTW's) is relatively small, a local issue and currently being phased out throughout the industry. A majority of the produced water across the country is injected in underground formations through disposal wells regulated under the Safe Drinking Water Act.
 - ii) Chesapeake disagrees with the inclusion of water distribution network corrosion and burden of analyzing for contaminants by POTW's into the Study.
 - iii) See comment 1-e and 2-e regarding environmental flow and cumulative impacts. It is believe the SAB is moving beyond an appropriate scope when proposing example study questions: "What is the assimilative capacity of natural systems (wetlands, lakes, streams) to accommodate hydraulic fracturing wastewater?"; "Is this the best expenditure of ecosystem services?"; and "Is this an equitable expenditure of environmental services?"

5) Charge Question 5: Research Outcomes

- a) Chesapeake agrees that the value of the water acquisition research is unclear.

- b) Chesapeake agrees that the frequency and severity of well failures could add value to the Study, however, it is important to distinguish failures that are associated with hydraulic fracturing and those that are not to keep within the Congressional directive.
- c) Agree it will not be possible to collect and evaluate new data on human toxicity of HF chemical or develop new certified analytical methods for detection and quantifying trace concentration of HF additives or develop analytical methods to identify and quantify flowback and produced water components.
- d) Chesapeake questions including environmental justice and cumulative community impact into the scope of the Study because it is believed to be beyond the Congressional request and contradictory to the SAB recommendation to conduct a well-focused Study. If indeed these questions must be addressed due to an administrative or regulatory requirement, then the focus should remain only on potential impacts to drinking water resources from hydraulic fracturing as defined by the original Congressional directive and keeping with the SAB recommendations. Also see comment 2-d and 4-a-vii regarding environmental justice.
- e) The SAB clearly states that cumulative impacts may be beyond the scope of the Study on page 4 line 12 of your June 14, 2011 comments. However, on a number of occasions the SAB recommend the EPA should determine cumulative impacts, including page 5 line 3 regarding water withdrawals. Chesapeake recommends that the mandated scope of the Study be maintained, and cumulative impact should not be included. Also see comment 2-e.
- f) Chesapeake agrees that the development of new analytical methods is not practical given the budget and schedule limitation of the Study. Also see comments 2-f, 3-f, and 4-d-iii.

Chesapeake is prepared to expand on or provide further explanation regarding these comments as appropriate. Again, we appreciate this opportunity to provide comments on this very important study effort.

Respectfully,

John A. Satterfield
Chesapeake Energy Corporation