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HEARING BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
HEARING ON GROUND WATER RESEARCH AT PAVILLION, WYOMING
February 1, 2012

Good morning Chairman Harris, Ranking Member Miller, and other members of the Committee. My name is Jim Martin. I am the Regional Administrator for the U.S. Environmental Protection Agency Region 8. I am here to talk to you about the ground water investigation that EPA is conducting near the town of Pavillion, Wyoming.

Before providing specific information about this investigation, I would like to emphasize two important points. First, EPA's highest priority in this specific case is to ensure that the residents of Pavillion have access to safe drinking water. We will continue to work cooperatively with the State of Wyoming, Tribes, the gas production company, Encana, and the community to secure a long-term drinking water solution. Second, as a science-driven agency, we take seriously our obligation to meet high standards of scientific integrity. We have used appropriate Agency procedures throughout each phase of the investigation. All data that have been collected have been subjected to rigorous quality assurance (QA) review and validation. We have gone to great lengths to assure transparency, taking steps in addition to the normal practice of EPA in releasing scientific work to the public. All of the information we have released to any party is being posted on a website dedicated solely to the Pavillion investigation.

Approximately 80 domestic water wells in the area of EPA's investigation overlie the Pavillion gas field, which is one of several gas fields within the Wind River Basin - a large, complex, structural, asymmetric, deep sedimentary basin covering much of central Wyoming. The first oil and gas exploration wells were drilled in the 1950s. Commercial natural gas extraction in the field commenced in the 1960s, with gas

production well installation activity intensifying in the late 1990s through 2006. The field currently consists of approximately 169 vertical production wells. Ninety-seven production wells are designated as "Tribal Pavillion" and are regulated by the U.S. Bureau of Land Management. The remaining wells are designated as "Pavillion Fee" and are regulated by Wyoming Oil and Gas Conservation Commission.

In response to concerns raised by residents regarding objectionable taste and odor problems in well water, EPA initiated a ground water investigation near the town of Pavillion three years ago under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), better known as Superfund. Our actions reflect our longstanding responsibility under federal laws to address threats to public health. Since the signing of CERCLA in 1980, EPA has conducted hundreds of site investigations to assess potential risks to drinking water. Since that time, in conjunction with the State of Wyoming, the Eastern Shoshone and Northern Arapaho Tribes, the local community, and Encana, EPA has been working to assess ground water quality and identify potential sources of contamination. The overall goal of this investigation was and remains to provide information to help inform decisions to ensure the safety of the drinking water in the Pavillion area.

Our investigation of drinking water at Pavilion has been supported by an extensive commitment of scientific resources. We conducted four phases of sampling between March of 2009 and April of 2011, including drinking water and livestock watering wells, public water supply wells, shallow monitoring wells and deep monitoring wells. Successive phases involved retesting of some wells sampled in earlier phases. The State of Wyoming and Tribes were consulted prior to implementation of every phase.

At the request of citizens, EPA began its investigation by sampling domestic wells in the area to assess ground water conditions and evaluate potential threats to human health and the environment. Based on these results, EPA refined the area of potential concern and determined a second round of investigation was needed. During the second phase of the investigation, EPA collected nearly 50 samples from drinking water wells, shallow groundwater, and other locations, each of which were analyzed for over 300 different constituents, including petroleum hydrocarbons, pesticides, industrial compounds, bacteria, inorganic metals, and general water quality parameters. This resulted in thousands of individual pieces of data, each of which has been carefully reviewed to ensure its validity. The results of this sampling determined that ground water in Pavillion contained a number of organic and inorganic constituents, including several organic hydrocarbons that were found widely in domestic wells, as well as in shallow

monitoring wells. Detections in shallow monitoring wells located in the drinking water aquifer included high levels of petroleum compounds such as benzene, xylene, methylcyclohexane, naphthalene, and phenols. In the spring of 2010 when EPA was validating and evaluating the Phase 2 sampling results, EPA did not reach any conclusions about source(s) of constituents of concern in domestic wells, but determined that additional investigation was necessary to evaluate whether deeper sources might be contributing to the contamination observed in some deeper domestic wells. Detections of organics in domestic wells were generally within available health and safety thresholds. However, concern about naturally occurring inorganic substances, the absence of established health values for some organic compounds detected, and the presence of much higher levels of contamination in the aquifer in close proximity all contributed to the recommendation by the Agency for Toxic Substances and Disease Registry that residents use alternate water and ventilate while showering.

In the summer of 2010, EPA constructed two deep monitoring wells to sample water in the aquifer at and below the depths of drinking water wells. Phases three and four of the investigation involved taking samples from these monitoring wells, as well as from selected domestic and livestock wells. The results, discussed in the draft report issued on December 8, 2011, indicate that ground water in the aquifer contains compounds likely associated with gas production practices, including hydraulic fracturing as conducted in this area. Analysis of samples taken from the deep monitoring wells in the aquifer indicates detection of benzene, methane, and synthetic chemicals, like glycols and alcohols consistent with gas production and hydraulic fracturing fluids.

EPA has worked diligently and methodically in pursuing our stated research objectives from start to finish. We have made every effort to work cooperatively and openly with the State of Wyoming, Tribes, and other parties. A rigorous, transparent and objective approach to our involvement at Pavillion has been employed from the outset. We have gone to great lengths to consult and share information with the State of Wyoming, the Tribes, Encana, and the public. To ensure a transparent and rigorous analysis, EPA released these findings for public comment and will submit them to an independent scientific review panel. We have extended the public comment period for an additional 45 days to allow the public and other interested parties sufficient time to review the extensive amount of study information being added to the public record.

We have employed rigorous scientific methods. Upon the completion of sampling from the deep monitoring wells, EPA career scientists engaged in a careful evaluation of the data to both assure their quality and

determine what conclusions could be drawn. These experts determined that the contaminants found in the deep monitoring wells were most likely the result of hydraulic fracturing in the Pavillion gas field and are not related to agriculture, septic systems or the installation of the monitoring wells themselves. Their findings were subjected to intensive review by career management and staff of our research organization. In addition, a technical review of the results was conducted by independent experts before the full draft report was made available to the public.

Representatives from the State of Wyoming and Encana have criticized EPA's draft report, stating, for example, that we did not follow standard Agency sampling and analysis protocols, and that the quality of our data was compromised due to extended sample holding times. EPA did, in fact, follow accepted protocols. The investigation was subjected to the Agency's highest level QA procedures. Audits of data quality and technical systems in the laboratory and field were conducted by an independent contractor and EPA QA manager. Where sample holding times were exceeded, EPA protocols were followed and professional judgment was used to determine the appropriate use of the data.

The evidence supporting the likely role of hydraulic fracturing activities in the observed contamination is presented in detail in the draft report, as is the reasoning process by which our experts evaluated that evidence. I draw your attention to the careful language with which our conclusions are couched. We make clear that the causal link to hydraulic fracturing has not been demonstrated conclusively, and that our analysis is limited to the particular geologic conditions in the Pavillion gas field and should not be assumed to apply to fracturing in other geologic settings. It should be noted that fracturing in Pavillion is taking place in and below the drinking water aquifer and in close proximity to drinking water wells – production conditions different from those in many other areas of the country.

EPA delayed the release of the draft report by several weeks to assure that a full technical review of the data and supporting information could be conducted by the State, Tribes, Encana, federal agencies and other parties. EPA staff shared extensive data and met on several occasions to discuss the data with these stakeholders. In addition, Administrator Jackson met personally with Encana leadership, and EPA staff met at length with Encana technical representatives.

As mentioned above, EPA will conduct a rigorous and transparent external peer review of the draft report. The review will entail the convening of a panel of five to seven individuals with expertise in the relevant scientific and engineering disciplines. On January 17, a Federal Register Notice was posted requesting

public nominations for the peer review panel.¹ These individuals will be unaffiliated with EPA and will be screened carefully for conflicts of interest. The public is being provided the opportunity to nominate peer reviewers and to comment on the draft charge to the peer review panel.

The peer review panel will review public comments submitted to the docket and will meet publicly to consider and weigh their expert opinions on the charge questions. The public will have the opportunity to provide oral and written comments at that meeting. The panel will then submit their separate reports to the Agency, and of course those reports will be publicly available. In addition, at the request of Governor Mead, we plan to schedule the public peer review meeting in Wyoming.

We have also indicated to the Governor that we welcome the State's willingness to support additional scientific investigation at Pavillion, which we believe is important considering the results of our initial investigation. This should include additional sampling of the drinking water and monitoring wells, and studying the fate and transport of contaminants in the subsurface. In addition to working with the State and Tribes, we are in discussions with the U.S. Geological Survey about partnering on the sampling of the monitoring wells.

In conclusion, EPA has acted carefully, thoughtfully, deliberately, and transparently in our ground water investigation and in sharing the data and findings contained in our draft report. We have applied the highest standards of scientific rigor. We hope and expect to continue in a spirit of collaboration and cooperation with Wyoming, the Tribes, and others as we conduct a peer review and consider additional study that may be warranted at this site.

Thank you for the opportunity to testify today. I am prepared to answer questions from the Committee.

¹ <http://www.gpo.gov/fdsys/pkg/FR-2012-01-17/pdf/2012-716.pdf>