



December 21, 2011

Mr. James B. Martin  
Regional Administrator  
United States Environmental Protection Agency, Region 8  
1595 Wynkoop Street  
Denver, CO 80202-1129

**RE: EPA Pavillion Field Investigation**

Dear Mr. Martin:

On behalf of Encana Oil & Gas (USA) Inc. (Encana), I write to provide comments to the draft report issued by the United States Environmental Protection Agency (EPA) on December 8, 2011 and included in the Federal Register December 14, 2011. This letter does not constitute the complete response of Encana to the draft report. Encana will supplement this response during the public comment period. Encana, nevertheless, desires to provide a preliminary response to the draft report and address the following matters.

**DOMESTIC WELLS**

- **Domestic Well Sampling:** The domestic water sampling results do not indicate impacts from natural gas development. Domestic water wells, if impacted, would indicate much higher levels of methane, as well as markers (or “fingerprints”) from deeper natural gas production such as benzene, toluene and other constituents. Of the numerous domestic wells that were sampled and analyzed multiple times, almost all of the analyses show water quality that meets primary drinking water standards that apply to public drinking water across the United States. One of the exceedances was nitrate, which suggests an agriculture-related or other non-natural gas industry source. The only organic compound to exceed primary drinking water standards in domestic water wells is a man-made compound, bis(2-ethylhexyl)phthalate. This compound is used as an additive to plastics and has become one of the most commonly detected organic compounds in water across the country. Naturally occurring sulfates and total dissolved solids, neither of which have any connection with natural gas production, occur above secondary standards.
- **Compounds:** The detections of diesel range organics (DRO) or gasoline range organics (GRO) do not support a conclusion of groundwater contamination caused by energy development. Furthermore, these detections do not mean that there are diesel or gasoline compounds in the

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water. Although their name implies otherwise, DRO and GRO, as you know, are not specific to compounds from diesel, gasoline, and petroleum. In the case of the EPA sampling results, the analytical fingerprint does not appear to match that of diesel and the DRO detections were extremely low. Thus, the presence of DRO or GRO in the EPA sampling results does not mean that water sampled in the Pavillion Field contains diesel or gasoline compounds.

## **EPA'S TWO DEEP MONITORING WELLS**

- **Quality Assurance/Quality Control Protocols:** The EPA did not follow standard Quality Assurance/Quality Control (QA/QC) protocols when it drilled, completed, and sampled the two deep monitoring wells. The available evidence suggests that EPA may have backfilled the deep monitoring wells with drilling mud and drill cuttings. If true, the use of these materials could have potentially compromised the reliability of the deep well monitoring data. In addition, the EPA detected seventeen compounds in “trip blanks”—QA/QC samples prepared using highly purified water—that were also found in the samples from the deep monitoring wells. As you know, the presence of these compounds in the “trip blanks” suggests that contaminants were introduced in the field and the laboratory, thereby impacting the reliability of the deep monitoring well samples. Overall, serious questions remain concerning the EPA’s QA/QC protocols.
- **Data Evaluation:** The EPA also appears to disregard relevant facts and data relating to the cause of high pH in samples from the two monitoring wells. In reaching its conclusions about the cause of the detection of high levels of pH, the EPA appears to disregard the fact that drilling materials used by EPA represent a more likely cause of the high pH findings.
- **Contradictory Data:** The EPA relied on contradictory data in its draft report. For example, the EPA cites a single detection of 2-butoxyethanol. The EPA fails to acknowledge in the draft report, however, that other analyses of the same sample by other government laboratories did not detect that compound in the well. In its sampling program, EPA water samples were split among the three laboratories, EPA Region 8, EPA Region 3, and Kerr/Shaw Environmental and Infrastructure (Kerr is part of the EPA Office of Research and Development). Each of these laboratories analyzed the data collected from the same deep well water source. Nevertheless, neither the Region 3 laboratory nor the Kerr/Shaw laboratory detected 2-butoxyethanol in their analysis. The reliability of this data, as well as any corresponding conclusions in the EPA’s draft report, appears suspect given this contradictory data.
- **New, non-standard analytical methods:** The EPA’s Office of Research and Development has developed new, non-standard analytical methods for certain chemicals and used them in the EPA’s analyses. However, these methods have not been peer-reviewed. As a result, the reliability and reproducibility of the method have not been proven. And, results based on these new analytic methods remain questionable.

- **Synthetic (“man-made”) chemicals in EPA’s deep monitoring wells:** Encana’s review to date indicates that the synthetic chemicals detected by the EPA in its deep monitoring wells either are: (1) not associated with natural gas operations; or (2) result from sample collection contamination or contamination from EPA monitoring well construction materials and methods.

## **ENCANA’S WORK AND COOPERATION WITH THE STATE OF WYOMING**

- **Encana and State of Wyoming Evaluating Well Bore Integrity:** In conjunction with the Pavillion working group process, the Wyoming Oil and Gas Conservation Commission (WOGCC) reviewed well logs for wells in the Pavillion Field area and asked Encana to conduct bradenhead testing of 38 wells. Bradenhead testing provides information about the integrity of the well bore and the well through identification of pressure anomalies. Encana has completed bradenhead testing on 32 of the 38 wells and expects to complete the others shortly. WOGCC is evaluating those results and Encana is continuing to monitor three of the wells.
- **Encana’s Participation in the Wyoming Voluntary Remediation Program (VRP):** The Wyoming Department of Environmental Quality is working with Encana as part of the remediation of the four historic pits that are being addressed under the VRP. The EPA’s draft report confuses the data from the VRP with other data collected in the investigation. The VRP efforts have involved an ongoing program of identification, sampling, assessment, and clean-up of historic pits. Encana committed to voluntarily participate in this program and has successfully addressed the very localized and shallow contamination from those historic pits. These issues are distinct and separate from the focus of the EPA investigation.

## **DATA REQUESTS**

During the course of the ground water investigation in Pavillion, Encana has requested that the EPA provide documents and information key to understanding the investigation. Only a portion of the information has been provided to date. As you are aware, Encana has made formal requests to the EPA under the Freedom of Information Act (FOIA). The documents sought in these FOIA requests are necessary for a meaningful review of the draft report. Among the records that Encana seeks from the EPA Region 8 are the following:

1. Attachment 1 (the Monitoring Well Installation Work Plan Narrative) to the May 2010 Final Monitoring Well Installation Work Plan, Pavillion, Wyoming.
2. All records associated with the drilling, installation, or sampling of the two EPA deep monitoring wells. This request includes all records related to: (a) the analysis of cuttings, drilling mud and drilling fluids from samples of them taken at the time of drilling; (b) the analysis of water used during drilling, well development or sampling; (c) the analysis of water used (during drilling, installation, or sampling) after the time at which it was delivered to the EPA deep well locations and/or after its on-site storage; and (d) sample preparation and QA/QC for those analyses.

3. All records of the methods and materials used in drilling the two EPA deep wells to join lengths of well casing together and the methods and chemicals used to clean and decontaminate well casing and down hole drilling and monitoring equipment before its being placed down hole, including verification swab samples.
4. All records on disposal of cuttings, drilling fluids, muds and other materials, and any other products or chemicals used in drilling and installation of the two EPA deep monitoring wells.
5. Material Safety Data Sheets for all products and other chemicals used in connection with drilling, installation, cleaning and decontamination, and sampling of the two EPA deep wells, including drilling chemicals and pipe dopes.
6. Product specifications, including model names and numbers, and equipment serial numbers where applicable, for all equipment installed or placed in either of the two EPA deep monitoring wells, including pumps, motors, fittings, cements, grouts, steel, pipe dopes, down hole measurement equipment and cable, and other data loggers.
7. All records related to the Sampling and Analysis Plans, Quality Management Plans, and Quality Assurance Project Plans associated with the October 2010 Field Sampling Event, including documents, emails, or correspondence internal or external to EPA, related to the review and approval of these plans.
8. All records related to EPA's soil gas sampling efforts in the Pavillion Field area or any evaluation of the same.
9. All records concerning the source and preparation of the standards used for adamantane, 1,3-dimethyladamantane, 2-butoxyethanol, tris(2-butoxyethyl) phosphate, squalene, and terpinol in water samples from the Pavillion Field area.
10. All records related to the analytical method development done by the Robert S. Kerr Environmental Research Center ("Kerr") and Shaw Environment and Infrastructure Inc. ("Shaw") for all methods used in connection with water samples from the Pavillion Field area, including how detection limits were set.
11. All records related to the discrepancies in reporting limits and detections between or among the analytical results from EPA Region 3 (including the Region 3 Laboratory), EPA Region 8 (including the Region 8 Laboratory), Kerr, Shaw, and/or any other laboratory that analyzed water samples from the Pavillion Field area.
12. All records related to the laboratory reports from Kerr and Shaw for water samples from the Pavillion Field area, including the full laboratory reports.

13. All records related to the chromatograms from EPA Region 8 (including the Region 8 Laboratory), EPA Region 3 (including the Region 3 Laboratory), Kerr, Shaw, and/or any other laboratory that analyzed water samples from the Pavillion area for all water samples from the Pavillion Field area and any records that provide an explanation for the reason the chromatograms are not available.
14. All records related to mass spectra from EPA Region 8 (including the Region 8 Laboratory), EPA Region 3 (including the Region 3 Laboratory), Kerr, Shaw, and/or any other laboratory that analyzed water samples from the Pavillion area for all water samples analyzed from the Pavillion Field Area using GC/MS, HPLC or equivalent methods, and any records that provide an explanation for the reason a mass spectra was not performed or available.

### **INDEPENDENT PEER-REVIEW PROCESS**

Most importantly, Encana remains concerned about the manner in which the peer-review of the EPA draft report is proposed to be conducted. For this reason, Encana respectfully requests a truly independent peer-review. This would be a peer review that does not consist solely of EPA employees and contractors. To have an adequate and appropriate review of the draft report, we believe that a more diverse and independent panel must be selected. In order to ensure an appropriate level of scientific review, Encana would suggest that the peer-review include areas of expertise applicable to the EPA's investigation, including (among others) chemistry, geochemistry, geology, hydrogeology, reservoir engineering, well design and construction, completion engineering, and hydraulic fracturing. Furthermore, the EPA should provide the public in advance with complete information about its anticipated peer-review process and afford the public a meaningful and appropriate opportunity to provide feedback.

Please include this letter, as well as the CD of professional publications that Encana provided to you on November 22, 2011, in the administrative record for this matter. Thank you for your consideration of our preliminary comments on this important matter.

Respectfully submitted,

John Schopp  
Vice President, North Rockies Business Unit

cc: The Honorable Lisa P. Jackson, Administrator, United States Environmental Protection Agency  
Mr. Robert M. Sussman, Senior Policy Counsel, United States Environmental Protection Agency  
Pavillion Working Group