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Update VI (1:05 p.m. EST; Dec. 27) — Another excellent hit in the Casper paper this morning, this one [a news article by reporter Jeremy Fugleberg](#) laying out a bunch of new information that further undermines EPA’s case on Pavillion. According to the piece: “EPA’s own data — **including details not mentioned in the draft report** — indicates the agency’s conclusions are partially based on improperly analyzed samples from six private drinking-water wells and two EPA-drilled deep monitoring wells in Pavillion.” [Click here](#) for the full article.

Update V (11:50 a.m. EST; Dec. 26) — Must-read [editorial](#) in the Casper Star-Tribune posted earlier today in which the newspaper cites EPA for “terrible execution” of its draft report on Pavillion, suggesting further that “process and politics have trumped good science.” The paper also highlights EPA’s continued unwillingness to answer even the most basic questions that have been raised about the methodology used in assembling the report — questions first posed by EID earlier this month (see below). [Click here](#) to view the Casper editorial.

Update IV (11:27 a.m. EST; Dec. 22) — Earlier this week, Wyoming governor Matthew Mead [sent a letter](#) to EPA administrator Lisa Jackson laying out a series of questions regarding the agency’s draft paper on Pavillion. In the letter, the governor stresses the importance of sound science and collaboration with state experts in arriving at a final determination. The governor also asks Administrator Jackson to clearly define what the “peer-review” process will look like; remarkably, EPA has yet to even inform the state what it intends to do on that issue.

In related news, Encana this week pulled together a conference call with the media to detail the myriad technical issues that have eroded confidence in the validity of EPA’s draft finding. On the call David Stewart, Group Lead on Environment, Health and Safety (North Rockies) outlined a litany of errors, discrepancies and oversights with EPA’s study efforts. Among the highlights:

- EPA has found no indication of oil and gas impacts in residential water wells in Pavilion consistent with all tests conducted over 50 years
- EPA finding of high PH is attributed to Potassium Hydroxide. Encana states that chemical, used in extremely sparse quantities has a PH between 6.5 and 7.0 which is near neutral. However, materials used in developing EPA’s monitoring wells, like dense soda ash, have a much more pronounced PH value and more closely matches EPA findings
- Potassium and chloride presence, which EPA attributes to hydraulic fracturing operations through “lines of reasoning”, are naturally occurring in the area which has been noted by USGS
- Synthetic compounds EPA declares are related to hydraulic fracturing operations were never used in operations there including Tert-butyl; alcohol and ketones among others. Additional

contaminants presence was also called into question given significant variability in findings from multiple certified labs

For more information on Encana's detailed technical response please see their briefing document which can be found [here](#)

UPDATE III (10:42 a.m. EST; Dec. 13) — New details starting to emerge on the process EPA will follow related to comment solicitation/collection and peer-review associated with its draft Pavillion paper. Formal notice of the comment period is slated to run in the Federal Register tomorrow, but you can get a sneak preview of what it will say [here](#). Among the items in the document that jump out to us: EPA's declaration that the draft report "does not represent and should not be construed to represent any Agency policy or determination." Of course, EPA also says in this notice that the Pavillion draft has "not been formally disseminated by EPA. " Guess they're not counting [that press release](#) they sent out to 50,000 people last Thursday.

UPDATE II (11:32 a.m. EST, Dec. 12) — Not sure how we missed this one over the weekend, but in a story posted [Friday](#) on the website of the Casper Star-Tribune, Interior secretary Ken Salazar suggests "the jury is still out" regarding the accuracy and veracity of EPA's draft report on Pavillion. According to the secretary: "We'll see what happens with this Pavillion study. And I think it's important that the real facts finally get to the table with respect to the peer review and seeing whether there's something specific with respect to that basin that is different from what we have across the country." [Click here](#) to view the story.

UPDATE (8:55 a.m. EST, Dec. 12) — Meaty press release from Encana just crossed the wires this morning; [click here](#) to take a look. One of the things in here that really caught our eye — and which wasn't mentioned in our issue alert below — is the fact that EPA apparently conceded to "finding" petroleum-based contaminants in "blank" water samples. Blank samples, according [to the release](#), are "ultra purified water samples commonly used in testing to ensure no contamination from field sampling procedures." How is it possible to detect compounds of concern from crystal-clear, ultra-purified water? Good question.

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Call it a sign of the "Times," let's say, that less than 24 hours removed [from the release](#) of EPA Region 8's report on groundwater sampling near Pavillion, Wyo., nearly a thousand different news stories have been generated — in 12 different countries, and best we can tell, four different languages. But set aside the breathless headlines for a moment and the triumphant quotes from a small segment of folks committed to ending the responsible development of natural gas, and one's left with a pretty straightforward question: Is EPA right? And if so, what exactly does that mean moving forward?

Of course, before you can answer the second question, it'd be helpful if you had a good answer for the first. And the truth is, as we sit here today, less than 20 hours A.P. (After Pavillion), we simply don't. What we do know, however, even at these early stages, is that several of the assertions put forth in EPA's report yesterday don't quite square with the facts as they actually exist on the ground out there. Because of that, a number of folks are starting to ask some pretty

basic questions about what the agency found and how it went about finding it. Below, a few of the most obvious:

1) Why the huge difference between what EPA found in its monitoring wells and what was detected in private wells from which people actually get their water?

- Contrary to what was reported yesterday, the compounds of greatest concern detected by EPA in Pavillion weren't found in water wells that actually supply residents their water – they were detected by two “monitoring wells” drilled by EPA outside of town.
- After several rounds of EPA testing of domestic drinking water wells in town, only one organic compound (bis (2-ethylhexyl) phthalate) was found to exceed state or federal drinking water standards – an additive in plastics and one of the most commonly detected organic compounds in water. [According to EPA](#): “Detections in drinking water wells **are generally below established health and safety standards.**”
- Bruce Hinchey, president of Petroleum Association of Wyoming: “Let me be clear, the **EPA’s findings indicate that there is no connection between oil and natural gas operations and impacts to domestic water wells.**” (PAW press release, [Dec. 8, 2011](#))
- In contrast, EPA found “a wide variety of organic chemicals” in its two monitoring wells, with greater concentrations found in the deeper of the two. The only problem? **EPA drilled its monitoring wells into a hydrocarbon-bearing formation.** Think it’s possible that could explain the presence of hydrocarbons?
- According to governor of Wyoming: “The study released today from EPA was based on data from two test wells drilled in 2010 and tested once that year and once in April, 2011. **Those test wells are deeper than drinking wells.** The data from the test wells was not available to the rest of the working group until a month ago.” (Gov. Mead press release, issued [Dec. 8, 2011](#))

2) After reviewing the data collected by Region 8, why did EPA administrator Lisa Jackson tell a reporter that, specific to Pavillion, “we have absolutely no indication now that drinking water is at risk”? (video available [here](#))

- Of note, Administrator Jackson offered those comments to a reporter from energyNOW! a full week after Region 8 [publicly released its final batch](#) of Pavillion data. In that interview, Jackson indicates that she personally analyzed the findings of the report, and was personally involved in conversations and consultations with staff, local officials, environmental groups, the state and the operator.
- After reviewing all that information, and conducting all those interviews, if the administrator believed that test results from EPA’s monitoring wells posed a danger to the community, why would she say the opposite of that on television?
- And if she believed that the state of Wyoming had failed to do its job, why would she – in that same interview – tell energyNOW! that “you can’t start to talk about a federal role [in regulating fracturing] without acknowledging the very strong state role.” ([2:46](#)) A week later, why did she

choose to double-down on those comments in an interview with Rachel Maddow, telling the cable host that “states are stepping up and doing a good job”? (9:01, aired [Nov. 21, 2011](#))

3) Did all those chemicals that EPA used to drill its monitoring wells affect the results?

- Diethanolamine? Anionic polyacrylamide? Trydymite? Bentonite? Contrary to conventional wisdom, chemicals are needed to drill wells, not just fracture them – even when the purpose of those wells has nothing to do with oil or natural gas development.
- In this case, however, EPA’s decision to use “dense soda ash” as part of the process for drilling its monitoring wells could have proved a bad one.
- One of the main justifications EPA uses to implicate hydraulic fracturing as a source of potential contamination is the high pH readings it says it found in its monitoring wells. But dense soda ash has a recorded pH (11.5) very similar to the level found in the deep wells, creating the possibility that the high pH recorded by EPA could have been caused by the very chemicals it used to drill its own wells.
- According to Tom Doll, supervisor of the Wyoming Oil and Gas Conservation Commission: “More sampling is needed to rule out surface contamination or **the process of building these test wells as the source of the concerning results.**” (as quoted in governor’s press release, [Dec. 8, 2011](#))

4) Why is the author so confident that fracturing is to blame when most of his actual report focuses on potential issues with casing, cement and legacy pits?

- The report singles-out old legacy pits (which the operator had already voluntarily placed in a state remediation program prior to EPA’s investigation) as the most obvious source of potential contamination. These decades-old pits, which are obviously no longer used, have nothing to do with hydraulic fracturing.
- From the report ([page xi](#)): “Detection of high concentrations of benzene, xylenes, gasoline range organics, diesel range organics, and total purgeable hydrocarbons in ground water samples from shallow monitoring wells near pits indicates that **pits are a source of shallow ground water contamination in the area of investigation.** Pits were used for disposal of drilling cuttings, flowback, and produced water. **There are at least 33 pits in the area of investigation.**”
- From the report’s concluding paragraph: “[T]his investigation supports recommendations made by the U.S. Department of Energy Panel on ... greater emphasis on **well construction and integrity requirements and testing.** As stated by the panel, implementation of these recommendations would decrease the likelihood of impact to ground water and increase public confidence in the technology.” ([p. 39](#))

5) 2-BE or not 2-BE? That is the question.

- EPA indicates that it found tris (2-butoxyethyl) phosphate in a few domestic water wells. What the agency doesn’t mention is that this chemical is a common fire retardant found in plastics

and plastic components used in drinking water wells. **It's not 2-BE**, which, although also a common material, is sometimes associated with the completions process.

- According to EPA, in one of the eight samples collected, a small amount of 2-BE was detected. Interestingly, two other EPA labs that measured for the same exact compound **reported not being able to detect it** in the duplicate samples they were given.
- According to Wyo. governor Mead: "Members of the [Pavillion] working group also have questions about the compound 2-BE, which was found in 1 sample ... **while other labs tested the exact same water sample and did not find it.**" (Mead press release, [Dec. 8, 2011](#))

6) Is EPA getting enough potassium?

- Several times in its report, EPA notes that potassium and chloride levels were found to be elevated in its monitoring wells. But just because you have potassium and chloride doesn't mean you've got potassium chloride, a different chemical entirely and one that's sometimes associated with fracturing solutions. Nowhere in its report does EPA suggest that potassium chloride was detected.
- According to several USGS studies of groundwater quality in the area, variable — and in some cases, high — concentrations of potassium and chloride have been detected in Pavillion-area groundwater for more than 20 years. (USGS [1991](#), [1992](#))
- Interestingly, the potassium levels detected in EPA's first monitoring well **declined by more than 50 percent** from October 2010 to April 2011, while the potassium level in EPA's second monitoring well increased during that same period. Only natural variations in groundwater flow and/or composition could have accounted for this disparity.

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- **Statement from PAW president:** ["The draft report coming out of the EPA is reckless."](#)
- **EID issue alert:** [Five Quick Facts on Pavillion](#)
- **Letter:** [2009 letter from Encana to Pavillion community](#)