



# Department of Environmental Quality



To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Dave Freudenthal, Governor

John Corra, Director

April 4, 2007

Matt Anderson, Project Lead  
BLM-Pinedale Field Office  
P.O. Box 768  
Pinedale, WY 82941-0768

re: Response to the Draft SEIS for the Pinedale Anticline Project Area

Dear Mr. Anderson:

These comments regarding the Draft SEIS for the Pinedale Anticline Project Area are specific to this agency's statutory mission within State government which is protection of public health and the environment. In that regard these comments are meant to, in association with all other agency comments, assist in defining the Official State Position. Comments in this response pertain to water quality and socioeconomic issues only. Air quality comments are contained in a separate submittal.

## SURFACE WATER

2007 APR -4 PM 11:28

SW-1  
SA-4-1

WYPDES Stormwater Permitting requirements need to be referenced throughout the document. Wherever the management of surface disturbing activities is discussed, this regulatory requirement needs to be mentioned along with BMPs. The following section has some added text (bold italic's) to better reference WDEQ Permitting requirements:

### 4.14.2 Impacts Considered in the PAPA DEIS

Because the New Fork and Green rivers flow through the PAPA, the PAPA DEIS (BLM, 1999a) recognized that potentially significant impacts could occur to water quality from increased erosion and sedimentation from construction related runoff (i.e., non-point source pollutants). BLM also noted the potential impact (increased sedimentation) to water quality from discharge of hydrostatic test water during pipeline testing. Hydrostatic test water, though, was not expected to produce significant impacts because it would be short-term in nature and the Operators would be required to comply with WDEQ/WQD **WYPDES** regulations. There could be water quality impacts from accidental spills. Depending on where such a spill occurred, the impacts could be significant.



Impacts from sedimentation would not be significant if the Operators strictly comply with BLM's Mitigation Guidelines, apply relevant stormwater Best Management Practices (BMPs), **follow WDEQ/WQD WYPDES Stormwater Permitting requirements (when applicable)**, and implement appropriate mitigation measures described in the PAPA DEIS. If significant impacts to area waters from sedimentation are to be avoided, attention to control of non-point sources of sediment will be necessary. In the PAPA DEIS, impacts produced by the alternatives would be considered significant should any of the following occur:

SW-3 SW-2

SA-4-2

The Department of Environmental Quality would like to see the NEPA analysis and resulting EIS address any potential effects to surface water quality that may occur as a result of existing or proposed construction practices in riparian areas. Also, every effort to prevent erosion of any kind should be taken. Any sediment created by the project can enter and affect the water quality of the receiving water

If you have any questions pertaining to surface water, please feel free to contact Jeremy Lyon at 307-777-7588.

**GROUNDWATER**

Our comments are broken into two categories, general comments and comments to specific language in the SEIS.

**General Comments**

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GW-1

SA-4-3

**1. Appendix O, Draft PAPA Water Monitoring Plan.** At first look, this plan appears to be better than the old approach of sampling all water wells within one mile of hydrocarbon exploration and production activities. However, we are still not comfortable with the methodology for selecting sites, and the type of wells proposed for monitoring. Until a better understanding of the entire aquifer system hydrogeology is achieved, we do not think it is possible to say that the aquifer is being properly monitored. Further studies need to be performed to determine if the Alluvial, Wasatch and Valley Fill aquifers are connected, and to what degree. The zones and rates of recharge of the aquifers need to be determined. Surface water and groundwater interactions need to be better understood to monitor impacts properly. The BLM and the WDEQ have both discussed the need for this type of study in several of the Pinedale Anticline Work Group (PAWG) Water Task Group meetings. The need for this study has been passed on to the main PAWG, without any success. The Rock Springs BLM office has gone as far as creating a draft plan to address this need.

GW-2

SA-4-4

The WDEQ believes that the BLM and the operators need to develop a plan on addressing these issues and work to obtain a better understanding of the aquifers in both the PAPA and the Jonah oil and gas fields. We will be happy to participate in

drafting a scope of work and providing any input to help develop an acceptable monitoring plan.

**2. Comments on mitigation measures in the PAPA.** The recent discovery of the presence of hydrocarbon in operator's water supply wells is a great concern to the WDEQ. It was found that back flow prevention or anti-siphoning devices are not being used for most of these water supply wells, and that contaminated water from pits and tanks was being pulled back into the water wells. Because of this, the WDEQ asked the operators in the Jonah and Anticline gas fields to sample all of their water wells. Over half (85 of 163 wells) of the water supply wells in the Jonah and Pinedale Anticline gas fields have been impacted. This appears to be a widespread problem that needs to be addressed quickly and thoroughly. We are currently working with operators to clean up the wells that contained contaminants over our water quality standards.

Our understanding is that the BLM has the authority for overseeing the day to day operations at the drilling and productions sites. We propose the following mitigation measures for future water well operations in the PAPA and the Jonah fields.

All water supply wells need to have back flow prevention requirements. This requirement should be confirmed by BLM inspectors. The wells need to be constructed and operated following the Wyoming State Engineers Office (SEO) Water Well Minimum Construction Standards, and any other applicable requirements and/or practices.

If a release or spill threatens to impact, or is found to have impacted surface water or groundwater, the WDEQ needs to be notified immediately. A written report should follow within 7 days of the incident. Prevention of impacts includes the use of secondary containment at any possible points of releases such as discharge valves and vapor venting where liquids might be released. Proper good housekeeping is also required. Please see our Water Quality Rules and Regulations, Chapter 4, Section 4, page 2 for further reporting details.

All new water supply wells should be constructed using sanitary water well construction methods. This means using non-toxic lubricants for casing threads, properly cleaning the casing before installing it, using safe perforation methods when completing the wells, and other applicable practices.

We are concerned that many of these wells have perforated intervals ranging from 200 or 300 feet deep down to 1,000 feet deep in the Wasatch formation. It is possible that these different water bearing zones have different qualities of groundwater, and commingling of different Classes of Groundwater may be occurring. We ask that any new water supply wells test the water quality of the various water bearing zones to ensure different classes of water are not being mixed.

We suggest that all newly completed water supply wells have water samples collected

GW-9 | SA-4-10 | and be analyzed for major cations, anions, and for hydrocarbons for future use if a well does show up to be contaminated.

GW-10 | SA-4-11 | We believe that electric logs should be run to surface where applicable to help map the near surface geology.

GW-11 | SA-4-12 | We have discovered that many of these water supply wells use Class I groundwater. This is water considered acceptable for domestic use. We ask that the BLM require operators to install water supply wells into deeper water bearing zones, possibly into the Fort Union formation, instead of using Class I water for drilling and completion purposes.

Specific Comments

SE-1 | SA-4-13 | **3. Executive Summary, Socioeconomics, page v.** Although not directly related to water quality issues, we wanted to point out that Fremont County is also seeing effects from the activity in Sublette County. Lander has several oil and gas service companies that have started up in the last few years, and many workers are now living in the area and commuting over to Sublette County.

GW-12 | SA-4-14 | **4. Section 3.15.1.1 Aquifers, page 3-71.** The SEIS states that *"Water is not used from the underlying Fort Union aquifer because it is too deep and of low quality."* The following paragraph on Page 3-72 states *"Fort Union groundwater is not generally used and is not well characterized."* What data was used to make this determination? What quality of water is required for drilling and completion activities? The WDEQ believes that water from the Fort Union formation should be used if possible, instead of using Class I water from the Wasatch formation.

GW-15 | GW-14 | GW-13 | SA-4-15 | **5. Section 3.15.1.2 Recharge.** The second paragraph discusses recharge to the Wasatch formation. The SEIS states that *"... up to 30 inches in the Wind River Range, where the Wasatch is apparently recharged. Because the Wasatch does not crop out against the Wind River Range, infiltration is likely to be less than 1 inch per year in this primary recharge area."* It is not clear how the Wasatch is recharged in the Wind River Range if it does not out crop there. Does the 30 inches of precipitation infiltrate through other formations down into the Wasatch? What types of formations does this water have to migrate through? This section was not clear. We believe that further study should be done to identify recharge to the Wasatch formation.

GW-17 | GW-16 | SA-4-16 | **6. Section 3.15.1.3 Groundwater Quality, page 3-73.** This section has language that contradicts the language pointed out in comment number 4 above. This sections states that the *"Fort Union sandstones generally contain water with salinity greater than 2,000 mg/l (Glover et. al., 1998) which may be adequate in some places for stock and drilling uses."* The SEIS should be consistent in its language describing the potential use of Fort Union water for drilling purposes. More data should be collected or more research performed to correctly characterize the Fort Union water.

GW-18 | SA-4-17 | **7. Section 3.15.1.4 Groundwater Quantity.** This section mentions the completion of individual water supply wells at depths ranging from 200 to 1,000 feet in depth. As mentioned above in our General Comment #2, we are concerned that groundwater quality may be different in the shallow zones versus the deeper zones. This concern should be addressed as soon as possible.

GW-19 | SA-4-18 | **8. Section 3.15.1.5 Groundwater Monitoring.** The current monitoring plan appears to meet the terms of the original ROD, however, in our opinion, it does not monitor the health of the aquifers in the PAPA. The proposed groundwater monitoring plan, Appendix O of the SEIS, tries to address this concern, however as mentioned in General Comment #1 above, we do not think there is a sufficient understanding of the aquifers to allow a monitoring plan to be completed.

**9. Section 4.13.2 Page 4-83 Impacts Considered in the PAPA DEIS.** We have several comments on this section.

GW-20 | GW-21 | SA-4-19 | The second bullet at the top of page 4-83 discusses changing drilling and completion techniques to correct the alkalinity problem. What problem is this? How would the techniques be changed? This would also be a good place to require the use of back flow prevention as we mentioned above. Language such as "and to prevent contamination during the operation of the water wells" should be added to this bullet.

GW-22 | SA-4-20 | The third bullet in the middle of page 4-83 discusses reserve pits and the potential for shallow aquifer contamination. Due to many possible reasons, liners at reserve pits fail and/or get torn. In cases where this happens, the WDEQ believes that the shallow groundwater should be investigated to see if there are any impacts from the reserve pit leakage. This would be especially critical in cases where oil based drilling mud was being used.

GW-23 | SA-4-21 | The next bullet on page 4-83 states "*If the quality of groundwater becomes unacceptable for any reason...*" Please add language in this bullet that requires operators to immediately contact the WDEQ if they discover groundwater or surface water quality impacts. This also was mentioned in our general comments above.

GW-24 | SA-4-22 | In the third bullet in the following paragraph, "*groundwater quality is degraded...*" Please add language into this bullet that if this happens, the operators need to report it to the WDEQ immediately and that groundwater remediation will be required by the WDEQ.

GW-25 | SA-4-23 | The last sentence in this section is no longer correct. Groundwater violations have been identified in the PAPA and will require remediation under the VRP. Language should be added to the SEIS that explains the contamination discovered and what steps are being required to prevent any further impacts.

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**10. Section 4.13.3.1 Summary of Impacts Common to All Alternatives:** There are several comments on this section.

GW-26 | SA-4-24 | The fourth bullet on page 4-84 mentions cross contamination of aquifers. Please note that cross contamination could occur within the same aquifer, such as the Wasatch.

GW-27 | SA-4-25 | The second paragraph on page 4-85 discusses potential water quantity impacts in the Wasatch. While this discussion and the information provided in Appendix N use conservative estimations, there are still a lot of unknowns concerning the interaction of the various aquifers and the surface water bodies. The SEIS mentions several times about sealing of water supply wells to a depth of at least 200 feet deeper than any stock or domestic well located nearby. However, there is no proof or evidence that the 200 foot separation is effective or reasonable. Until further studies can be done, we question the use of phrases such as "...but these impacts should not affect stock and domestic wells if effective well seals are maintained."

GW-28 | SA-4-26 | **11. Section 4.13.5 Alternative Impact Mitigation.** We believe that the mitigations we mentioned in our General Comment #2 above should be included in this section.

If you have any questions pertaining to groundwater, please feel free to contact Mark Thiesse at 307-335-6959.

### SOCIOECONOMIC

SE-2 | SA-4-27 | • The assumption about housing (4.10.1) being a constraint is not utilized to delimit the estimates for employment, earnings, and taxes.

SE-3 | SA-4-28 | • Section 4.10 Socioeconomics gives a good snapshot of current conditions but does not show how the base line conditions will change in the immediate future (e. g. crime, traffic safety).

SE-4 | SA-4-29 | • Section 4.10 describes the socioeconomics for the alternatives by face validity (that is, rhetoric), rather than on estimated calculations. For example, page 4-123 talks about increases in traffic safety and crime and says only that increases are *likely*. What is missing are rates or quantities, such as benchmarks or standards based on counts or rates (comparable populations or road loads), or calculations based on current statistics in the study area. Another example is the report of *values* of citizens and workers. While it is interesting reading, counts or percentages of the different values would improve the acceptance of the statements.


SE-5 | SA-4-30 | • It would be helpful to conclude section 4.10 Socioeconomics with a table comparing the impacts under each of the alternatives.

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If you have any questions pertaining to socioeconomic or industrial siting issues, please feel free to contact Tom Schroeder at 307-777-7369.

We appreciate the opportunity to comment in this process and look forward to working with you in the future. If you have any questions, please feel free to contact the WDEQ representatives listed above.

Sincerely,



John V. Corra  
Director  
Department of Environmental Quality

JVC/JML/rm/7-0268

cc: Governor's Planning Office, Herschler Bldg, 1<sup>st</sup> Floor, East Wing

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