

Powder River Basin Resource Council Comments on BLM's Draft EIS

May 15, 2002

Mr. Paul Beels
Project Manager
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834-2436

RE: Draft EIS and Planning Amendment for Powder River Basin Oil and Gas Project
(WY-070-02-065)

Dear Mr. Beels,

Thank you for the opportunity to comment on this document. The Powder River Basin Resource Council is a citizen-based organization dedicated to the preservation of Wyoming's rural heritage and lifestyle, conservation and responsible use of our unique land, minerals, water and clean air to sustain the livelihood of present and future generations, and education and empowerment of Wyoming citizens. Many of our members currently are and will be directly and indirectly affected by the existing and proposed development of coalbed methane wells in the Powder River Basin. Our members, who currently number just over 1000, a number quickly growing due to the coalbed methane issue, live and work in the communities and the areas where development is already occurring, and will occur.

Because the proposed development and this Draft Environmental Impact Statement (DEIS) is unprecedented in its size and scope, we have reviewed this document carefully and also sought the expertise of over a dozen consultants around the region and country for their review and analysis. The comments of these experts have been submitted to you directly. We are also incorporating these experts' comments by reference, and will refer to many of them specifically. The experts we are referring to are: Dr. Clait Braun, Dr. Barry Noon, Dr. Reed Noss, Dr. J. David Allan, Dr. Will Clements, Dr. James Gore, Walt Merschatt, Dr. William Schlesinger, John Molenaar, Dr. John Spengler, John Monks, Dr. Scott Tyler, and Dr. Thomas Goerold.

We are also incorporating and attaching the comments submitted to the Campbell County Commissioners by the Coalbed Methane Coalition and subsequently not submitted to the BLM due to political concerns by the CBM industry. The comments are specific and offer constructive and important information that must be considered by the BLM.

Introduction & Summary:

Before we delve into our specific comments we would like to reiterate for the BLM the purpose and policy of the National Environmental Policy Act (NEPA) under which this document is required.

The National Environmental Policy Act falls under 40 CFR Parts 1500-1508. The purpose and policy of NEPA are stated in 1500.1 and 1500.2. We want to call the BLM's specific attention to 1500.1 (c) which states:

Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork-even excellent paperwork-but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment. These regulations provide the direction to achieve that purpose.

Our intent in calling BLM's attention to this quote from the NEPA regulations is to underscore NEPA's aim to: 1) foster better decisionmaking based on thorough and comprehensive understanding of the environmental consequences of a proposed action, and 2) ensure that those actions taken by federal agencies in their decisionmaking protect, restore and enhance the environment. How is BLM's analysis of the proposed action in this document, and BLM's preferred alternative meeting the purpose of NEPA? How specifically will BLM's preferred alternative for the Proposed Action, protect, restore and enhance the environment?

We would also like to call the BLM's attention to 40 CFR 1500.2 (e) and (f) specifically regarding the policy of NEPA:

(e) Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.

(f) Use all practicable means, consistent with the requirement of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

The Powder River Basin Resource Council and the Wyoming Outdoor Council submitted to BLM a proposed alternative for the development of CBM resources in the Powder River Basin that would meet the above policy requirements of NEPA. This proposed alternative, which was submitted in early October, outlined a series of specific actions that would minimize adverse effects and ensure restoration of the environment. These included: Phased development; a "look before you lease" policy; alternative technologies; adaptive management; higher bonding and extensive involvement of landowners. Unfortunately, the BLM did not include the "Heritage Alternative" proposed by citizens.

We are specifically requesting under 40 CFR 1503.4 that the BLM consider, evaluate and include this alternative in a revised DEIS.

According to the extensive review of our consultants and our review of the DEIS, the document is so utterly inadequate if not actually incorrect or even misleading in disclosing and revealing the potential impacts and environmental consequences of the proposed actions and alternative actions, that it fails to remotely comply with NEPA. The document is also wholly inadequate in identifying specific mitigation measures to minimize the impacts. Instead the BLM attempts to put off mitigation measures to a later phase of development, such as the APD process, or it transfers its own responsibility to manage the resources over to other agencies, such as the Wyoming DEQ or the State Engineer's Office.

Finally, we would like to point out the definition of "cumulative impact" within the NEPA regulations under Section 1508.7, and of "effects" under Section 1508.8:

"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

"Effects" include:

- a. Direct effects, which are caused by the action and occur at the same time and place.
- b. Indirect effects, which are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.

BLM has consistently failed to address the cumulative impacts of the Proposed Action, as well as the indirect effects of the Proposed Action, in their analysis. We will refer to these serious oversights as they occur in the document.

We have major concerns over the primary author of this document, Greystone, and their conflicts of interest regarding previous and current consulting and employment by the CBM industry.

Overall flaws in the BLM analysis:

- In presenting the purpose of the DEIS, the Summary states that the "BLM and Forest Service need to evaluate the level of development of oil and gas in the Project Area over the next ten years. Yet, only one level of development is offered in the stated alternatives. The absence of alternative rates of development thwarts the stated purpose of the study.
- The DEIS states that the high estimate is used for quantifying CBM reserves, in order to avoid underestimating project impacts. But when it comes to "reasonably foreseeable" number of wells, the "moderate" estimate is used rather than the high estimate (80,000 wells by 2010). This goes against the intent of conservatism. More importantly, industry estimates are much more in line with the high estimate, which would nearly double the impacts in the DEIS.
- The DEIS overtly seeks to determine how to modify other public land planning documents to make them compatible with the proposed development. Nowhere in the document does it suggest alterations to the proposed development to conform to other planning documents. This reflects a study bias toward full development, a bias revealed in a press article on November 23, 2000. Defending the urgency of accelerated development of BLM reserves, Paul Beels of the BLM said, "There will be little gas left because it's being drained from neighboring wells." BLM offers no proof of this. Clearly, the threat of loss to competing mineral owners has spurred the pace of CBM development beyond the level supported by the marketplace and regional infrastructure.

Finally, after the review of this document by our consultants, members and staff, we have reached the obvious and similar conclusion that the environmental analysis is so misleading, deficient and incompetent that legally, BLM is required to revise and reissue the Draft EIS. Further, we believe the BLM must combine the Wyoming and Montana drafts into one document and analyze the impacts of CBM development in the entire Powder River Basin; the impacts are common and overlapping, and must be analyzed together, using the same variables, the same baseline information, where available, and the same methodology. We recommend that Wyoming and Montana BLM Field Offices launch this effort as cooperating cross-state agencies, with other crucial cooperating agencies such as EPA and US Fish and Wildlife officially involved.

SPECIFIC COMMENTS REGARDING ERRORS AND OMISSIONS IN THE DOCUMENT:

DEIS page ix - xi and page 1-3, 1-4 - Under the Purpose and Need for the Proposed Action, BLM states that the "Companies hold valid federal, state and private leases for oil and natural gas in the project area." This is not an accurate statement. The Companies do not hold valid federal leases for CBM, because the validity of the CBM federal leases has

been rejected by a recent Interior Board of Land Appeals Decision. Additionally, the BLM is aware that they are responsible for the invalidity of these leases, because BLM failed to conduct the required analysis under NEPA and FLPMA prior to issuing the federal leases for CBM development. As a result, the BLM must revise the lease stipulations to accommodate the specific and unique impacts of CBM development on private and public surface, and they must enact specific new mitigation measures.

The Project area is defined as 8 million acres, when the area of development will really be concentrated in 3 to 4 million acres. This should be described and discussed more specifically to accurately show the impacts.

NEPA Process, Including Tiering and Decision Making - page xi, Page 1-5, 1-6 - In this section of the summary and Chapter 1, the document states that BLM and the Forest Service have a provision for ensuring reclamation of facilities and disturbed lands should an oil and gas operator fail to complete adequate reclamation efforts. The BLM fails to disclose that these bonds have been completely inadequate in the past to ensure reclamation, and that many abandoned oil and gas facilities are still not reclaimed. Many landowners are still struggling to get the BLM to clean up the mess left from more than a decade ago of abandoned facilities from federal mineral development. What assurances do landowners have that the proposed new development will not repeat the mess from the past? The federal bond of \$25,000 per company, statewide is inadequate to ensure full reclamation of CBM facilities. BLM must disclose their failure to reclaim facilities and disturbed lands when oil and gas operators walk away; bonding should be levied on a per well basis rather than per company.

Page 1-5: The document claims to provide responsible agencies with information upon which to base a final decision, and also claims that scoping issues raised by the public and agencies drove the development of alternatives. This is not completely true. BLM did not include or consider the "Heritage Alternative", submitted by this organization and several others. The EIS also fails to meet NEPA requirements, because it does not disclose or analyze the effects of the proposed development, and it does not "develop the environmental protection measures necessary to reduce or eliminate environmental consequences."

The EIS fails to meet the NEPA requirements of 1502.14, 1502.14 (f) and 1502.16 (g).

Decisions to be Made Following this NEPA Process - page xii, Page 1-6, 1-7 - BLM describes the methods used to evaluate each surface disturbing activity as the APD, ROW or SUP. BLM makes slight mention of "inviting the surface owner to attend" the onsite inspection. This is a slap in the face to the private property owner, who will bear the brunt of impacts from the mineral development. The BLM must not just "invite the surface owner to attend." BLM must intimately involve the surface owner in the development of the APD, ROW or SUP plan at every step of the way. The surface owner must be included and notified whenever APD's or other permitting actions are under

review, and they must be actively involved in specific plans for development. The surface owner must also be intimately involved in developing clear-cut mitigation measures; reclamation must be ensured.

Currently the BLM provides no formal written notification to the affected landowner when APD's are under review. This policy must change. The Forest Service sends out notification for comment on APD's and other actions under review. The BLM should adopt this policy and notify the affected landowners as well as other concerned public regarding their APD, ROW and SUP permitting actions.

Alternatives Analyzed in Detail - page xvi - These alternatives are not complete. A wider range of alternatives needs to be reviewed and analyzed as required by NEPA. The proposed Heritage Alternative needs to be included.

Affected Environment - page xviii - The statement, "specific air quality monitoring is not conducted throughout most of the Project Area" is not completely true. In fact, the Powder River Basin airshed is one of the most heavily monitored areas of the United States, as confirmed by the Air Quality Division of the Wyoming Department of Environmental Quality (DEQ). Particulate monitors have been in place for over 20 years, covering some 15 surface mines, two municipalities and other DEQ sites. In the last couple of years, a NOx monitoring program was added, covering three sites in the PRB.

Page xx - incorrectly states that "recreational use of the Project Area is limited because more than 75 percent of the land is privately owned." Although the land is privately owned, there is extensive recreation on these private lands from hunting to non-consumptive wildlife viewing to horseback riding, hiking and fishing.

GROUNDWATER - All relevant sections of Chapters 3 and 4

The overall impacts to the groundwater and surface as a result of the groundwater discharge have not been fully or accurately analyzed or disclosed. The DEIS underestimates the projected impacts of Alternatives 1, 2a and 2b on the groundwater and surface, and fails to include in the analysis existing impacts on the groundwater and surface from CBM discharge to date.

The projected discharge of over 4 million-acre feet of water far exceeds the recharge rate. The average use by a family of four is 1-acre foot a year. This is enough water to supply over 16 million people with water. The DEIS places no value on this water or the loss of this water. Further the DEIS does not analyze the economic effects that dumping this water on the surface will have on native vegetation, soils, springs and land taken out of production. This is not an adequate or complete analysis, as required by NEPA.

According to Dr. Scott Tyler, "water withdrawals and exports will exceed natural replenishment by a significant margin (perhaps as much as 16 fold), resulting in a net loss of groundwater resources from the basin. The DEIS does not sufficiently address the economic, environmental and societal impacts of this net loss of water from the aquifers.

The impacts of this loss of water resources should be factored into the analysis on the viability of the proposed alternatives and represents a serious omission from the DEIS."

In addition, Dr. Tyler's analysis of the DEIS notes the following deficiencies:

- 1) The DEIS does not adequately describe, nor draw from existing data, the ground and surface water impacts occurring today as a result of existing CBM production;
- 2) Insufficient data are provided to adequately estimate the impacts of deep aquifer head declines on the flow regime of perennial rivers of the basin;
- 3) The DEIS has insufficient data to conservatively predict the drawdowns in the overlying Wasatch Formation;
- 4) The DEIS inadequately addresses the potential for and impacts of CBM water infiltrated in Alternatives 1, 2a and 2b;
- 5) The DEIS does not adequately address the impact of either dewatering or infiltration on existing springs in the area;
- 6) The DEIS does not adequately address the impact of freezing temperatures on infiltration basins or direct discharge (land spreading).

Dr. Tyler supports the above statements with more specific information. We would add the following data and comments concerning groundwater withdrawal and discharge to further support the failure of the DEIS to provide the required NEPA review and analysis.

There is no discussion of well documented and known impacts on ephemeral drainages and vegetation that have been killed by the discharge of CBM water, such as on Wildcat Creek, Spotted Horse Creek, Dry Willow Creek and other areas: The dead cottonwood trees-drowned by CBM discharge water on Spotted Horse Creek and other drainages; examples of ice flows and freezing CBM water, both on the surface, and in drainages; the number of groundwater wells that have been lost to dewatering and/or changes in water quality was not researched and analyzed. (In past EIS documents, the impacts on domestic and livestock wells were identified.) This DEIS fails to reveal the specific registered domestic and livestock wells that will be impacted.

The document also fails to consider the existing impacts to monitoring wells at the coal mines, which demonstrate that the groundwater model of a 50 foot head over the coal aquifer does not hold true on the east side of the Basin. Coalmines have been unable to get water samples because of the amount of methane in the monitoring wells. According to the DEQ Land Division files, the water levels in coal monitor wells are either 1) dry; 2) the water level is below the top of the coal; or 3) the wells are acting as a vacuum. We also know that BLM's monitor wells are dry in these areas, and that there is not a 50 foot

head of water above the coal. The water level is below the coal or the coal is now dry. Furthermore, (referring to Chapter 4-30) the groundwater quality changes significantly across the Basin. Why does the DEIS analysis assume that water quality is uniform? This is another inaccuracy.

We would like to emphasize Dr. Taylor's analysis that "the disposal of large amounts of water at the surface and their subsequent infiltration through relatively saline soils, coupled with some evaporation is likely to lead to the generation of relatively saline, shallow ground waters. Such shallow ground water and subsequent water logging of near surface soils is not discussed nor are its impacts." Tyler goes on to state that in other areas of the world, excessive water discharge on the land surface has resulted in soil salinization and serious environmental problems."

Why isn't this analyzed in more detail in the DEIS? What are the specific impacts on the surface of this water? Why doesn't the BLM include the data from specific discharges where we have seen soil salinity problems created on the surface?

Additional concerns related to groundwater and surface water impacts that are not adequately considered in the DEIS-also the subject of a review by hydrogeologist John Monks-involve the inaccuracy of the assumptions used by the groundwater model in the DEIS, page 4-7 to 4-41 and the EIS Technical report on Groundwater modeling. These include:

1. The numerical model assumes that all CBM water disposed of by Surface Discharge that infiltrates the alluvium will recharge groundwater in the underlying bedrock formations. This is contradictory to hydrogeologic data collected by USGS and other field evidence which does not support this assumption.
2. The numerical model assumes that no hydrologic connection exists between infiltration impoundments and downstream surface, and that all CBM water that infiltrates recharges groundwater and does not reach surface water. According to Monks' review of USGS and other research data, hydro-geologic conditions in the Project Area suggest that some CBM water will discharge to the surface either as springs, or to stream valley alluvial aquifers and hydraulically connected down gradient surface waters. We are beginning to see examples of this in the Basin.
3. The groundwater model assumes that the partial isolation of the sand aquifers overlying the coal (documented by BLM monitoring at the Marquiss CBM project) can be applied over the entire basin.

As the BLM knows, there are hundreds if not thousands of unplugged and improperly plugged wells in the PRB, as well as areas where the coal is more fractured. Both of these scenarios exist throughout the Basin, and will result in an underestimation of the amount of produced water from CBM development. The BLM also knows that the area is very large and can be highly variable; to assume that the entire Basin is the same as the small area monitored south of Gillette is not scientifically sound. According to Monks, the model would more conservatively predict drawdowns and volumes of produced water if the partial isolation were not presumed to exist everywhere.

METHANE MIGRATION/SEEPAGE/SUBSIDENCE AND COAL FIRES - 3-43, 3-44, 4-84 to 4-86

The DEIS fails to discuss specific instances in the PRB pre CBM development and post CBM development where methane seepage has occurred and the resulting problems associated with methane seepage. A specific graphic example is Rawhide Village and methane seepage, which occurred due to dewatering of the adjacent coal mine. The document also fails to identify baseline levels for methane or require baseline documentation for methane levels prior to development. This is a very serious health and safety issue, which could easily cost human life that BLM is taking very lightly.

The DEIS contradicts itself on 4-84 and 4-86. First the DEIS states that "Potential effects, such as creating geologic hazards, are not likely to occur." Then it states, "Methane migration or seepage could occur within the PRB as CBM development proceeds." It goes on to state that it could emerge from water wells near CBM production areas and affect stock and domestic wells. It fails at this point to state how explosive methane is and note the number of workers who have already been burned by methane explosions. It later states that residents living near CBM production should make sure their well houses and basements are well ventilated so as to avoid explosions. This is completely inadequate. The BLM and industry possess some responsibility and liability to ensure that people are informed of the hazards and to require industry to pay for specific testing and mitigation measures to prevent and deal with methane migration problems.

Regarding coal fires and subsidence the DEIS makes a sweeping assumption that this impact will be minimized by the maintenance of a 50 foot head of water above the coal. This is no longer a valid assumption basin wide as the 50 foot head has been removed and the water level is either lower within the coal or the coal is now dry. The 50-foot assumption keeps the aquifer in a confined state and when that is not the case the calculations used to determine subsidence are no longer valid. The document also incorrectly states that the spontaneous combustion of the coal aquifer will be minimized since the coal will remain saturated. Again this is not accurate. When the water is no longer available to inhibit oxygen flow, that assumption cannot be relied upon to inhibit coal fires.

We also incorporate and refer BLM to the comments of Walt Merschhat regarding these specific issues.

GROUNDWATER CHEMISTRY/SOIL/WATER INTERACTIONS -All relevant sections of Chapters 3 and 4

The DEIS fails to completely analyze and disclose the water chemistry of CBM discharge water, concentrations of heavy metals and salts in produced water pits, and the impacts to soils and vegetation where water has been discharged. Table 3-1 is incomplete. There are many specific examples of this on the ground and BLM has ignored this information and material.

On page 4-70 the document incorrectly states that "all in-channel impoundments would be designed as flow-through structures and would be properly permitted by the WDEQ. No existing surface water right would be expected to be affected by this water handling method." This is not occurring and is not an accurate picture of what is already happening in the field. The BLM is well aware that in-channel impoundments on Wildcat Creek are currently affecting downstream water rights and have resulted in destroying the native vegetation in the creek channel and affected the ability of at least one landowner to irrigate due to the water quality impacts.

There have also been impacts and/or concerns with downstream landowners on Wild Horse Creek, NX Bar Creek, Spotted Horse Creek, Dry Willow Creek, Dead Horse Creek, Prairie Dog Creek, Powder River, Little Powder River, Cheyenne River and Tongue River. Some specific data on impacts to streams, soils and vegetation is available from these locations and the BLM should use that information and disclose the impacts that have already occurred as a result of the development. Data has also been gathered on specific impacts by the Coalbed Methane Coordinator Coalition, the Conservation Districts in Wyoming and Montana, irrigation districts in Montana and the University of Wyoming and Montana State University.

Existing soils are poorly discussed or identified as well as impacts to those soils, Page 3-52, 53. The research we have conducted with NRCS information currently shows that the majority of soils in the Basin are clay soils and therefore not conducive to putting high CBM discharge water onto these soils. The existing and projected impacts to soils and vegetation from discharging CBM water should be described and disclosed. The compaction and deflocculation of clay soils by high SAR water should be described and disclosed.

How will the concentration of metals and salts in CBM discharge pits be reclaimed and cleaned up? With the DEIS talking about the proposal of several thousand CBM production pits the volume of salts and metals should be disclosed and analyzed.

We also refer the BLM specifically to the comments of Dr. William Schlesinger that were submitted by separate letter.

AIR QUALITY - 3-53 to 55 and 4-101 to 112 and related Tables

One of the most erroneous and unsupported statements in this DEIS is in Chapter 4 on page 103. It states, "Significant air quality impacts would not occur under this Alternative." This directly contradicts the modeled impacts of PM10, NOx, CO and formaldehyde. Furthermore, the air quality expert, John Molenaar, of Air Resource Specialists, Inc., who reviewed this document, stated:

"The detailed critical review of both the PRBO&G DEIS and Argonne described in the following document conclusively shows that, while this air quality impact analysis was initially framed in an accepted technique, the analysis, as completed deliberately underestimates the actual increase in emissions, is scientifically unsound and incomplete, and therefore, seriously underestimates potential ambient air quality impacts throughout the region. In addition to the underestimation of ambient air quality impacts, it is shown that even when Argonne's flawed visibility impact analysis indicates an adverse significant impact at a number of Class I areas, the PRBO&G DEIS deliberately misrepresents and ignores the results reported by Argonne."

These are the kind of reviews and analysis of the DEIS that call the entire document into question. They reveal not only a severe industry bias, but also an attempt to distort the actual findings of the air quality analysis. Even if the Argonne analysis had not underestimated the increase in emissions, their underestimated emission still shows a "significant" increase in emissions:

- CO 49% increase or 29,868 tons/year increase
- NOx 52% increase or 45,070 tons/year increase
- PM10 7% increase or 7,288 tons/year increase
- PM2.5 9% increase or 1,986 tons year increase
- SO2 6% increase or 9,232 tons/year increase
- VOC 106% increase or 11,527 tons/year increase

To say that these are not significant air quality impacts is directly contrary to the legal requirements of NEPA. Regarding this faulty and misleading air quality analysis Molenaar states,

"The conclusion of no significant adverse air quality or visibility impacts arrived at by Argonne and reported in the PRBO&G DEIS does not meet the legal requirements for professional integrity. It is at best incompetent and scientifically unsubstantiated, and at worst, it is possibly fraudulent!"

Of extreme concern to us are Page 4-110 and 4-111, and Table 4-14, which does not correspond with Argonne's actual study.

In addition to Molenaar's very specific comments on the air quality portion of the document, we offer the following points and concerns:

1. In violation of NEPA 1508.7 Cumulative impact - "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." The DEIS completely fails to consider and reveal the environmental effects of their own reasonably foreseeable development (RFD) sources of 40,000 additional CBM wells, by industry estimates, three proposed power plants, and CBM development in Montana. Adding these probable sources to the analysis would double the air quality impacts, exceeding PSD thresholds, aggravating already threatened visibility (AQRV's) and potentially even violating national ambient standards in some locations. Furthermore, over the past year or two (document attached) air quality monitors in the PRB have shown the air exceeds Clean Air Act standards for PM-10.

2. The fugitive dust emissions are grossly underestimated or understated by projecting operation visits at 12 per year for each well (Page A-4 of Technical Support Document). This also contradicts Appendix A, page 2-36 of Volume 1, which states that routine well maintenance and inspections may require a visit to the well "up to once per day." While automated monitoring equipment could reduce this frequency, the pattern thus far has been to avoid automation. Page 2-36, further states that even if the wells are automated, other factors such as safety, "may require daily visits." The daily visit is corroborated by current practice. Apply this frequency to Appendix A and it dramatically increases road dust quantities and, presumably, modeled impacts. Furthermore, non-CBM use of new roads is completely ignored, while the CBM use is understated. Even if you use the figure of 25,000 miles of new dirt roads, at an average of only one vehicle round trip per day (pickup), it would still lead to 6,400 tons/yr of PM-10 emissions. This is nearly 10 times what the DEIS estimates for ongoing fugitive dust from roads (700tpy).

3. When you add up projected emissions increases in the 4-county area, with a 72% increase in PM-10 and an 80% increase in NOx, common sense tells us these projections are far from the "no significant impact" claimed by the DEIS. Projected PM-10 impacts, even ignoring the understatement of fugitive dust emissions, are more than "significant," again casting suspicion on the DEIS claim of "no significant impact." The projected maximum increase in annual average, ambient PM-10 particulates is 6 micrograms per cubic meter. This is a third more than the minimum background concentration in Campbell County. It is also more than a third of the available PSD increment. It is even enough to threaten national

ambient standards near some of the coalmines. NOx impacts are even worse. The projected maximum impact of 14 micrograms per cubic meter would double the background ambient concentration, and consume 60% of the available PSD increment for a Class II airshed. If 80,000 wells get developed, instead of 39,000, all of the available NOx increment would be consumed.

4. Table 7-2 shows higher 24 hour PM-10 impact for the "No Action" alternative (63 micrograms per cubic meter) than for the full-scale CBM development (60 micrograms). How can CBM development take dust out of the air?
5. Page 4-101 contains a subheading, "Air Quality and Climate." The climate portion is misleading, as the DEIS does not evaluate greenhouse gas contributions from the proposed development. In addition to CO2 emissions from produced gas, the document is missing any analysis of the impact of methane vented to the atmosphere. Sources of methane emissions included pre-production venting, emissions from vacuum blowers, and migration of liberated methane to the ground surface through both natural and man-made channels. Methane gas contributes 21 times the greenhouse effect of CO2, on a volume basis. If 5% of the methane evacuated from the coalbed were lost to the atmosphere, the proposed development would result in 125 million tons per year of CO2 equivalent greenhouse gas emissions.
6. Page 4-109 sidesteps the issue of air quality deterioration from compressor stations, by offering a false assurance that future permitting will address Prevention of Significant Deterioration (PSD). "At the time of pre-construction air quality permit application, the applicable air quality regulatory agencies may require a much more detailed PSD Increment Consumption Analysis." In fact, individual gas compressors do not qualify as major sources and therefore would be exempt from PSD permit requirements. The Wyoming DEQ may require a minor source, Best Available Control Technology (BACT) analysis, but PSD regulations and increment consumption analysis do not apply.
7. The DEIS reporting on Table 4-14 does not accurately or correctly report what is in the much higher number of days where visibility will be

affected in the technical Argonne air report on Table 3. According to Molenaar in his review, "This is a deliberate fraudulent misrepresentation of the visibility screening analysis results as reported in Argonne!!!" Molenaar goes on to reiterate his concern that this appears to be a "deliberate, possibly fraudulent, attempt by the BLM to obfuscate and minimize the serious potential visibility impacts of the proposed planned development in the Powder River Basin at the Northern Cheyenne Indian Reservation, and Badlands and Wind Cave National Parks." We cannot emphasize how serious this type of misrepresentation is and how it casts a pall on the credibility of the entire document. Again we believe this is due to the fact that the contractor, Greystone, principally responsible for writing this document is an industry consultant and therefore, prone to understate or obfuscate the findings.

Finally, regarding the air quality analysis, the impacts of health effects to people living in and near the CBM development has not been fully analyzed or disclosed. It is well documented that particulate matter, especially fine particulate matter, is responsible for serious health effects. It is also well known that there has been an increase in specific reported cases of dust pneumonia in livestock, and asthma and respiratory illnesses in people living near the development in the last year or two due to increased dust emissions from CBM development. We refer you to the comments submitted by Dr. John Spengler for a more detailed account of this material.

Why hasn't BLM discussed in more detail and disclosed the potential health effects of the increased emissions? We also recommend that BLM provide additional air quality monitoring for PM-2.5 particle emissions, and offer more specific air quality mitigation measures for this very serious problem.

NOXIOUS WEEDS - 3-66

The DEIS should better define and describe the baseline conditions for existing noxious weeds, 3-66. This is available from the County Weed & Pest Boards that have conducted noxious weed surveys. The DEIS should also better describe and disclose the enormous potential for the spread of noxious weeds, the economic impacts of the spread of weeds, and the subsequent increase in spraying of herbicides to control the spread of noxious weeds. We have already observed and documented extensive invasion of noxious weeds where new roads are bladed, on pipeline right of ways and in well pad areas where proper reclamation has not taken place.

WILDLIFE - 3-71 to 135 and 4-139 to 201

The DEIS has failed in its obligation to disclose either the specific or the cumulative impacts of the proposed oil and gas development on wildlife and on the biodiversity of the Powder River Basin.

Throughout the wildlife section of the document, the DEIS asserts that the major disturbances to wildlife by roads, pipelines, powerlines, water and waste discharges, etc. are difficult to assess. Because the DEIS assessment regarding potential impacts to wildlife from the development ends up being very limited in scope, one might likewise expect that conclusions would reflect that limitation. On the contrary, throughout the document a discordant conclusion is arrived at, stating that the development will have **minimal** adverse affects on wildlife. It is not acceptable to admit that data is not available but to then come to a firm conclusion despite this lack of data.

To compound this problematic conclusion, based on minimal data on the different species of wildlife in the Basin and lack of knowledge on placement of project infrastructure, the DEIS acknowledges that the assessment of the impacts of the proposed project is largely conjecture. Relying on "conjecture" as a means to address the effects of the development on wildlife is totally unacceptable.

The lack of mitigation measures offered and suitability of those that are proposed for some of the susceptible wildlife groups are questionable. There is no pro-active stance, such as pre-development surveys, proposed in the document that would allow for proper management of the development and its impacts on Basin wildlife.

Because the primary reason for the DEIS is to determine the impact of the development, a worst case scenario must be considered so that adequate management recommendations and alternatives can be proposed for the wildlife affected. This has not been done to an adequate degree.

A glaring limitation of the DEIS is that it restricts itself to political boundaries. The Bureau of Land Management through its own bureaucracy has approached ecological systems as closed systems that do not flow across political boundaries. The fact that Powder River Basin extends into Montana, and that an EIS is also being developed for the Montana area of the Basin, was not considered. The fact that what happens to the habitat and systems in Wyoming will have a significant impact on the Montana environment was also not considered. **Lacking consideration of the comprehensive ecosystem involved in the Basin indicates that the DEIS is likely to be inadequate in its findings and conclusions.**

The above insouciant attitude towards the DEIS process is evident in the lack of prioritization of the principal effects of the development on wildlife. First and foremost among the acknowledged effects must be the inevitable fragmentation of the habitat by the development, followed closely by loss of habitat, and disturbance by human activity. **The cumulative effects of habitat fragmentation, loss of habitat and disturbance by human activity are brushed aside by repetitive statements and are not adequately addressed. This deficiency must be addressed in the final document.**

Concerning the big game species of pronghorn, white-tail and mule deer, and elk, statements include: "The extent of potential (habitat) fragmentation is unknown because

the precise location of project-related facilities is undetermined at this time." Pages 4-145, 150, 154, 160. If the effects are undetermined it should be expected that no conclusions could be drawn. However, verbatim statements for pronghorn and deer species state that, "The effects of potential fragmentation would not likely adversely affect the (insert species) because of the widespread occurrence and availability of suitable habitats throughout the Project Area." Pages 4-145, 154. The two statements are incompatible and contradictory and smack of negligent assessment and invalid impact projection. If the habitat fragmentation is declared as unknown, to then predict that such fragmentation will have no adverse affect is frivolous conjecture as opposed to the requisite scientific analysis upon which a valid DEIS should be based. **No scientific study is referenced to corroborate the summation of the effects of the Project on habitat fragmentation. This deficiency must be addressed in a revised EIS.**

Concerning human disturbance the same contradictory language is again used for both deer species. "Big game sensitivity to human disturbance is difficult to quantify, nonetheless, compared to some other big game species, mule and white tail deer are less sensitive to temporary or short term human activities and therefore, the potential distance and duration of displacement is expected to be more than other big game species." Pages 4-150, 155. This sentence is contradictory in itself and when coupled with the following statement renders the entire assessment on human disturbance as wholly inadequate. "Displacement due to concentrations of human activity are not expected to cause detrimental effect on deer because human disturbance would likely be limited temporarily and spatially and suitable deer habitats are available." **Again, no scientific corroboration for these assertions is given to provide valid conclusions about the effects of human disturbance on deer species. This deficiency must be addressed in the final EIS.**

It is well known that wildlife species respond to their environment in different ways. These ways of response do not come under consideration in the DEIS. The size of landscapes required to accommodate a species depends on the need of the particular species. Each habitat patch that exists in the Powder River Basin provides only some of the resources needed by individual species. Unless these habitat patches are available to provide the required needs in an ecological manner across the landscape the negative effects on many species will be profound. **The severing of these habitat patch connections by project disturbances such as roads and power lines has the potential to destabilize entire populations. This must be addressed in the DEIS.**

Additionally, the fact that the DEIS largely ignores most species within the Basin, focusing almost exclusively on big game, game bird and raptors, is reflective of the absence of understanding of Basin ecology and biodiversity in the DEIS. **In order for the DEIS to have credibility in its wildlife impact assessment it must be more inclusive of the over 242 species of birds, 69 mammalian species, and 18 reptile and amphibian species which have been identified as inhabiting the Basin.**

The document is very cumbersome for the layman trying to find out what the expected effects will be on wildlife and what mitigation measures and/or management recommendations are made. For example: On Page 4-139 seven different principal effects of the development to terrestrial wildlife are stated including project induced increases in mortality (e.g. poaching, roadkills and raptor collision, and raptor electrocution among many). To discover projections of the affects and what will be done to lessen these mortality increases, the reader must turn to details on the different species. **To reiterate, the process of searching the document to follow from projected effects to proposed mitigation is very cumbersome especially when the management and mitigation plans are virtually non-existent.**

Despite vastly varying habitat areas and animal behavior, when checking the four major big game animals mentioned in the document, pronghorns, white-tail and mule deer, and elk, the exact same wordage is used to describe the possibility of vehicle collisions, "Quantifiable effects to (insert big game animal) as the result of increased vehicle traffic are not available; however the potential for vehicle collisions with (insert big game animal) is expected to be directly correlated with the volume of traffic." (Pages 4-145,150,154,155,160) Another same statement for all four animals is used to describe the increased number of roads, "The effects from new access roads is difficult to quantify, because road densities and lengths are dependent upon specific facility locations which are undetermined at this time." Pages 4-146,151,155,161. **No attempt is made to project the number of animals that will be killed or maimed, although the trend of increase in reported number of roadkills of these species in areas currently under coalbed methane development is readily available from the Wyoming Game and Fish. This deficiency must be addressed in the final EIS.**

In Johnson County alone the number of deer only, struck by vehicles, has increased by 348 in 1997 to 601 in 2000. (Casper Star Tribune 3/16/02). The increase in activity in the coalbed methane fields is undoubtedly a contributing factor. With the increased number of vehicles and roads that will result from the development, the number of road kill big game animals will no doubt also dramatically increase, reaching potentially into the thousands in the entire basin. There are reasonable prevention plans that could be put in place. Besides the confirmed data available, anecdotal accounts by area residents, ranchers, and coalbed methane field workers of collisions and dead and maimed animals are abundant. The opening of previous roadless areas put thousands of big game animals with no previous exposure to vehicles at risk with no plans for mitigation. This obvious area where mitigation could take place through planned management is completely ignored. **No where in the document is there any type of prevention or mitigation planning for big game vehicular accidents. The potential for dramatic impacts to big game populations from this type of mortality must be addressed in the final EIS.**

Confirmed deaths of raptors by collision are already on the increase in the Basin. Known vehicle/ raptor collisions have increased in Campbell County alone from 11 in 1998 to 34 in 2000. (Casper Star Tribune 3/16/02). This statistic belies the statement in the DEIS page 4-164 "The increase in vehicle collisions with individual raptors is not expected to contribute to the loss of raptor population viability or health." Utilizing the numbers of

deaths from Campbell County and increasing it Basin wide while considering the projected increase in project activities, results in the conclusion that the death of raptors by collision will be in the mid- to high hundreds. **No mitigation methods to address what is a rising problem of raptor deaths due to vehicle collisions have been proposed in the EIS. The potential for serious impacts to raptor populations from this type of mortality must be addressed in the final EIS.**

Raptor electrocution has dramatically increased in recent years. In Campbell County alone numbers increased from one raptor electrocution in 1998 to 12 in 2000, with basin wide deaths reported by US Fish and Wildlife of over 80 for 2001. These deaths have occurred and increased despite the assertion by Powder River Energy, the main supplier of power lines for the area, that they have adapted the Avian Power Line Interaction Committee's recommendations as of April 1998. Electrocution and collision deaths of raptors bring the possible numbers of total deaths to one of great concern for the Project. **The potential for serious impacts to raptor populations from death by electrocution must be more thoroughly addressed in the DEIS.**

Poaching and wanton destruction of wildlife is on the rise in coalbed methane affected areas. The US Fish and Game officers report that they are getting more calls for service than ever and they believe that extra activity in oil and gas field is likely the reason. The Game Warden covering the basin north of Gillette has stated that due to the increasing demand for enforcement, his officers have stopped almost all other non-enforcement-related activities. Fifteen shot and abandoned big game animals were found in 2001 north of Gillette on Highway 59 in an area that has seen a coalbed methane boom. The Game and Fish estimate that on average only 10% of the abandoned animals are found which means that the mortality from this type of death is likely in the hundreds. **No where in the EIS is this fact acknowledged beyond stating that an increase is expected. No mitigation plan of any kind not even one to support enforcement has been proposed. This deficiency must be addressed because it constitutes a sizeable impact on wildlife.**

The serious lack of mitigation plans for the inevitable effects on most wildlife is very disturbing. The specific issues stated above are used because they include wildlife in which most of the public are interested. The fact that even these high profile big game animals and protected birds lack management plans related to the coalbed methane development makes particularly conspicuous the complete ignoring of all other species in the document. If nothing can be done for these high profile animals then obviously nothing is even being remotely considered for the non-game species and non-raptor avians. **This serious deficiency in failing to include animals other than high profile, big game animals and raptors, must be adequately addressed in the DEIS.**

The DEIS does consider mitigation activities for the greater sagegrouse. It is obvious it does so because of the possible listing in the near future of this bird under the Endangered Species Act. The BLM has recognized the need for greater efforts to study the greater sagegrouse by providing the Wyoming Game and Fish Department with funding to search for and monitor leks in the Sheridan area, which is within the DEIS project area.

Over the past 3 years 57 new leks have been identified, with almost all of them lying in the DEIS coverage area. Despite this recognition of the BLM and the WGFD, three known leks and likely more were disturbed in spring 2001. The impact on these leks may have been avoided if the available data had been reviewed and utilized in the management of the area. If the information that is available is not reviewed it is of no help in preventing disturbances to sagegrouse leks. **To fully extend protection to the sagegrouse adequate surveys of the Project area must be made, and those surveys must extend to private surface rights as that is where the majority of the development will take place. Only after that can mitigation and management plans for the project area be developed correctly.**

Last, but certainly not least, the EIS does not address the potential for serious economic consequences, which could result for ranchers if the impacts of the project force the listing of wildlife species onto the endangered species list. This could seriously alter agricultural operations and even threaten the ability of those most impacted to survive. This economic factor must be given consideration in the revised EIS and specific measures must be included to prevent this from happening.

In conclusion, the DEIS does not include adequate data on most of the wildlife in the Basin. Where data is available it is not used appropriately or is totally ignored. Because of the lack of data and because available data is often not utilized, the assessment of the impacts to wildlife from the Project are not adequately addressed.

The BLM must include in the DEIS a thorough assessment of the wildlife in the project area in order to have existing inventories documented before the project ensues. Projected impacts must be scientifically based and include worst case scenarios and how such impacts can be avoided and when not possible, mitigated to least possible impact.

The wildlife of Wyoming are a valuable asset for which the BLM must provide plans for adequate protection from negative and potentially species endangering impacts from the development of federal minerals. Simply because much of the development will take place on private surfaces, does not absolve the BLM from this responsibility for a resource that is subject to a number of federal and state protections. Failure on the part of BLM to treat with priority the potential impacts to wildlife will undoubtedly result in ongoing disputes between various state and federal agencies, potential for law suits, and a profound public outcry from Wyoming citizens who take great pride and enjoyment in the state's wildlife about which they tend to be highly protective.

AQUATIC SPECIES - 3 - 103 to 135; 4 - 202 to 214

After careful review of the Draft Environmental Impact Statement the Powder River Basin Resource Council, in collaboration with recognized experts in various fields of study, find that the DEIS is inadequate in its assessment of the impending impacts to aquatic life systems in the project area. The following comments address that issue. Preliminary to presenting these comments it is useful to quote from Part 1502.1 of the NEPA regulations: "An Environmental Impact Statement is more than a disclosure

document. It shall be used by Federal officials in conjunction with other relevant material to plan actions and make decisions." Because the stated purpose of NEPA is to serve as "our basic national charter for protection of the environment," (NEPA Regulations, Part 1500.1 [a]) it is imperative that the content of the final EIS be of substantive value, incorporating adequate volumes of scientific studies, in order to serve these fundamental purposes and intents of NEPA.

The description of the aquatic ecosystem of the project area, Chapter 3, pages 103 through 108, does not adequately portray the highly complex elements of the aquatic environment and the multitude of biotic and abiotic components on which the health of the system is dependent. To simply address the fish species, which are known to live in the Project Area, giving only spurious mention to the overall ecosystem on which the species interact and depend, misrepresents the scope of concerns regarding the comprehensive and complex systems involved. The area's fisheries, which are primarily at the top of the aquatic environment system's food chain, cannot be extrapolated from the overall ecosystem without seriously compromising meaningful assessment.

Although there is more inclusion of these interactive components of the ecosystem in Chapter 4, pages 201 through 206, the rich, diverse and unique qualities which support the project area's complex aquatic system continues to be inadequately represented to satisfy the requirements of an Environmental Impact Statement. While bits and pieces of the factors relevant to assessment of aquatic impacts are addressed, they are incomplete and not incorporated into a comprehensive assessment of aquatic impacts. Due to the lack of identification and representation of these fundamental elements of the aquatic ecosystem, which are critical to meaningful dialogue and assessment, the DEIS has very limited value as a resource to "plan actions and make decisions" relative to protecting the aquatic ecosystem.

The inadequacy of the assessment of the aquatic species and overall aquatic ecosystem is reflective, in part, of the extremely limited number of studies and resources referenced and utilized. This deficiency results in many unsubstantiated conclusions regarding the impacts on aquatic life and systems. This limitation is so extreme as to be considered negligent.

This is not to be construed as criticism of the integrity of the few sources that are cited. The real issue is that if the significant volume of sound, scientific, scholarly research available had been even reasonably researched and included, the result would likely be a decidedly more accurate portrayal and assessment of the systems involved. Utilizing more substantive studies from more, equally reliable research sources, would have resulted in an improved ability to identify potential impacts from CBM mining, and provided a stronger foundation from which to "plan actions and make decisions."

As it stands regarding impacts to aquatic life, the DEIS can appropriately be viewed as a cursory introduction to the issue, at best. To assist the BLM in the final compilation of a viable and meaningful EIS, with the integrity no doubt being sought, we request that, at a minimum, the information contained in assessments by the following experts, which were

submitted to the BLM independently of this report, be fully utilized in the final assessment of impacts to aquatic systems in the project area, J. David Allan, Ph.D., School of Natural Resources and Environment; University of Michigan, Ann Arbor, MI; Matt Whiles, Assistant Professor of Zoology, Southern Illinois University, Carbondale, IL; Dr. James A. Gore, Professor and Chair of the Department of Environmental Science and Public Health, Columbus State University, Columbus, OH; William H. Clements, Ph.D.; John Monks, P.B., Monks Hydro-Geoscience, Sandpoint, ID.

In addition to valuable content, the above assessments contain extensive references of studies and documents cited by the authors. These scientifically based studies provide additional, valuable resources to assist in formulating the final sections regarding impacts to aquatic life and ecosystems in a revised EIS.

The people and environment being served by the BLM in the DEIS assessment process deserve, and in fact have a legal right to a more comprehensive and accurate reflection of the pending impacts and concurrent mitigation measures to the aquatic life and ecosystems of the Basin. Failure to seriously consider, and include wherever appropriate, the findings within these documents in preparation of the final EIS could only be regarded as negligence on the part of the BLM in their obligation to identify and mitigate impacts to the flora and fauna of the project area.

Following are critical issues which must be more thoroughly addressed in order for the final EIS to have requisite viability as satisfying NEPA requirements and to be valid as a planning tool which can address the impacts to aquatic species and systems.

- **The effects of CBM mining effluents, which are introduced into the existing waterways at any point in their system, must include thorough assessments not only of how water quality will affect systems and organisms but also how water quantity will impact these same systems.** The DEIS presents its aquatic impact conclusions based on the assumption that only 20% of the CBM mining effluent will reach the aquatic systems in the project area. There must be valid assessments of the potential impacts to the aquatic ecosystem should the amount entering the system exceed 20%. Also, the question must be asked, "20% of what?" Impacts on aquatic systems from 20% of several thousand gallons of water daily is a significantly different issue than 20% of tens of thousands of gallons of water daily. Even using the figures presented from the sections on Groundwater and Surface water, one cannot get an accurate understanding of the volumes of water which will be impacting the vastly different aquatic systems throughout the project area. . Using a "20% factor" without quantifying that percentage is not an adequate representation of the volumes of discharge that will be entering the system. It is imperative that the estimated volumes of discharge, and how such varying volumes will impact the aquatic systems be quantified throughout the EIS.

In addition to volumes of produced water needing to be accurately quantified,

equally important is for the EIS to comprehensively address the hydrology of the project area which is complex, diverse, and replete with variables. There is wholly inadequate data on the kinds of impact such quantities of water will have on the overall hydrological schemata of the Powder River Basin. This further complicates using a 20% assumption without quantifying exactly what volumes of water that percentage might represent, and results in inadequate information on which to "plan actions and make decisions."

- **The DEIS does not consider the potential interactions between toxic constituents which are in CBM produced water and other inherent factors of waters in the Powder River Basin.** As Dr. Clements states in his submitted comments, "A large body of literature exists showing that exposure to one stressor may increase susceptibility of aquatic species to other stressors. In particular, previous research has shown that some contaminants are more toxic under conditions of high TDS." Because contaminants are known to exist in CBM waters, and "a large body of literature exists" supporting the impact of this type of interaction, it should be included in the assessment of potential impacts of CBM waters discharged into the aquatic ecosystem.
- **The DEIS fails to provide adequate assessment of the impacts of the increased sedimentation which will enter the aquatic ecosystems in the project area.** To quote Dr. Clements, "changes in abundance and distribution of macroinvertebrates resulting from sedimentation will likely have significant consequences for fish populations in Powder River watersheds. In addition to the reduction in food resources, loss of fish habitat and degradation of spawning areas will impact fisheries. The potential impacts of fine sediment deposition in the Powder River Basin should be quantified. Although the Wyoming DEIS correctly notes these impacts may occur, relatively little information is provided indicating how they will be mitigated." The DEIS also does not indicate the potential for impacts given varying volumes of CBM entering the waterways, relying largely on the 20% assumption rather than providing substantive, quantified estimates as to what this volume of water will be.
- **The DEIS minimizes the potential effects for toxic materials associated with CBM produced effluents. A more thorough, scientific approach must be utilized regarding these toxic materials and their impact on the aquatic systems of the project area.** In fact, the DEIS indicates that there will be no impacts of increased metals or metalloids on aquatic organisms in the Powder River, despite the fact that some metals in CBM produced waters have been measured at levels which can be toxic to aquatic organisms. This claim is not

backed up by substantive scientific studies. Of particular concern are levels of selenium which have the known potential to "bioaccumulate up aquatic food chains" where they may cause significant harm to top predators.

The impact of either reductions of or increases in concentrations of major ions, relative to conductivity, TDS and toxicity, on aquatic organisms has not been given adequate consideration in the DEIS. The DEIS must utilize scientific studies which factor in the complexity of these factors, and must consider the effects of elevated concentrations of major ions and must document how aquatic organisms will be impacted by salinity and TDS if higher than predicted volumes of discharge waters enter the receiving systems of the project area.

To quote the work of William H. Clements, Ph.D., "predicting toxicological impacts of high TDS effluents is very complicated. Recent studies have shown considerable variation in the toxicity of TDS." He goes on to state that, "Aquatic organisms are highly sensitive to changes in ion concentrations in the environment. It is well established that elevated concentrations of major ions can reduce water quality and significantly impact fish and wildlife." Dr. Clements also uses recently developed statistical models based on specific concentrations of major ions to predict toxicity to fish and invertebrates. In doing so he concludes that, "CBM produced effluents from most sites within the project area are expected to be highly toxic to aquatic organisms." He also goes on to indicate that using these predictions, the, "**greatest potential effects of CBM produced effluents are expected to occur in the Upper Tongue River sub-Watershed because of the naturally low levels of most ions in this stream.**"

- **The Upper Tongue River supports critical fisheries on which minimal impact is being predicted in the DEIS. The DEIS, in part, appears to minimize the potential for such impacts "presumably because of the unsupported assumption that only small volumes of these materials will be discharged..."**
- **The DEIS often uses mean values in its predictions of the potential effects of various impacts on the aquatic systems which may lead to erroneous conclusions regarding the actual impacts that might occur across the statistical spectrum of possibilities.** In some scenarios, mean values of various impacting factors may in fact prove relatively harmless to aquatic life. However, this does not address what may happen in instances when the maximum values influence the systems. For instance, some of the identified toxic constituents, even though they may be limited in frequency or duration, are documented as being fatal to both microorganisms and fish when present, even briefly, at higher levels.
- **The DEIS is wholly inadequate in its assessment of the impact on the microorganisms within the aquatic systems as a result of critical system alterations likely from CBM development including water volume,**

temperature, alteration to natural seasonal changes, and water quality. The DEIS focuses largely on fish specie impacts, as though fish existed independently of the multitude of micro organic systems in the waterways. The multitude of organisms indigenou to the complex aquatic food chain systems is critical to the survival of other species up and down the chain. To simply be concerned about how toxic effluent components may or may not directly impact the fish species, at the top of the aquatic chain, is to deny the integrity of the system as a whole.

- **The DEIS does not adequately reflect the complex diversity of the ecology of the Powder River Ecosystem relative to the connectivity of the land and water networks that are fundamental to the makeup and health of the overall river system. In order to maintain the integrity of the existing systems, the DEIS must utilize more thorough studies which currently exist and conduct studies where needed to formulate a more accurate picture of the unique riverine communities of the area.** Quality of water flowing into the rivers is but one of many factors that can impact the river ecosystem as a whole. The nutrients, water temperature, and quantity (or lack of) which flow from the headwater systems (both ephemeral and perennial) which are all highly influenced by the adjoining riparian zones are as important as waters which may flow directly into the mainstem rivers. Any change in the delicate balances of these elements, which have evolved over thousands of years, can dramatically impact the aquatic life of the project area rivers.

It is impossible to assess impacts when a thorough, baseline picture is lacking of what exists before impacts take place. Once a pre-impact ecosystem map is in place, responsible agencies must evaluate impacts by monitoring both pre and post mining development. As indicated in the attached analysis by J. David Allan, Ph.D., "This monitoring should examine key aspects of the physical, chemical, and biological condition of the riparian ecosystem and the river ecosystem."

Negative impacts to the riparian areas of the aquatic systems within the project area can, in turn, negatively impact the avian community and all other wildlife which depend on the riparian areas for their survival. Dramatic increases in water quality or quantity as well as changes in seasonal flows must be factored into the assessment of the impacts on the wildlife in the area.

In conclusion regarding these comments specific to aquatic species and environments, the DEIS is seriously inadequate in its assessment of the complex and numerous factors which can negatively impact the aquatic species and aquatic environment of the project area. Of particular concern is the piecemeal assessment of an area where the various components are highly interdependent and must be assessed within the context of this interdependence. This deficiency is compounded by utilizing the assumption that only 20% of the CBM produced water will reach the water systems of the project area without quantifying that percentage. Hydrological studies suggest that this is a speculative guess

at best. Of equal concern is the lack of scientific studies utilized in drafting the DEIS. Inclusion of these comments and the attached referenced scientific studies is essential if the final EIS is to have the substance and integrity needed to meet the fundamental purpose of formulating an EIS. Failure to do so will compromise the ability of the BLM and other federal agencies to utilize the EIS in addressing and mitigating environmental issues as the project develops.

VISUAL RESOURCES & IMPACTS - 3-173 to 181, 4-249 to 260

The description of the scenery of the area is over simplified and understated. Contrary to what the document states there are extensive, large areas of the project area that remain natural and undeveloped and there is not widespread mineral development throughout the area. In fact, the mineral development has been centered north and south of Gillette in a very specific corridor and is much sparser in other areas of the Basin. Contrary to what the DEIS states, the scenery on the western side of the Basin is rather spectacular and much of the property is valued-based on the scenery. Furthermore, the middle portion of the Basin is also known for unique and varied scenery, quintessential for western landscape. It is not at all common place.

Furthermore, the statement that "oil and gas pumping units and associated well pads and access roads are evident through the Project Area," is completely false! Oil and gas pumping units only became very extensive south and just north of Gillette in the last several years as a result of CBM development. Additionally, north and west areas in the Basin have only begun to be impacted on a much broader scale by oil and gas development. Up to this point development has been concentrated in a few areas within the Project area. It is absolutely incorrect to classify the majority of the Project area for Class VI visual management objectives. The majority of the Basin should be managed as a Class II or Class III area.

Page 3-181, is again exposing the ignorance and bias of the authors of this DEIS by stating that "Most of the Project area is not visually sensitive due to its remoteness from viewpoints used by the public." And "In general, residents and other users of the area are accustomed to viewing existing mineral resource development, but could be sensitive to increased levels of development." The people who live, travel and recreate on the public and extensive private lands in these areas are highly sensitive to the industrial development on the landscape. Who is the document referring to in making these sweeping generalizations? Furthermore, residents, with the exception of those living near Gillette, are not accustomed to viewing existing mineral development. Where does the BLM get this idea or this information? Viewed both from the air and from the ground the transformation of the landscape that has and is undergoing CBM development is a dramatic change.

On page 4-251, it is incorrect to state that "There would be no long-term effects to the landscape once the pipelines are installed and reclaimed." Accepting inclusion of this statement in the DEIS indicates BLM's ignorance regarding the area. Pipelines that have

been installed many years ago - pre CBM development are still visible. Pipelines that have been installed just a few years ago and supposedly reclaimed are also very visible.

The truth is that the entire visual nature of the Powder River Basin will change with this proposed development and not just slightly but in a very dramatic and shocking nature, akin to putting up billboards all over the face of the Grand Tetons. The BLM must put some very significant effort into ways to mitigate and reduce these impacts.

NOISE IMPACTS - 3-192, 4-270

The DEIS fails to adequately describe the solitude enjoyed by rural residents of the Powder River Basin. It also fails to fully establish the baseline level of quiet in rural areas and instead makes guesses at the background level. It also fails to distinguish between a constant ongoing 24 hour a day 7 day a week roar from compressor stations and drilling rigs and intermittent noise. It also fails to discuss the health effects of exposure to higher, constant levels of noise a condition which is also well documented and should be discussed in this DEIS, particularly in light of the complaints by residents regarding existing compressor station noise.

The DEIS also fails to provide any mitigation measures for decreasing noise levels. There are many technologies and best management practices available for reducing noise levels of compressor stations, including but not limited to, special mufflers, enclosed buildings and underground or bermed construction. The BLM should require compressor stations for the development of federal minerals to be constructed using BACT for noise controls.

SOCIAL AND ECONOMIC IMPACTS

General Comments:

BLM should prepare one document rather than two to assess the impacts of a development that spans two states but pertains to one basin. Baseline information, from which assumptions and correlations are routinely made, are entirely different in the two documents, which means they cannot be used together in order to examine those cumulative effects that occur basin-wide, without achieving contradictory results. Many ranches in the Powder River Basin cross the Wyoming-Montana state line, as do many of the proposed CBM operations. Some of the impacts of these operations on people living in the basin need to be assessed on a regional basis, rather than in isolation because the state line bisects them. For example, the impact of the noise and light of a compressor station, within a few miles of the Wyoming-Montana line will be felt across that line and needs to be analyzed as such.

The current boom of coalbed methane development in the Project Area differs markedly from previous energy booms such as the coal boom of the late '70's through the mid '80's. Whereas the coal boom consisted of site-specific and geographically contained developments, coalbed methane development is scattered in nature, and is rapidly proliferating from Campbell County into Sheridan and Johnson County. For this reason,

BLM's analysis of the effects of 50,000 CBM wells on the human population must focus on cumulative impacts spread over the entire region.

We wish to direct BLM's attention to the definition of "Human environment" in Section 1508.14 of the NEPA Regulations:

"Human environment " shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

In Section 1508.8 under "Effects", the Regulations state:

Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

Finally in Section 1500.2 under (NEPA) "Policy", the Regulations lead federal agencies to:

(e) Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.

(f) Use all the practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

These citations are included to remind BLM of their obligation under NEPA to analyze the "human environment" as an integral part of the "affected environment", and that part of the dynamic of the Proposed Action is the disproportionality of social and economic impacts on local populations. BLM must analyze the split mineral estate issue in terms of its disproportionate effects. BLM must also identify and assess alternatives that avoid or minimize the adverse effects of CBM development upon the quality of the human environment. BLM's preferred Alternative does nothing toward avoiding, preventing or even mitigating any of the adverse effects of 40,000 new wells on the human environment.

Comments by Section and Page Number:

Estimates of employees needed during the production phase are underestimated. Many more direct employees and secondary employees will be needed than are forecast, as many as two to three times the number BLM estimates. The subsequent social and economic impacts need to be reevaluated. In addition, in an area with 4% unemployment, it is highly unlikely that all of these people will come from the existing workforce. In fact all three counties have already seen a significant influx of persons seeking employment in CBM, as evidenced in housing shortages and pressures on law enforcement facilities.

The projected need for accessible recreation land is underestimated because of the above underestimation of workforce needs. As a result, there is likely to be severe pressure on the limited recreation opportunities available in the area. BLM is required under its multiple use mandate to "make ample allowance for recreational requirements along with mineral development." BLM needs to analyze increased pressure on campgrounds, trails, roads and roadless areas in the Black Hills and in the Bighorn National Forest, as well as the increased need for patrolling in Wilderness, and enforcement of off-road regulations. BLM's discussion of noise fails to address the constancy of the noise of a compressor station, for example. A low constant sound is considered as noisy if not noisier than a louder, non-constant noise, especially at night.

Under Socioeconomics: The population and workforce increase is underestimated. Sources for projected population figures are out of date, and out of line with what is actually occurring. According to a Pedersen Consultants study, which was commissioned by the Wyoming Energy Commission, CBM activity in Campbell and Johnson Counties has caused a growing instability in the local labor forces. Government officials are having difficulty maintaining qualified personnel in key positions because they must compete with higher paying positions in the private sector and with CBM. This means in turn, the cost of government operations will continue to rise, even after the boom.

3-196 Housing According to the Pedersen study, increased housing costs in Campbell County have increased the overall cost of living for most households. This stress has led to increases in petty theft, domestic violence, and other criminal behavior. The elderly tend to be disproportionately affected by cost of living increases. According to boom town studies done during the coal boom of the late'70's, the problems resulting from energy development, compound further the normal problems older people face, and may promulgate crises and even life threatening circumstances. The elderly have greater needs for health services than other segments of the population, which further exacerbates the situation.

Similar housing problems-both cost and availability-exist throughout the Project Area. Sheridan has a serious lack of affordable housing, partly due to the influx of a few hundred residents since 1998 to work in CBM and related services. Land values have escalated in recent years due to an influx of wealthy residents seeking scenic and aesthetically pleasing surroundings. However, CBM developments outside of Sheridan have already begun to impact property valuations in the vicinity. There are few housing vacancies in the town of Sheridan, and trailer parks are full.

Buffalo is experiencing similar housing shortages and affordability difficulties as Sheridan. According to community leaders, there isn't enough affordable housing for those employed in Johnson County's tourist industry or in federal government positions, much less the CBM industry.

3-198 The document mentions the Sheridan County detention center as having been directly affected by CBM, but fails to mention Johnson County or Campbell County, both of which have had similar experiences.

3-200 BLM avoids discussing quality of life issues specifically, deferring instead to what is termed "site-specific factors within the EIS, which might affect the quality of life. BLM also needs to look at quality of life concerns in terms of their cumulative impacts. People in all walks of life are experiencing social and economic upheavals never before seen in the Powder River Basin-not with the oil boom, not with the coal boom-and this is from existing CBM development; we can only conjecture what the cumulative effects of the social and economic turmoil already occurring will be when multiplied fourfold. But BLM has a responsibility under NEPA to analyze quality of life concerns-not to write them off as a matter of "personal perspective."

3-201 Environmental Justice: The impacts of immigration from the Crow and Northern Cheyenne reservations because of increased job opportunities need to be addressed. Also the impacts on these tribes as downstream water users and as air shed recipients, particularly in light of Northern Cheyenne Class I status, need to be analyzed. There is no discussion on the disproportionate human health or environmental effects on minority populations. For example, what are the health effects of high SAR on fish or humans? There is no discussion about the significance of subsistence hunting and fishing by tribal members, and what impacts of CBM development on wildlife and fisheries will also affect tribal populations, and subsistence patterns. BLM must look at these cumulative and overlapping impacts. NEPA requires an analysis of "differential patterns of consumption of natural resources." When applied to subsistence patterns, this means different rates and/or patterns of fish, water, vegetation, and/or wildlife consumption among minority populations, low-income populations, or Indian tribes, as compared to the general population. In addition to the Crow and the Northern Cheyenne tribes, there is an Amish community living in the Tongue River Valley of Montana that qualifies as an "environmental justice" community. The potential for elevated SAR levels on water quality and on soils may have an impact on fisheries and irrigation downstream, where traditional eating patterns and lifestyles rely upon pristine water and soils. The impact of high SAR water on irrigation in the Amish community must be considered, particularly because the Amish practice subsistence agriculture.

Low income and minority populations may have increased vulnerability to environmental degradation due to social, cultural, and economic circumstances. There should be some discussion of such issues as low birth weight babies, inadequate nutrition, and limited access to health care. There is no discussion of health effects to any groups. And although there is limited discussion of air emissions, there is no discussion about the effect they

will have on minority and low-income groups. This must be rectified, particularly in relation to the Northern Cheyenne Class I Status.

4-244 Transportation: There has been a substantial increase in traffic accidents on county roads in areas of CBM development. BLM needs to address this.

4-245 BLM needs to address the traffic increases associated with visits to compressor stations, and provide the estimated number of visits.

4-252 BLM needs to address the visual impact of atomizers, which, when placed on ridgelines can be seen from a distance of 20 miles.

4-272 Socioeconomics: Effects to the socioeconomic structure of Campbell, Converse, Johnson, and Sheridan Counties will occur over a much longer period than the 10 years the document predicts, and if all the proposed development actually takes place, a much longer period than the 20 year production phase. The fallout from CBM development in the three counties thus far impacted has already been substantial, particularly in the areas of roads and road dust, where dust emissions are impacting cattle grazing and human health, economic impacts to ranching operations-particularly ranchers who don't hold mineral rights and therefore stand to gain no royalties from the development, and at the county levels where social services are unable to keep pace with development.

Dr. Thomas Goerold, of Lookout Mountain Analysis, questions some of the assumptions and methodologies used by BLM regarding the economics and cost/benefit analysis of CBM. First, he points out that, using \$2.25 per mcf, BLM predicts Alternative I will contribute a sales value of nearly \$35.4 billion over the life of the project to the local, state, regional, and national economies from sales of CBM. They further predict a total sales value of \$5.5 billion on the 3,200 conventional wells in the project area. He asks why has BLM chosen a 50% success rate for conventional wells and a 100% success rate for CBM? Also, BLM has assumed the natural gas prices will remain stable for 20 years. Is this a reasonable assumption? Also, why hasn't BLM included in their analysis the associated facilities or equipment and supplies from the development? Finally, why hasn't BLM conducted a cost/benefit analysis to support the assertion that Alternative I "provides for the best balance of effects to costs and development of the CBM." According to Dr. Goerold, critical data lacking from the document for conducting an adequate cost/benefit analysis include 1) Capital, operating costs and profitability of currently operating wells, as well as for new wells in the Powder River Basin, including water production and disposal options; 2) Profitability estimates of CBM ventures vis a vis the risks to communities that tie their economic futures to the development (Is bonding high enough to cover costs of abandoned wells and full reclamation?); 3) Estimates of water treatment options that might be "affordable" within companies' profit margins and which would lessen impacts to ranching operations and communities (ie. reinjection, desalinization, or down hole gas and water separation); 4) Estimates of the value of all resources in the cost/benefit analysis, including those that exist on the surface (ie. water resources, soils and vegetation, wildlife and fisheries, and private property values); 5) Estimates of foregone and opportunity costs of resources, including the

opportunity costs of developing the gas over time, in a staged, orderly way that ensures a supply for future generations.

4-275 Population: BLM states that additional jobs from CBM development will result in improved and or additional community needs, such as schools, utilities, and transportation systems. What about the impacts on these areas from the increased population?

BLM predicts that people might "relocate to the area for a limited period of time" during the construction phase of the project, and that "only a small to moderate increase in population growth would occur." This is a misleading assumption, especially since there has already been an influx of people looking for employment in CBM.

Under employment, BLM again assumes workers will be hired from the local labor force. BLM must identify the source of CBM employees in order to predict the demands on local social services and infrastructure. BLM again underestimates the number of employees needed for a development of this magnitude, as well as the number of secondary jobs that are created as a result of CBM. There is a snowball effect on impacts from this many workers, and BLM should take into account current impacts in communities such as Gillette, Arvada, Sheridan, Clearmont, Wright, and Buffalo. Increases in need for county road maintenance, alone, represent an employment increase. Specialized workers are expected to reside in motel rooms for 6 months each year during the construction season, which means they would be competing with the tourists for these rooms. BLM needs to look at the impact of this development on the tourist economy, a yearly sustainable source of income these counties depend on. What are the opportunity costs here?

4-276 BLM admits they can't develop "exact projections of employment," nor which counties within the project area employees would live and work-even though they have already assumed most of the jobs would be hired from the local labor force. Wouldn't these people who are being hired locally already have homes? These statements are contradictory!

4-278 BLM describes the typical phases of boom and bust that can be expected from development on this scale, and then, under Potential for Boom/Bust Cycle, they assert the potential for substantial boom/bust is "low." BLM's solution to boom/bust is to add more wells, as though the bust could be delayed forever. They further state that the economies within the project area have been subject to the fluctuations of resource extraction historically, and are therefore "less sensitive to this phenomenon than other areas." This does not make them immune to boom/bust!

BLM states that there are expected to be fluctuations in natural gas economics associated with the development. A boom that relies almost entirely on gas prices for its momentum is bound to suffer periods of bust. In fact, based on the nature of CBM development as it has occurred thus far, there will probably be a series of boom/bust cycles in the Powder

River Basin, making planning for dealing with impacts extremely difficult. Bonding levels need to be set with this fluctuating set of circumstances in mind.

4-279 The need for housing is again underestimated for the entire project area; the assumption that "the majority of employees would live in Campbell County." Is misleading. Why would they live in Campbell County when they work in Johnson or Sheridan County? Please see 3-196 for discussion on Housing.

Community Facilities and Services: Project activities will most certainly result in increased traffic and use of roads, as even without this project, traffic has been a problem, along with increased costs of maintenance to county special districts. BLM underestimates the snowball effects of any increase in population on water and sewer, or local landfills, which in Sheridan County is near capacity.

4-280 BLM states that "law enforcement, fire protection services, and medical are not expected to experience substantial effects as a result of Project implementation." The Pedersen study states that "as a direct result of recent CBM development, the County Sheriff (Gillette) has seen an increase in larceny, destruction of private property, family violence, and child abuse." They mention drugs and alcohol as being directly related to these crimes, that these crimes are tied in with the type of population moving in to the area, and that there is a lack of law enforcement and social services to deal with them. Campbell County is adding 36 cells to the jail, which will bring it to capacity. Police calls increased by 7% in one year in Gillette, while vehicular accidents increased by 18%, and the number of criminal arrests increased by 12%

According to Pedersen, prior to the CBM boom, in 1997, the Campbell County Fire Department responded to 1,169 emergency calls; in 2000 the number went up to 1,631, which reflects a 40% increase in three years.

The lack of safety standards in the areas of coalbed methane exploration and production has intensified the problems; The City of Gillette's attorney has been working with the Fire Chief to develop some standards, but as of the writing of the Pedersen report, none had been adopted.

Social Services Food pantry statistics from the Council of Community Statistics reveal an influx of over 3000 low-income adults and children receiving Campbell County food services each year. In 2001, this average began spiraling upwards, according to Pedersen. This reflects the fact that a larger portion of the population lacks the technical skills or possesses poor work habits, making many applicants ineligible for available jobs in CBM and related employment areas. Rising housing costs only exacerbate the problem; Gillette is now second only to Jackson in cost-of-living indexes. The Council of Services provided non-emergency housing to 80 persons in 1998, and in 2000 the number went up to 238. There are limited subsidies available in Campbell County for Section 8 housing, which means that for two years in a row, families spending more than half of their income for housing-meaning they were eligible for Section 8-could not apply.

According to Pedersen, Sheridan and Johnson Counties have been impacted by energy development during the past 3-4 years, but not to the extent of Campbell County. Primarily impacted have been county roads and municipal utilities, law enforcement, and housing. Lack of affordable housing is a problem in both Sheridan and Buffalo, partly as a result of influxes of wealthy people buying up land and driving up property values.

Increased road usage in the two counties from CBM development has increased costs of road maintenance and repair. Significant dust emission problems along county roads have caused chronic coughing in horses in some areas of Sheridan County. Ranchers in the Buffalo area have complained about an increase in traffic speeding along county roads because of CBM.

The number of arrests in Sheridan County rose 14% between 1999 and 2000, many associated with assault and drug abuse. The number of assaults almost doubled in the same period. In Johnson County, similar crimes increased by 12% between 1999 and 2000. The Sheridan County jail has reached capacity and law enforcement officials have begun doubling up cells to accommodate the increase in inmates.

Quality of Life: BLM has avoided any real discussion of this issue by focusing on a hodge podge of what they consider the elements determining quality of life (ie. local economy, visual effects, traffic congestion, climate and air quality, community facilities and services, and community values; at the end they throw in a couple of sentences on crime, and a paragraph on property values. The whole discussion takes up less than two pages. BLM is unable to define "quality of life", yet they state that "no one would be in favor of a "poor" quality of life." In reality, "quality of life" considerations are a conglomerate of every aspect of life (including but not limited to those elements listed by BLM.) As BLM correctly points out, quality of life perceptions are subjective and personal, and they do vary considerably. "Quality of life" is a concept that cannot be quantified, and as such it tends to be somewhat abstract. It includes the "tangibles" listed above, but it also includes a whole set of "intangibles" that BLM has not attempted to identify, much less analyze; their mention (and dismissal) of "community values" is the closest they come to even acknowledging such intangibles exist.

BLM has failed in this document to analyze any of the social impacts of the Proposed Action, even though the social consequences of developing 40,000 new coalbed methane wells in the Powder River Basin will be enormous. The social impacts of the development that has already occurred, in fact, has had the effect of altering peoples attitudes, lifestyles, social relationships, and means of coping with the uncertainties of life brought on by CBM development in irreparable ways. Yet BLM has made no attempt to gather any of the social impact materials crucial to an understanding of these forces. Where is the social scientist-not to be confused with economist-on this study? Some of the social impact concerns that might have emerged had BLM considered social impacts are: the fragmentation of community and family relationships; the increasing loss of local control and powerlessness, both in terms of decisionmaking at the community and political level, but at the household and private property level; the breakdown of such rural values as "neighboring", reciprocity, and trust; the increasing perception on the part

of local residents that the future is uncertain-for them, for their children, and for the social relationships that make up their lives; the disintegration of human/land relationships and traditional systems of land stewardship; and the emerging redefinition of property values and social class systems based on ownership versus non-ownership of mineral rights. BLM should keep in mind that many of these social impacts are cumulative and overlapping, and as such will have even more serious consequences than when considered individually.

Local Economy: BLM states that "Employment opportunities and economic stability are a positive factor in the quality of life.", yet they do not look at the other side of the equation: The social costs of high employment on community stability, and the inevitable boom-bust cycle associated with the resource extraction industry.

Visual Effects: BLM uses such expressions as CBM wells "dotting" the landscape, and new road and pipeline corridors being "noticeable" during active development of CBM. They maintain "These features may affect one's perception of quality of life in terms of a visual impact experienced primarily during outdoor recreational activities in the Project Area."

BLM needs to tour Lower Prairie Dog and Beattie Gulch in Sheridan County and then make that statement! This is a complete misrepresentation of what types of visual impairment actually accompany CBM development, including entire networks of roads and raw dirt corridors, which connect power lines, pipelines, drill pads, and industrial scale compressor stations, and enormous waste pits. These intrusive structures, and the permanent scars from massive amounts of soil and vegetation disturbance in a primarily prairie landscape are best described as "rape and pillage", and BLM has not disclosed the extent of the irreparable damage that will occur.

Traffic Congestion: BLM has failed to mention how bad the traffic situation already is on these roads, and they have vastly underestimated the number and type of roads which will be affected. What about all the new roads, and all the dust from these roads? BLM has left out county roads.

Climate and Air Quality: BLM claims that " implementation of the Proposed Action is not anticipated to have significant effects to regional air quality." This is simply not true. (Please see our comments on Air Quality concerns, as well as those comments submitted John Molenaar of Air Resource Specialists, Inc.

Community Facilities and Services, Community Values: BLM underestimates the demand on existing services, which are already being taxed by CBM development. (See above discussions on housing, law enforcement, health services, and other community services.)

Community values have already undergone massive upheaval, and will continue to do so as development continues. This subject belongs with social impacts (under the "intangibles" discussed above), not thrown in with community facilities and services.

Crime: BLM's statement, "There is no information available that links natural gas development to increases in crime in a particular area." is ludicrous, but it helps to illustrate just how shoddy the research was that went into the development of this document. As discussed above, crime has been on the increase in the tri-county area for the past three to four years (see Pedersen study). And to add to an increasingly serious drug situation in Campbell County, there has been another bust of a methamphetamine lab in Gillette just in the last two weeks!

Property Values: BLM has pointed out one of the economic dichotomies that accompany industrialization in rural areas. The price of property (including rental property) escalates for people living and working in communities undergoing development-particularly for median income people-and property values in areas adjacent to the development plummet, rendering property owners unable to recoup their investments. BLM needs to address the serious implications of this dichotomy rather than declaring them unquantifiable.

Appendices:

BLM must analyze the effects of the following practices and materials on landowners and residents of the Project Area:

The increased use of pesticides to control noxious weeds on human health;
The use of hazardous materials associated with drilling, completion, and production phases of development on human health, including the potential for spills and accidents, improper disposal, and storage; these may include spent hydraulic fluids, used engine oil, paint, chemical rinsate, pipe dope, completion and stimulation fluids, and containers;
The impacts of air contaminants on human health and ambient air quality-road dust, and well production equipment, including diesel generators, separators, storage tanks, engines and dehydrators.

Conclusion:

BLM must consider the split estate issue in terms of the disproportionality of the effects of CBM development on landowners and homeowners in the Powder River Basin. People without mineral rights are being treated as second class citizens, they have no power of negotiation with companies developing on their private property, and they are bearing a disproportionate share of the impacts. This is not right, and BLM needs to level the playing field. Other residents that have been ignored in the process of developing CBM are rural subdivision dwellers; even the lives of residents on the outskirts of towns are being threatened by the unfettered, unregulated nature of CBM development. The cumulative impacts of another 40,000 wells on Powder River Basin residents must be taken into account and addressed by BLM.

CONCLUSION:

The members and staff of the Powder River Basin Council, implore you to seriously consider these extensive, well thought out and scientifically backed comments. It is clear,

given the extent of critical review from the general public, scientific community and other federal and state government agencies, that the DEIS is gravely inadequate and must undergo radical review and change before it can be in compliance with the law. Failure to seriously consider our comments and those of the scientific community, to which we have turned for sound assessment, could only be regarded as negligence on the part of the BLM.

The BLM would be gravely remiss not to take advantage of the valuable information and expertise that these and other comments represent regarding the deficiencies of this DEIS and the concurrent need to redo the DEIS. Ignoring or neglecting these comments promises to seriously delay the process of moving forward with the final EIS and the prudent development of coalbed methane minerals in the Powder River Basin.

The public, to whom all agencies are ultimately responsible, fully expects for the EIS process to grant the kind of environmental review and protection that NEPA assures. If the final EIS fails in that regard, the courts end up being the public's only recourse, a path which we would all surely hope to avoid. In that light, and consistent with the regional and national message for all players to work collaboratively in these types of processes, our staff and members are open to and in fact would welcome the opportunity to be utilized as a resource to be called upon and/or to sit down at the table with the BLM in the development of a revised DEIS.

Thank you for your serious consideration and inclusion of these comments.

Respectfully submitted,

Nancy Sorenson, Chair
Board of Directors
Powder River Basin Resource Council

Eric Barlow, Chair
CBM Task Force
Powder River Basin Resource Council

Kevin Lind, Executive Director
Powder River Basin Resource Council

Jill Morrison, Sr. Organizer
Powder River Basin Resource Council

Gillian Malone, Organizer
Powder River Basin Resource Council

Pennie Vance, Organizer
Powder River Basin Resource Council