APPENDIX E
DEIS COMMENT LETTERS

Name	City, State	Received
1. Prairie Springs Ranch	Gillette, WY	6-15-99
2. CMS Energy Oil & Gas	Houston, TX	6-15-99
3. Holland & Hart	Jackson, WY	6-15-99
4. National Mining Association	Washington, DC	6-15-99
5. COGEMA Resources, Inc.	Mills, WY	6-15-99
6. Department of the Army	Omaha, NE	6-21-99
7. Kathy Moriarty	E-Mail	6-22-99
8. Gerald Kresge	E-Mail	6-22-99
9. Office of Federal Land Policy	Cheyenne, WY	6-22-99
9a. Wyoming Game & Fish Department	Cheyenne, WY	6-22-99
9b. Wyoming State Geological Survey	Laramie, WY	6-22-99
9c. Wyoming State Engineers Office	Cheyenne, WY	6-22-99
10. Anonymous	E-Mail	6-23-99
11. Scott Phinney	E-Mail	6-23-99
12. Scientific Geochemical Services	Casper, WY	6-24-99
13. Anonymous	E-Mail	6-24-99
14. Devon Energy Corporation	Oklahoma City, OK	6-25-99
15. Neil O. and Jennifer S. Miller	E-Mail	6-28-99
16. E. Barlow	E-Mail	6-28-99
17. Wildlife Management Institute	Fort Collins, CO	6-28-99
18. U.S. Fish & Wildlife Service	Cheyenne, WY	6-28-99
19. Pam Christensen	Sheridan, WY	6-29-99
20. Office of Federal Land Policy	Cheyenne, WY	6-30-99
20a. Department of Environmental Quality	Cheyenne, WY	6-30-99
21. Gary and Louise Kay	Gillette, WY	7-1-99
22. Peter J. Dube	Buffalo, WY	7-1-99
23. City of Gillette	Gillette, WY	7-2-99
24. US Bureau of Reclamation	Rapid City, SD	7-2-99
25. Kris Korfanta	E-Mail	7-6-99
26. Gillette Area Groundwater Monitoring Organization	Gillette, WY	7-7-99
27. Gene R. George & Associates, Inc.	Casper, WY	7-9-99
28. Mark Winland (WY Wildlife Federation)	Cheyenne, WY	7-13-99
29. True Oil Company	Casper, WY	7-13-99
30. Enron Oil & Gas Company	Denver, CO	7-13-99
31. Thunder Basin Coal Company	Wright, WY	7-13-99
32. Richard L. Innes	Casper, WY	7-14-99
33. Tom Bell	Lander, WY	7-14-99
34. Powder River Basin Resource Council	Sheridan, WY	7-14-99
35. Prima Oil & Gas Company	Denver, CO	7-14-99
36. Petroleum Association of Wyoming	Casper, WY	7-14-99
37. Kennecott Energy	Gillette, WY	7-14-99

Name	City, State	Received
38. Triton Coal Company	Gillette, WY	7-14-99
39. Wyoming Mining Association	Cheyenne, WY	7-14-99
40. Nancy Hilding	Black Hawk, SD	7-14-99
41. Office of Federal Land Policy	Cheyenne, WY	7-15-99
41a. Department of Environmental Quality	Cheyenne, WY	7-15-99
41b. Richard Chancellor (LQD)	Cheyenne, WY	7-15-99
42. Barlow Livestock	Gillette, WY	7-16-99
43. Biodiversity Associates	Laramie, WY	7-16-99
44. Wyoming Outdoor Council	Lander, WY	7-16-99
45. Lance Oil & Gas Company	Denver, CO	7-16-99
46. Rio Algom Mining Corporation	Oklahoma City, OK	7-19-99
47. Department of Environmental and Natural Resources	Pierre, SD	7-19-99
48. US Fish & Wildlife Service	Cheyenne, WY	7-19-99
49. Barrett Resources Corporation	Gillette, WY	7-20-99
50. US Forest Service	Lakewood, CO	7-22-99
51. US Environmental Protection Agency	Denver, CO	7-22-99
52. National Park Service	Denver, CO	7-22-99

1

Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort St.
Buffalo, WY 82834

BUREAU OF LAND MANAGEMENT
JUN 15
BUFFALO FIELD OFFICE

Dear Mr. Zander

Under the NEPA law, the BLM has to present a plan for mitigation of impacts, the plan has to be published in the EIS, and it has to be available for public comment. Furthermore, under NEPA the material in the EIS has to be presented in a way that is clear, concise, and easily understood. Throughout this Draft EIS document I find the lack of a plan for mitigation of impacts, and some data is erroneous, some is misleading, and some is fragmented and hard to locate. Mitigation plans are deferred for review in APD's and Sundry Notices, which are not included in this EIS and are not subject to public comment as required by NEPA.

PAGE

SOCIOECONOMICS (JOBS)

3-55
4-121 Socioeconomics is a big word for whether or not you will have a job in the
4-3 future as a result of this project. According to Wyoming Department of Employment, the largest group of workers in Campbell County are the 4,087 miners. The coalbed methane project is expected to provide at most 384 long term jobs over the life of the project. According to this EIS, CBM wells located in areas where future mining may take place will take precedence over coal mining as long as gas is being produced. This will impair future growth in the coal industry, and will cause an economic hardship to the largest industry in Campbell County. This hardship could last for 15 years or more, and we could lose the 4,087 coal mining jobs which are the backbone of our economy. At best, the coal industry will have to pay exorbitant amounts to the Coalbed Methane industry in some areas as the cost of staying in business. All this during one of the toughest coal markets in years.

Mitigation measures for the far reaching economic consequences of this project are omitted from the EIS. Furthermore, this information is fragmented in the EIS document, making the information hard to find. Both are violations of the NEPA law.

AIR POLLUTION

4-71 **Air Pollution:** Compressors which burn methane gas as their power source have been found to emit **formaldehyde, a known carcinogen. This is a potential threat to public safety.** The BLM did not publish the results of its research on formaldehyde emissions from this project in this EIS. However, **the current emission rate of 0.45 gm/hp-hr (982 tons per year of formaldehyde) is significant, and is considered a major source of pollution under the Clean Air Act. Anything more than 10 tons per year is considered a major source of air pollution. Furthermore, the pollution will be emitted over a large area and will impact a large portion of the population.** At the target of 0.077 micrograms per square meter, one person in one million gets cancer from the formaldehyde. As a result, BLM recommends that compressor stations be sited 10 kilometers (about 8 miles) from a residence. The proposed action includes 160 booster stations and 49 field stations for a total of 209 compressor stations.

2-4 **Proposed Alternatives:** The proposed alternative is for 3000 wells in the Powder Basin. According to this EIS, 890 wells exist and 2000 were permitted as of 12-24-98. Industry figures put permitted wells at 3000 at this writing. Therefore we have already reached the cap for CBM development under the proposed alternative, and exceeded the cap for CBM development under the "no action" alternative. The "no action" plan should not include any CBM wells in order to establish an accurate baseline for the study area. To accurately address cumulative impacts from the project, the industry goal of 15,000 wells must be used. Anything less does not accurately depict the cumulative impacts from this project.

3-40 **Endangered and sensitive species:** Special Status species in the study area are
3-45 Bald Eagle, Black- footed Ferret, Peregrine Falcon, Swift Fox, Mountain Plover,
4-12 Sturgeon Chub, Ute Ladies Tresses; 27 additional species are listed as sensitive.
4-87 Analysis is reported to have been done by a "fly over," this is not enough detail to analyze impacts to the species listed. The Powder River in Wyoming supports the largest known reproducing population of Sturgeon Chub. Eight tributaries to the the Powder River comprise one third of the study area, however the impacts to the Sturgeon Chub are dismissed. The wells in these drainages will pump much more water than existing development on the eastern edge of the project. Industry estimates are over 100gpm per well, which will cause much greater and more regular flows in the Powder River. Changes in pH are critical to fish and aquatic life, as are changes to TDS and salts. Since the water quality is variable, specific analysis must be done and included in this EIS in order to accurately assess impacts to fish and aquatic life, including the Sturgeon Chub. Field scientific study, using the facts about the water discharges and other ecosystem changes on the Powder River, needs to be done to accurately assess impacts to these species. Specific mitigation plans for these species are not included in the EIS, a violation of the NEPA law.

4-2 **Geologic Hazards:** Geologic hazards, including methane and hydrogen sulfide gas seeps, underground coal fires, explosive levels of methane in domestic water wells, and the contamination of homes has occurred in areas of coal mining and areas of methane development in Wyoming, as well as in other states. Wyoming State officials have refused to do baseline testing for methane gas in water wells and homes. Baseline testing by private citizens of Campbell County is being done, and has revealed indicators for geological catastrophe. Area water wells have been found to contain an increasing concentration of methane gas, for example one water well doubled in gas concentration to explosive levels within two years of active methane production near the well. Another water well tested in 1999 at 100% methane concentration, and now is subject to spontaneous combustion, the precursor for underground coal fires. Baseline testing, impact analysis, and a mitigation plan must be completed for the study area, and included in the Wyodak EIS document, with opportunity for public comment.

3-19 **Aquifer drawdowns: Table 4-3 shows maximum drawdowns in the coal**
4-61 **aquifers expected to be 600' and more.** Since there is some commingling of the aquifers naturally and because of the mechanical failures of wells and drilling activity, we can expect all aquifers to drop at a corresponding rate with Coalbed methane dewatering. This is confirmed by data from area monitoring wells. Although the Water Well Mitigation Agreement is required by this EIS, it isn't enough to address the future water needs of 32,000 people in Campbell County. Long range mitigation plans are needed in this EIS, plans that include the water needs of the cities of Gillette and Wright, as well as rural residents and ranch use.

Existing compressor stations are sited from one to two miles from residences. Unfortunately, the formaldehyde emissions will be widespread, emanating from 209 compressor stations, with homes, schools, workplaces, and towns scattered within and downwind of the study area. I recommend that all compressor stations in this project, including existing CBM compressor stations, be required to use electricity exclusively as their power source. This power source would protect residents in areas where they live and work from this carcinogenic threat. If methane powered compressors continue to be permitted, further testing, long range risk assessment, cumulative impact analysis, and a mitigation plan must be included in this EIS.

3-26 In the analysis of current air quality in the study area, the carcinogenic air pollutant Formaldehyde is omitted. Numerous CBM Compressor Stations are currently operating in the study area, many sited near homes and schools, and are self monitored by industry as a permit requirement. Emissions data for this pollutant could be easily incorporated into the document, providing accurate baseline data to the public. The long term risk from these existing sources must also be included in the document. Existing source pollution must be compared in units per cubic meter to the standard, which is also given in units per cubic meter, so that the public can understand their current risk from these existing sources. The data should also be graphically presented for ease of understanding, and should include wind patterns and distances from the source in miles, since kilometers are not the standard measure of distance in the study area. Cumulative impacts from all existing sources, as well as combined long range health risks from all existing sources, should be included in the data and the graphic presentation. The omission of data on existing sources of carcinogenic air pollutants is misleading to the public. Presentation of the data in non-graphic form, and using non-standard units of measurement, makes it hard for the general public to understand and is a violation of the NEPA law.

4-71 The analysis of impacts from the carcinogenic air pollutant Formaldehyde is misleading to the public, and some points are missed altogether. The proposed mitigation is to site the Compressor Stations approximately 8 miles (10 km) from homes. Existing Compressor Stations which pump Federal gas are sited much closer to homes, from 1 to 2 miles on average. Some Compressor Stations have been built near existing subdivisions and schools. Since future Federal gas production will be transported using some of the existing infrastructure, impacts and mitigation must be included for existing compressor stations, as well as future compressor stations, whether they are built on public land or not.

Long range risk assessment of carcinogenic and other air pollutants has been omitted from the document. Air pollution from this project will cause cancers and other respiratory disease. With Compressor Stations sited near homes and schools, the public needs to know their risk of cancer and respiratory disease from this project. How many children will contract cancer, pneumonia, or debilitating asthma? How does this EIS plan to mitigate their suffering? How many deaths will result? With a high rate of respiratory disease already occurring in the area, how much additional suffering will the general population have to endure? How will the four thousand coal miners, who will have to work downwind of the project, be affected by this assault of pollution on their lungs? Why isn't dust abatement required on the dirt roads used for CBM? Why aren't electrical compressors or other solutions required to protect the public health? Where is the mitigation plan that protects me and my family? It's time for the BLM to come down from their ivory tower, and look into the eyes of those whose lives they plan to ruin or end. The cumulative effects for this project must be calculated and presented to the public for review and comment.

4-75 **Air pollution, class I and classII areas:** Regional haze is expected to be an
4-76 impact in pristine areas of the Bighorns and the Black Hills, and some "acid rain" will impact Florence Lake in the Cloud Peak Wilderness. The amount of the impacts are considered to be an "acceptable change," and no mitigation plan is proposed for these impacts, as required by NEPA.

7-12-99 Wyodak Coalbed Methane Draft EIS Comments

4-4 **Water discharges and Flooding:** This Draft EIS omits water discharge data,
4-14 available from the USGS, for the water years 1997 and 1998. This data shows
4-134 more accurately the discharge flows from this project reaching rivers and dams in the study area, and should be included in this EIS. Discharge flows are understated, and recharge rates are overstated, and do not continue to increase once the ground is saturated. Discharges of 1.2 million acre feet are expected over the life of the project. Flooding is likely to occur in many areas due to the huge volumes of water being discharged, and construction of bridges may be needed on private and public roads. Specific Watershed Management plans and mitigation plans must be included in this EIS.

4-9 **Water Quality, NPDES Discharges:** Water quality is variable throughout the project. TDS concentrations of 764 mg/l are listed as representative of the water quality, yet a maximum TDS of over 4,000 is also reported in the study area. Will treatment be required for all TDS levels over 764 mg/l ? If treatment is not required, what mitigation measures will be taken for indirect discharges to waters containing aquatic life? Whole Effluent Toxicity (WET) testing is not required for water discharges in the Proposed Action, and is an EPA requirement for some bodies of water. Sedimentation and salts are also likely to pollute water bodies receiving discharge water. Specific mitigation plans for these impacts must be included in this EIS.

2-9 **Acres of Potential disturbance:** Acres of potential disturbance are under
2-10 reported, by a total of 93,409 acres. The largest area of under reporting is for
2-11 "improved roads to production pods," an error of 13,645 acres. The most notable
4-10 error is for drill sites and well sites. Drill sites are allowed one acre per site by surface owners. BLM is allowing 100' by 100' for drilling locations, not enough space to park the drilling rig and allow water, mud, and pipe trucks to turn around. Completed well sites are allowed one half acre by surface owners. The BLM is allowing 21' by 21' for completed well locations. This does not allow enough room for the pumper's pickup to be parked next to the well, or to turn around. Acres disturbed by water discharges are not included; one discharge can easily disturb 30 acres of rangeland before it reaches a body of water. In the Proposed Action, this could add up to an additional 75,000 acres. No mitigation plan is included for acres of disturbance, and reclamation procedures that are discussed do not include native plants.

3-54 **Noise Pollution:** Background noise for the area is 35 to 40 dba. **This draft EIS**
4-113 **allows 55dba , which is an impact of 15 dba and requires impact analysis and mitigation.** The Proposed Action requires 209 compressor stations, which will run with all their doors open for 6 months of the year for cooling. The EIS does not list the noise level of compressor stations with all their doors open, but the noise does carry for miles, and is similar to railroad locomotives. Imagine the noise from 209 railroad locomotives. The noise impacts from the project needs further study, and impact assessment and mitigation plan must be included in this EIS.

3-52 **Visual and Recreational:** According to the BLM, Campbell County is a classIV
4-111 area, and major modifications to the landscape are acceptable. The Draft EIS does
4-109 conclude that the project will cause visual impacts to scenery, but doesn't provide
4-13 for mitigation. Furthermore, the document concludes that there will be no impacts to recreation, because we own our land. Contrary to BLM opinion, recreational use of the land will be impacted as a result of this project. BLM proposes to forever change Northeast Wyoming from a prairie ecosystem with many roadless

areas of 5,000 acres or more and a rural character, into a polluted industrial site, extensively roaded, with little scenic value. No consideration has been given for impacts to private property values and tourism businesses such as outfitting. Most outfitters who operate in the Powder River Basin prairie ecosystem will probably be impacted by this project. No one wants to vacation in an industrial site. Mitigation plans for these impacts must be included in this EIS.

Sincerely yours,

Laurel S. McCoul

Laurel S. McCoul

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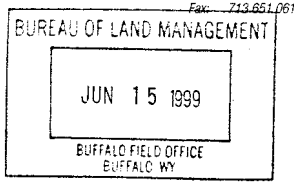

July 14, 1999

United States Department of the Interior
Bureau of Land Management
Buffalo, Wyoming Field office
1425 Fort Street
Buffalo, WY 82834
Attention: Mr. Richard Zander

Faxed to 307-684-1122, Federal Expressed on 7/14/99

Re: Wyodak Coal Bed Methane Project
Draft Environmental Impact Statement (DEIS)

Dear Mr. Zander:

CMS Oil and Gas Company ("CMS") is a coal bed methane operator with a fifty percent (50%) interest in over 500,000 acres of leasehold in the Powder River Basin. Approximately 35% of our leasehold is on federal lands. We appreciate the opportunity to comment on the Wyodak Coal Bed Methane Project, Draft Environmental Impact Statement.

GENERAL COMMENTS

While the introduction to the DEIS requests specific comments, CMS wishes to make several general comments that we believe are very significant to the EIS. First, CMS strongly supports Alternative 1 as the appropriate development model for the EIS.

Second, there are numerous cases throughout the DEIS in which the BLM appears to mandate/create regulation applicable to fee lands over which it has no jurisdiction. Below we will identify a few specific examples of this.

Thirdly, the DEIS assumes proposed CBM development to occur on 40-acre spacing. It is currently CMS's intent to locate wells in many areas on 80-acre spacing and there is the distinct possibility that 160-acre spacing or greater may be utilized in the future. This would obviously reduce surface impacts proportionately.

SPECIFIC COMMENTS

On Page 2-16, Paragraph 5 the DEIS shows possible ways in which mitigation could be accomplished at the cost of the operator. In the event the operator is deemed to be at fault, he should only be responsible for his proportionate share of mitigation costs. In preliminary baseline work, we have witnessed changes in the hydrogeological system absent CBM development (i.e. loss of head due to methane depletion from existing flowing stock wells).

On Page 2-17, the third paragraph addresses the PRAGMO concept and reporting. Operators should not be required by a regulatory agency to join an organization to represent its interests. While a company may support PRAGMO, the obligation to join such an organization should not be a requirement to operate on BLM property. Furthermore, CMS believes reporting should be to a single regulatory agency, specifically the Wyoming Oil and Gas Conservation Commission. We would change the end of the 4th sentence of the paragraph from "to the BLM and WSEO" to "to the WOGCC". We would also replace "the following specific activities will be required" in the fifth sentence with "existing regulations will be followed."

On Page 2-17, the first sentence under the subheading Groundwater: Add "for projects on BLM land" to the end of the 1st sentence.

On Page 2-17, strike the 2nd sentence of the second bullet. The WSEO does not currently require a monitoring plan.

On Page 2-17, 3rd bullet: The first sentence of the 3rd bullet should suffice "Periodic monitoring of static water levels in CBM production as required by the WSEO" and strike the rest of the bullet.

On Page 2-20, under the "Cost Share on Wells ....." heading, strike the last 2 sentences and replace with "the cost of BLM requirements above and beyond a basic monitoring well shall be borne by the BLM."

On Page 4-14, 7th Bullet, any discharge limitation created by this EIS must be subject to future study, analysis and possible correction of allowable and equitable discharge. Further, CMS questions the authority of the BLM to limit discharge volumes.

On Page 4-14, 8th bullet, CMS believes there will be instances where it will be beneficial to discharge water into a spring area (i.e. maintaining riparian habitat). Therefore, we believe that spring mitigation should be dealt with on a case by case basis.

On Page 4-15, 9th bullet, add "reasonable" before time frames and "operators" after landowners.

On Page 4-67, 1st bullet, last sentence refers to 1.8 acres of potential disturbance per well. While the word potential is certainly appropriate here, a more likely average would be around 1.1 acres (well site .22 acres, access/pipelines .9 acres). This only becomes significant if in your total impact analysis you utilize the 1.8 acres as your multiplier for basin wide impacts.

Under Appendix B, Standard Conditions of Approval for APD's, numerous requirements are made relative to watershed management and monitoring plans which appear to include non federal lands in their analysis. Approval of APD's should not hinge on the treatment of non-jurisdictional lands. Water management and monitoring plans must be limited to BLM

jurisdictional lands. Water management and monitoring plans off of BLM leases are between the landowner and operator and subject to jurisdictional regulatory authority.

On Page B-4, a class 3 cultural inventory may not be possible if the surface is privately owned and the landowner does not grant consent for the inventory.

Again, we appreciate the opportunity to comment on the Wyodak Coal Bed Methane Draft Environmental Impact Statement and we look forward to continued involvement and a timely completion of this process.

Respectfully submitted,

Michael D. Bernard
Environmental, Health and Safety Manager

3

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July 13, 1999

BUREAU OF LAND MANAGEMENT
JUN 15 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Via Federal Express

Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

Re: **Comments on the Wyodak Draft Environmental Impact Statement**

Dear Mr. Zander:

This letter provides comments on the Draft Environmental Impact Statement (DEIS) for the Wyodak Coalbed Methane (CBM) Project. Comments in this letter pertain only to cumulative impacts to Air Quality Related Values (AQRVs) in Class I and Class II sensitive areas and the modeling conducted to arrive at those impacts. For a number of reasons, we believe the cumulative AQRV impacts predicted in the DEIS are unrealistically high. Several problems exist regarding the methodology BLM used to predict cumulative impacts to AQRVs.

First, the model and source emissions for railroads does not recognize EPA's adopted Best Available Control Technology (BACT) for railroad locomotives. The estimate of emissions from locomotives used in the model are nearly twice those allowed by BACT. Any new locomotives used to transport Powder River Basin Coal would have to comply with BACT. BACT could be reasonably argued to apply to all coal transported from the Powder River Basin in excess of current production levels. This fact should be included in the model assumptions and the source emissions corrected.

Second, we have some questions regarding the methodology used by BLM in the CALMET/CALPUFF modeling. We contracted with Environ (CALMET/CALPUFF modeling consultant) to review the Wyodak Modeling Protocol and the CBM Project Air Quality Impact Analysis Technical Reference

Document. These were compared to similar documents/protocols for two other ongoing BLM Wyoming projects which are also using CALMET/CALPUFF modeling for prediction of air quality impacts. Environ's critique is attached in a memorandum to PIC Technologies, Inc. dated July 12, 1999. As you will see, the memo points out a number of inaccuracies in the model assumptions used for the Wyodak CBM Project.

In addition, the directions of rail traffic used to predict impacts is over-simplified. In fact, all the rail traffic was projected by BLM to run north-south along the existing joint line. Please be advised that DM&E Railroad is proposing to construct an east-west line between the coal mines and Wall, South Dakota around the south side of the Black Hills. DM&E's preferred route has been provided to BLM through right-of-way applications and should be modeled as part of reasonably foreseeable development. Assuming all incremental coal production would be transported down the joint line is unreasonable in light of DM&E's proposal. DM&E's specific route needs to be incorporated into additional model runs for the Final EIS (FEIS).

All of the problems pointed out in this letter lead to a gross overestimation of cumulative impacts to AQRVs in Class I and II areas. These problems need to be resolved and a more realistic estimate provided in the FEIS. A second model run with revised assumptions and accurate information is essential. In addition, we understand the BLM may have intentions of applying the Wyodak modeling results to other future projects (as baseline). This should not be allowed until BLM corrects the deficiencies pointed out in this letter.

Very truly yours,

Marilyn S. Kite
a Partner of Holland & Hart

MSK:tw
Enclosure

JACKSON:0016492.01

ENVIRON

MEMORANDUM

To: Mary Bloomstran, PIC Technologies, Inc.

From: Ralph Morris

Date: July 12, 1999

Subject: Review of the WYODAK EIS CALMET/CALPUFF modeling

INTRODUCTION

The Wyodak Coal Bed Methane (CBM) project proposes to drill, complete, operate, and reclaim approximately 3,000 new productive CBM wells and related production in the east Powder River Basin area in northeastern Wyoming (located in Campbell and Converse counties). The Wyodak CBM project is required to submit an Environmental Impact Statement (EIS) as part of the National Environmental Policy Act (NEPA) to evaluate the significance of the air quality and air quality related value (AQRV) impacts due to the proposed action and the cumulative impacts due to all existing and new sources. Of particular concern are the impacts of the Wyodak CBM project and other new sources on visibility degradation at protected sensitive Class I and II receptor areas including: Badlands and Wind Cave National Parks; Black Elk, and Cloud Peak Wilderness areas; Jewel Cave, Mt. Rushmore, and Devils Tower National Monuments; and Northern Cheyenne Reservation.

Two other recent Environmental Impacts Statements have been or are in the process of being prepared for the Continental Divide/Greater Wamsutter II/Baggs (CD EIS) and Pinedale Anticline (PA EIS) natural gas field developments. These studies also did cumulative emissions visibility impact assessment and produced fairly similar results when similar IWAQM/FLAG visibility screening methods were utilized. It is useful to compare the Wyodak CBM project visibility impacts with the two other EIS impacts to put them in context.

WYODAK CALMET/CALPUFF MODELING

Overarching Concerns

The analysis of the Wyodak CBM CALMET/CALPUFF modeling is based on the review of two documents: (1) the Wyodak Modeling Protocol (Greystone, 1998); and (2) the Wyodak

CBM Project Air Quality Impact Analysis Technical Reference Document (AQTRD) (Greystone, 1999). These two documents provide a very poor documentation of what observational data was used in the CALMET/CALPUFF modeling and how the data were used to post-process the modeling results to estimate the visibility impacts. In particular, the source of key input parameters including the terrain, land use, observed surface meteorological network, background ozone, background ammonia, source of relative humidity used in the visibility post-processing, CALPUFF dry and wet deposition parameters, etc. are not described. What little description provided suggests that the Wyodak CALMET/CALPUFF modeling was performed by an air quality modeler(s) with experience in applying EPA "cook book" methods for steady-state Gaussian plume dispersion modeling (e.g., ISC) for permit for near-source new source review (NSR) impacts assessment but with little CALMET/CALPUFF modeling experience. The Wyodak CALMET/CALPUFF documentation is insufficient and the explanations superficial, all of which suggests that the Wyodak air quality modeler(s) have little experience in applying the CALMET/CALPUFF modeling system. Thus, the lack of documentation of key input parameters raises concerns regarding their validity which can only be ascertained through examination of the model input and output files, which were not available for this review.

From what was provided in the documentation, we identified two overarching concerns regarding the Wyodak CALMET/CALPUFF modeling:

Fixation with Computation Time at the Expense of Performing the Correct Technical Modeling of the Sources Under Study: The computer run times of CALPUFF depend on the number of puff/receptor "hits" which in turn depends on the number and types of sources and number of receptors used as input. The Wyodak CBM project air quality modeling examined impacts at 7 sensitive receptor areas using only 195 receptors. The CD EIS and PA EIS performed their CALPUFF modeling using over twice this amount of receptors. More disturbing is the fact that the Wyodak CBM project CALPUFF modeling went to extensive efforts to reduce the number of sources by modeling diffuse sources as concentrated sources (e.g., the diffuse railroad line sources are treated as concentrated sources located every 10-km apart) and combining multiple sources into single sources to reduce the total number of sources. In fact, in some cases the Wyodak documentation suggests that different sources located more than 50-km apart were combined into a single source (Section 5.4.2.6, Page 5-34 of the Wyodak AQTRD), presumably this was done solely to reduce the computational time of the CALPUFF simulations. The concentration of emissions from many separate diffuse sources into a single source results in a concentrated plume with much higher concentrations than there should be and, consequently, much higher overstated impacts at the sensitive receptor areas.

Treatment of Chemistry and Equilibrium: Since the NOx emissions from the modeled sources and the resultant visibility impacts due to particulate ammonium nitrate appear to be the critical air quality related issue under study, we are concerned that the chemistry and sulfate/nitrate/ammonia equilibrium may not be treated correctly in the Wyodak CBM project

CALPUFF modeling. Since there is no mention of what background ozone and ammonia was used as input and these inputs are critically important, we can only conclude that the modelers did not examine this issue in detail and likely used the CALPUFF default values. The CALPUFF default background ammonia value is 10 ppb which is much too high for study area, likely over a factor of 10 too high for the northeastern Wyoming region and vicinity. Thus, if ammonium nitrate formation is ammonia-limited (which is likely given the simulation of the diffuse NOx emissions as concentrated plumes), the CALPUFF-estimated ammonium nitrate concentrations may potentially be a factor of 10 too high just due to the possible specification of too high background ammonia yet alone modeling the diffuse NOx sources as concentrated "point" sources.

Emission Inputs

The treatment of emission sources appear to be fairly reasonable (e.g., compressors as point sources and tailpipe emissions as area sources) with two notable exceptions:

1. The treatment of Coal Train Emissions (Section 5.4.2.5, Page 5-29) essentially treats these emissions as isolated "point" sources located 10-km apart concentrating their emissions thereby greatly overestimating their concentration impacts. Locomotive NOx, PM, and other emissions from a 10-km segment of railroad track are combined into a 3-m by 5-m area source (effectively a "point" source) with a 5-m release height. Locomotive emissions are in reality diffusive buoyant line sources with high initial dispersion due to the turbulence caused by the movement of the train, thus they should be treated as such in the CALPUFF modeling. As CALPUFF contains a buoyant line source input treatment, the reasons for treating locomotive emissions as an effective "point" source in the Wyodak CALPUFF is technically incorrect and not justified.
2. As discussed above (under Overarching Concerns) considerable effort was expended combining sources to limit the number of puffs being modeled in CALPUFF presumably to reduce computational requirements. By combining many sources (some over 50-km apart) into a single source, the CALPUFF modeling will greatly overestimate the calculated concentration impacts and resultant adverse effects.

CALMET Modeling

The CALMET modeling was performed on a 136 x 94 5-km x 5-km grid covering northeastern Wyoming and vicinity (see Figure 5-1 of the Wyodak CBM project AQTRD), CALMET was exercised for the 1990 calendar year to generate three-dimensional wind fields for CALPUFF modeling,

Terrain and Land Use: No information on the source of the terrain and land use data used in the Wyodak CBM project CALMET modeling was provided.

Meteorological Observations Used: An archived historical MM4 prognostic model database at 80-km resolution was used as input into CALMET to represent the gross synoptic characteristics of the 1990 meteorology. The 80-km meteorology was used with twice-daily upper-air meteorological observations from 5 sites, presumably an unspecified number of surface meteorological observations, and 4 precipitation observation sites in the area. The characterization of the upper-air meteorology (80-km MM5 plus 5 NWS upper-air observation sites), appears to be as good as you can do with available data for the 1990 year. Note that both the CD EIS and PA EIS CALMET modeling used MM5 output at 20-km resolution which would provide much better characterization of synoptic flows and perturbations of the flow fields due to large-scale terrain features which would not be present in the 80-km MM4 fields. Without knowing the number and type of surface meteorological observation sites it is impossible to comment on their adequacy and appropriateness. As a point of reference, the CD EIS and PA EOS used surface meteorological observations from, respectively, 22 and 48 sites. We believe that the CD EIS surface meteorological observation network of 22 sites, which failed to include over half of the available surface observations, may have been insufficient, or at least did not make use of all available data. The number of surface meteorological sites used in the Wyodak CALMET modeling should be comparable to the other studies. Using just 4 observed precipitation observation sites to characterize rainfall across the 680-km by 475-km Wyodak CBM project CALMET modeling domain is woefully inadequate given the spotty nature of precipitation. Again, as a point of reference the CD EIS CALMET/CALPUFF modeling domain, which is of comparable size as used in the Wyodak CBM project modeling, used precipitation observations from 67 sites. Similarly, the PA EIS CALMET/CALPUFF application, which used a smaller domain than the Wyodak CBM project, used precipitation observations from over 10 times as many sites as the Wyodak CBM project CALMET modeling.

CALPUFF Modeling

The CALPUFF model was used to simulate the impact of the Wyodak CBM project emissions and the cumulative emissions due to all new permitted and reasonably foreseeable development sources from 1995 on (post-1995 sources). As noted above, it appears that significant technical degradation of the CALPUFF modeling was made though extensive combination of sources solely to reduce computational requirements with no technical justification. It is our belief that these technical degradations in the Wyodak modeling analysis led to the extreme calculated visibility impacts in the cumulative impact scenarios. Again, as noted above, we also have concerns that the chemical conversion rate of SO2 to sulfate and NOx to nitrate and the sulfate/nitrate/ammonia equilibrium may also have some deficiencies. However, no information was provided on the background ozone and ammonia used and how the interaction

of source groupings was handled in the post-processing to make any definitive statements in this area.

CALPUFF Options: The CALPUFF options were based on the IWAQM Phase II recommendations (EPA, 1998) which were based on the CALPUFF4 model so do not include recommendations for some of the more advanced features of the CALPUFF5 model. For example, the IWAQM Phase II recommendations noted that the MESOPUFFII chemical mechanism was deficient in its treatment of some chemical processes but recommended it since it was the best mechanism in CALPUFF4. An improved chemical mechanism based on the ARM3/RIVAD model was added to CALPUFF5. Both the CD EIS and PA EIS CALPUFF modeling used the improved ARM3/RIVAD mechanism, however the Wyodak CBM project strictly followed the IWAQM phase II recommendations without regards to the recent advances and new capabilities of the version 5 of the CALMET/CALPUFF modeling system, thus the Wyodak CALPUFF modeling specified the MESOPUFFII chemical mechanism. The CALPUFF dispersion parameters and other options provided in the documentation strictly followed the IWAQM Phase II recommendations and, for the most part, appear to be consistent with those used in the CD EIS and PA EIS CALMET modeling.

CALPUFF Post-Processing: The post-processing of the CALPUFF modeling results to obtain visibility impacts appears to have followed the IWAQM/FLAG recommended approach. This approach uses a seasonal background extinction based on the mean of the 20 percent of the cleanest days from the IMPROVE reconstructed PM mass and seasonal relative humidity adjustment factors. The resultant incremental impacts from the CALPUFF modeled sources are compared with the 0.5 and 1.0 dv perceptibility threshold of the, respectively, National Forest Service (NFS) and National Park Service (NPS). This same approach is being utilized in the PA EIS visibility analysis. A similar approach, albeit with significant deviations, was also used in the CD EIS technical documentation (METHOD 2), but a less stringent approach was actually used in the CD EIS (METHOD 4 based on transmissometer data).

When using a similar approach (IWAQM/FLAG recommended methods) to assess the visibility impacts to the cumulative impact analysis (all new sources), the CD EIS and PA EIS estimated that the maximum number of days per year the NFS 0.5 dv threshold of perceptibility would be exceeded at any sensitive Class I or II area ranged from 5-10 days per year. The Wyodak CBM project cumulative impact analysis, on the other hand, estimated that the NFS 0.5 dv perceptibility threshold would be exceeded at sensitive Class I areas from 116 days (Badlands National Park) to 136 days (Wind Cave National Park) per year (Page 6-8 of the Wyodak AQTRD). Thus, the Wyodak CBM project cumulative impact analysis is estimating that "significant" ($>$ 0.5 dv) visibility degradation impacts occur at sensitive Class I receptor areas approximately a third of the days during the year. Using the same (or similar) visibility screening methods (IWAQM/FLAG method), the CD EIS and PA EIS analysis estimate that the cumulative emissions scenario results in such significant impacts ($>$ 0.5 dv) a tenth to fifth (5-10 percent) of the time that the Wyodak cumulative analysis estimates such a threshold

would be exceeded.

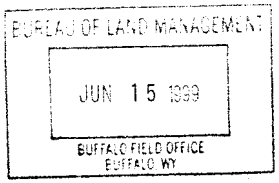
We believe that the high number of days of adverse visibility impacts in the Wyodak CALMET/CALPUFF cumulative impact assessment are mainly due to the incorrect characterization of diffusive emissions sources as concentrated sources (e.g., railway locomotive emissions are modeled as discrete "point" emission sources located 10-km apart; multiple sources are combined into single sources, some located more than 50-km apart from each other). Although there is insufficient information in the Wyodak documentation to determine this, we also suspect that the treatment of the chemistry/equilibrium of ammonium nitrate formation is inadequate and overstated in the Wyodak CALPUFF modeling.

4

National Mining Association

Harold P. Quinn Jr.
Senior Vice President
Legal and Regulatory Affairs
General Counsel and Secretary

July 12, 1999



Mr. Richard Zander
Bureau of Land Management-Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

Re: Draft Environmental Impact Statement for the Wyodak Coalbed Methane Project. 64 Fed. Reg. 26436 (May 14, 1999)

Dear Mr. Zander:

This letter responds to the Bureau of Land Management's (BLM) request for comment on the above-referenced Draft Environmental Impact Statement (DEIS) analyzing the potential impacts and cumulative effects of proposed coalbed methane (CBM) development on Federal lands and minerals for areas north and south of Gillette, Campbell County Wyoming. The National Mining Association's (NMA) members include the producers of more than 70% of the coal mined in the Nation, many of which operate mines and own or lease coal reserves in the area covered by the DEIS. Moreover, our members retain a continuing interest in acquiring additional coal reserves in the area in order to supply the fuel and products necessary for our Nation's continued economic vitality. Coal is the primary source of energy produced domestically, and provides the source of fuel for the generation of 57% of the electricity consumed in this country. See Energy Information Administration, *Monthly Energy Review*, February 1999 at 5, 95.

Because coal is an important source of energy and raw material in almost every phase of our national daily life and well-being, these comments focus upon two related issues: (1) the disposition and leasing of coal and CBM on federal lands; and (2) the conflicts in the development of coal and CBM resources when title and control over them are split between different parties. With respect to both issues, the DEIS only provides terse statements without supplying any support for the declarations or analysis of the economic or social effects that follow from the proposed actions in view of inevitable conflicts that will arise.

We realize that with respect to the issue of the appropriate disposition of federal CBM interests, considerable uncertainty remains in view of legal developments over the past several years. Nonetheless, this uncertainty compels even greater care and attention by BLM in its

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discussion, analysis, and consideration of alternatives for the proposed actions. As for conflicts, they have been present well before the recent Tenth Circuit and Supreme Court decisions which only pertain to 1909 and 1910 Coal Lands Act. See *Southern Ute Tribe v. Amoco Production Co.*, 151F. 3d 1251 (10th Cir. 1998), *rev'd* ___ U.S. ___, 1999 WL 358961 (1999) (hereinafter "*Amoco*"). The potential for conflicts between coal and CBM development was created by the 1981 Solicitor's Opinion. These conflicts now exist in the area covered by the proposed action and must be addressed and analyzed. As it stands, the DEIS fails to supply a proper analysis of the social and economic impacts related to these issues as required by the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4332, and its implementing regulation, see, e.g., 40 C.F.R. § 1508.14, §1508.8.

Authorizing Actions - Disposition of CBM on Federal Lands

The DEIS notes that the current framework for the disposition of CBM on federal lands is under review. DEIS at 1-5. Indeed, the 1981 Solicitor's Opinion, 88 I.D. 538, that addressed the issue of leasing CBM has been withdrawn after a reexamination that, in the Department's own words, revealed that the opinion was "incorrect." See Fed. Br. in *Amoco* 46. Accordingly, the opinions's conclusion that CBM was presumably leased to those who were issued federal oil and gas leases no longer stands.[1]

The recent Supreme Court decision only reaches the question of CBM ownership on lands patented under the 1909 and 1910 Coal Lands Acts. As the Department recognized in that litigation, "[t]he question of what Congress reserved under the Coal Lands Act is distinct from the question of how the government chooses to lease it under the MLA." Fed. Br. 38. In this regard, the Department identified a substantial number of legal and practical considerations that cast grave doubt upon claims that CBM development rights were conveyed as part of federal oil and gas leases.

To begin with, the Department explained that "it is reasonable to interpret 'coal' to include all of the coal's naturally co-existing constituents, including components that would be liquids or gases if physically separated from the coal." Fed. Br. 25. Moreover, it is enormously impractical to assume that federal oil and gas leases "conveyed to others the inextricably adsorbed component of [coal] that the miner necessarily remove[s] as part of the mined product." *Id.* at 21. See also *id.* at 20 ("it is impossible for miners to remove coal without also removing the inextricably adsorbed CBM"). According to the Department, "CBM that resides within a coal stratum is part of the coal owner's coal estate, and any attempt by the owner of the relevant non-coal estate to drill into that stratum and extract the CBM therein is a trespass on the coal owners's property rights." Fed. Br. 35. Accord *Vines v. McKenzie Methane Corp.*, 619 So. 2d. 1305, 1308 (Ala. 1993) (CBM and coal are inextricably intertwined, and grant of all coal includes CBM); *United States Steel Corp. v. Hoge*, 468 A.2d 1380, 1384 (Pa. 1983). (CBM

[1]/ As for the prior conclusion that CBM was leased as part of federal oil and gas leases, the 1981 opinion also cautioned that "nothing in this opinion warrants title to any oil and gas deposit." 88 I.D. at 549.

present in coal must necessarily belong to the owner of coal); *Lillibridge v. Lackawana Coal Co.*, 22 A. 1035, 1037 (Pa. 1891) (ownership of coal estate includes the space it occupies). The BLM federal coal lease grants the lessee the exclusive right and privilege to drill, mine, extract, remove or otherwise process and dispose of the coal deposits under the land. § 2, Form 3400-12. When a lessor conveys a portion of his property (here the coal deposits) to another, the lessor cannot thereafter maintain that what resides in the property conveyed remains a part of his estate.

The Department's most recent discussion and analysis, therefore, suggests that where the United States owns oil, gas and coal, CBM is part of the coal estate granted under a federal coal lease, and was not conveyed under a oil and gas lease. Practical considerations and consequences further support the view that the grant of the exclusive right and privilege of coal development rights under a federal coal lease includes dominion and control over CBM within the coal deposit. The most critical aspect of a grant of the coal estate is the possession, dominion and control over it in order to mine and remove the coal. See *Williams v. Gibson*, 4 So. 350, 353-54 (Ala. 1888). CBM is physically bound (adsorbed) in the coal and is released in the mining process. A. Kim & F. Kissel, *Methane Formation in Coalbeds, in* Department of the Interior, *Methane Control Research: Summary of Results 1964-1980* 23 (Bureau of Mines Bulletin 687, 1988). Because the hazards CBM poses to miners safety, mine operations must, as a matter of necessity and law, monitor, control, and ventilate CBM at all times to avoid explosions and asphyxiation. See Mine Safety Act § 303, 30 U.S.C. § 863. See also *Deserant v. Cerillos Coal R.R. Co.*, 178 U.S. 409 (1900). As is readily apparent from the inherent nature of both the coal resource and the methods of mining it (whether surface or underground; and whether today or a century ago) the coal cannot be mined without the release of CBM. Therefore, it is unreasonable to infer that CBM in coal deposits was conveyed by implication under federal oil and gas leases when it has been well-known that CBM is liberated and destroyed in the mining of the coal.

The CBM extraction techniques also compromise the coal lessee's possession and control over the coal estate. See *Vines v. McKenzie Methane Corp.*, 619 So. 2d at 1308 (the process of drilling for CBM intrudes on the process of mining for coal). Since the object of commercial extraction of methane from coal is not the free gas associated with the surrounding rock strata, but rather, the methane molecularly bound in the coal, the extraction methods target and complete a well in the coal deposit. For many coals, stimulation techniques are used to increase the rate of methane desorption. See *Legal Environmental Assistance Foundation, Inc. v. U.S. Env't Protection Agency,* 118 F. 3d 1467, 1470-71 (11th Cir 1997) (coalbeds must be fractured to induce significant flow of gas). The most frequently used stimulation technique known as hydrofracturing (or "fracing") is especially invasive to the coal estate since it involves the injection of fluids and suspended solids to create and hold open fractures in the coal. See *Legal Environmental Assistance Foundation Inc.*, 118 F.3d at 1471 (describing the results of hydrofracturing as fractures that extend several hundred feet with significant amounts of injected fluids and other additives left in the coal). In certain circumstances, these techniques may damage the coal seam, render the coal unmineable, or increase the costs of mining.

In sum, the assertion that CBM was conveyed by implication under federal oil and gas leases poses grave consequences for the safe, orderly and economic development of the coal

granted in a federal coal lease. Such a view would seriously compromise the coal lessee's possession, dominion and control over the coal estate granted in the lease. In short, it would be tantamount to a destruction of the grant itself. See *Vines v. McKenzie Methane Corp., supra*; *Williams v. Gibson, supra.*

The question of whether CBM was conveyed by implication under federal oil and gas leases should also be examined in view of surrounding circumstance and intent of the grantor at the time the leases were executed. See *Vines v. McKenzie Methane Corp.* 619 So. 2d at 1307; *Hartman v. Potter*, 596 P.2d 653, 656 (Utah 1979). It appears highly improbable that BLM's intent was to convey CBM under oil and gas leases in view of the enormous practical consequences it would hold for the coal estate. At the time many of these leases were executed, CBM was considered a dangerous by-product of the coal estate, and the gas that was considered the subject of the grant under the oil and gas lease was the conventional natural gas that was generally considered commercially exploitable at that time. An examination of federal oil and gas lessees' exploration and production activities at the time the leases were issued would likely confirm the absence of intent to convey CBM as part of the lease. See, *e.g.*, DEIS at 4-3 ("In the project area, oil and gas have been produced from geologic formations occurring several thousand feet below the coal seams"); Draft Gillette South Coal Bed Methane Project EIS (#97-8) at 31 (March 1997) (describing the formations below the Wyodak coal seam that historically were the subject of federal oil and gas leasing). The existence of CBM in coal has been well-known for centuries, it is only its "commercial discovery" that is of recent vintage. See DEIS at 3-6 ("Drilling for CBM resources within the PRB began in the1980s. Production statistics begin with the year 1987"). The historic lack of diligence in exploiting the CBM under oil and gas leases make it almost inconceivable that the BLM intended to convey CBM with the oil and gas lease. If, indeed, the CBM was conveyed, the prolonged absence of CBM production from coal seams under these leases would call into serious question BLM's vigilance in assuring that the lessee met its obligations for the diligent development of the resource. See, *e.g.*, 43 C.F.R. 3107.1 ("Actual drilling operations shall be conducted in a manner that anyone seriously looking for oil and gas could be expected to make in that particular area, given the existing knowledge or geologic and other pertinent facts").

In view of the significant and substantial questions related to both the prior and future disposition of CBM development rights on federal lands, the DEIS fails to evaluate this fundamental question which so plainly underlies the proposed action and its potential impacts and cumulative effects.

Conflicts

The conclusions reached in the now withdrawn 1981 Solicitor's Opinion created potential conflicts between coal and CBM developers. Remarkably, the opinion for the most part made no attempt to address these inevitable conflicts despite its recognition that CBM exits in the coal itself. NEPA does not allow BLM here to avoid discussing and analyzing these issues and their impacts, particularly since these conflicts now manifest themselves in the area covered by the proposed action.

The issue of conflicts was identified in the scoping process as a principal concern that must be addressed in the EIS. See March 19, 1998 Scoping Summary, DEIS App. C. Yet, the DEIS only makes passing mention that conflicts may occur and without any explanation or analysis proceeds to recite two general propositions for the development of the inextricably intertwined resources. DEIS at 4-3.

In view of the conflicts that do exist today with respect to existing coal leases and operations, as well as the inevitable conflicts that will continue to arise in the future with the expansion of coal mines to meet our nation's energy needs, BLM must provide a more comprehensive discussion of the impacts such conflicts will have on the present and future development of federal coal resources. On this point, the DEIS simply opines that:

> Development of CBM wells would be precluded in areas of active or impending coal mining. Locating wells in areas where future mining may take place would preclude mining during the life of the wells located in the proposed mining area. Coal in these areas could be mined after CBM extraction is completed or terminated, or after an agreement is negotiated between the CBM operators and coal mine operators.

DEIS at 4-3.

To begin with, our observations disclose that notwithstanding its declaration in the DEIS, BLM has not acted to preclude CBM development in areas of active or impending coal mining. BLM should explain in any final EIS how it plans to implement such a policy as well as assure that federal coal lessees are not impeded in their development plans by unwarranted claims by CBM developers that coal mine operators must compensate for CBM that escapes during mining. After all, as the Supreme Court recognized, the right to mine the coal implies the right to release gas incident to coal mining." *Amoco,* Slip Op. at 12. See also, *NCNB Texas National Bank, N.A. v. Watkins*, 631 So. 2d. 212, 228 (Ala. 1993) ("The grant of coal mining rights would be useless if it did not include the right to ventilate methane gas from the coal mining area"); *United States Steel Corp. v. Hoge*, 468 A. 2d at 1384 (right to ventilate gas from coal seam part of rights granted to coal); *Williams v. Gibson,* 4 So. at 353 (one who is granted exclusive right to mine coal has right of possession and control necessary to carry on mining operations, and is not liable for incidental damages necessarily occasioned by the ordinary operation of his mines).

As for the second proposition that the location of wells in areas where future mining may take place will preclude coal mining during the life of the wells, this unadorned statement cannot stand without further explanation and analysis of its impacts.[2] On its face, this statement suggests a de facto moratorium on coal leasing in one of the nation's most important coal

[2]/ We presume that by "future mining", BLM means areas that have not been leased for coal or are not the subject of a pending coal lease application. BLM should clarify this point when it performs the necessary analysis under NEPA.

regions. Surely, this is not what BLM proposes. In any event, the agency needs to fully analyze the impacts on the nation's energy supply and economy posed the proposed action and attendant development conflicts.

Toward this end, we offer the following observations in order to assist BLM in this analysis:

- The active mines within or adjacent to the proposed action area supply almost 300 million tons of coal annually (see DEIS at 3-6) or about 30% of the total domestic production. The projections used by BLM indicate that by 2015, production for Powder River Basin mines is expected to reach 390-400 million tons annually. DEIS at 4-115.

- According to the DEIS, by 2005 coal production is expected to generate $1 billion more of total economic activity *annually* than CBM production is expected to contribute over the 15 year production life of all the wells subject to the proposed action. DEIS at 4-115 (annual coal production to contribute $2.6 billion of economic activity, CBM production to contribute $1.6 billion over life of the project).

- Coal production will support 15,885 full-time positions while CBM development will require long-term workforce of only 286 employees. DEIS 4-115 & 4-116.

- The *annual* federal royalty revenues from coal mines in Wyoming ($1.7 billion) is almost twice the amount of federal royalties expected to be generated over the entire life of the proposed CBM development. See MMS, Coal Revenue 1998, Table 1; DEIS at 4-118.

This economic disparity between the proposed action for CBM development and coal development on federal lands is not surprising when one evaluates the impacts of conflicts between resource developers. According to the DEIS, it is estimated that the sale value generated over the life of a CBM well is $525,000. A federal coal lessee who would be forced to bypass the coal within the 40 acre spacing unit would leave behind almost 5 million tons of coal with a sales value of about $25 million.[3]

In view of this substantial disparity in the economic value of the two resources, the DEIS suggestion that future coal mining would be precluded in areas where wells are located under this

[3]/ The tons of coal lost is derived by assuming a 70 foot coal seam with a coal density factor of 1770 tons per acre foot of coal thickness, e.g. 1 acre x 70 feet x 1770 tn/ft./acre. The sales value is based on the Wyoming Geo Notes (Vol. 61. March 1999) breakdown of average prices ($5.03) paid in 1997 for coal from northeastern Wyoming, Table 12 p. 28.

proposed action is simply irrational. Moreover, this nation's substantial dependence upon coal from this region as a fuel source for electricity makes this suggestion untenable from the standpoint of national energy policy.

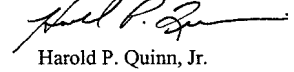
In connection with the need to evaluate how the proposed action and alternatives will affect the safe, orderly and economic development of coal under either existing or future leases, the BLM must evaluate how it will address both the present conflicts for existing coal mine operations and how it will approach future leasing activities for these resources. The economic factors discussed above should be considered in the development of such policies. The statutory obligations for diligent development should also be considered when weighing the competing needs and necessary accommodations. For example, existing coal lessees must commence production of commercial quantities within ten years or risk forfeiture of their lease. On the other hand, federal oil and gas lessees appear to have more flexibility in terms of diligent production requirements in order to maintain their leases. Yet, if CBM development is to occur on lands that have been, or will be, leased for coal, appropriate stipulations should attach for diligent development in a manner that will not jeopardize the orderly and economic development of the coal. Given the nature of CBM, a lessee should not be allowed to thwart the development of the coal estate when it has not attempted to exploit its resources knowing that the CBM will be released when the coal is mined. Since the leasing of one mineral does not preclude the leasing, development and production of another mineral, 30 C.F.R. § 3000.7, those who claim the right to CBM are well aware that coal development inevitably results in the release of the CBM. And, the rule of accommodation as applied in that context, will allow the coal lessee to dissipate the CBM in order to mine the coal. *Amoco*, Slip. Op. at 13 *citing Williams v. Gibson, supra.*[4] Of course, as we set forth at the outset, the scope and frequency of potential conflicts will turn upon the agency's current examination of the question regarding the appropriate disposition of CBM under the leasing program.

Because these questions are so fundamental to the proposed action for the development of Federal coal bed methane, any analysis of the potential impacts and cumulative effects would be fatally incomplete without a more informative discussion of how the agency will address the

[4]/ Because the proposed action here is so closely related to the development of CBM on private and state lands, it bears noting that even on lands patented under the 1909 and 1910 Coal Lands Acts where the Supreme Court in *Amoco* has recently decided CBM was conveyed as part of the surface estate, the reserved coal estate imposes a servitude upon the surface estate (including CBM) that was part of the grant under these Acts. See *Kinney-Coastal Oil Co. v. Kieffer*, 277 U.S. 488, 504 (1928) (a mineral reservation imposes a servitude on the surface estate so the United States may realize a proper return from the extraction of minerals).

disposition of CBM under its leasing policies and the conflicts that would arise if CBM and coal are leased in a manner that splits the resource between parties who do not share the same interest in the purpose and manner in which it is to be developed.

Sincerely,



Harold P. Quinn, Jr.
Senior Vice President and
General Counsel

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COGEMA
Resources, Inc.

July 13, 1999

Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1435 Fort Street
Buffalo, WY 82834

BUREAU OF LAND MANAGEMENT
JUN 15 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Re: Wyodak Coal Bed Methane Project EIS

Dear Mr. Zander:

We appreciate the opportunity to comment on the Draft Wyodak Coal Bed Methane Project Environmental Impact Statement.

Pathfinder Mines Corporation owns patented and unpatented mining claims in the Pumpkin Buttes uranium mining district, adjacent to the southwest portion of the study area. This includes the North Butte uranium deposit (T44N, R76W) which is permitted for in-situ leach mining. Pathfinder's North Butte ore body resides in the Wasatch formation sandstones, several hundred feet above the prospective coal seam in the Ft. Union formation.

In Chapter 4, under Geology and Mineral Resources, Proposed Action, next to the last paragraph, the draft EIS states "Withdrawal of CBM and water from the stratigraphically lower Ft. Union Fm. would not be likely to impact the potential recovery of uranium resources within or near the project area." While this assumption might be true, it would be necessary to have a hydrologist conduct actual studies in areas of potential conflicts like North Butte. It might be possible that where exploration drilling has intersected both aquifers, hole plugging required under state regulations might not be adequate to prevent migration between the formations. Additionally, with the extreme dewatering contemplated by CBM development, there might be an influence on surface water tables that could affect uranium mining since the deposit must be submersed within the water table in order to be in-situ mined.

Concerns are especially critical near *ongoing* in-situ projects like the Christensen Mine (T44N, R76W) operated by Cogema Mining, Inc. ISL operations are extremely dependent upon a high degree of groundwater control and containment. The company is required by state and federal regulatory agencies to monitor groundwater on a rigorous basis for a protracted period. Additionally there are surface facilities in place in drainage areas that have been built under certain flood criteria. CBM operators contemplating drilling or de-watering in the vicinity of an operating insitu mine must demonstrate to the in-situ uranium operator and the state and federal agencies regulating the same, that the uranium operations will not be adversely impacted.

In Chapter 3, Geology and Mineral Resources, the reference in the last paragraph to the Christensen Ranch Mine can be updated to have produced 1.5 million pounds uranium as of the first quarter 1999. After completion of uranium production, groundwater restoration and surface reclamation are anticipated to continue for ten years. Regulatory permit termination and final bond release could be expected a minimum of five years after reclamation.

Sincerely,

Donna L. Wichers
General Manager

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TEL: (307) 234-5019 FAX: (307) 234-5321

6

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
215 NORTH 17TH STREET
OMAHA, NEBRASKA 68102-4978

REPLY TO
ATTENTION OF

June 17, 1999

BUREAU OF LAND MANAGEMENT
JUN 21 1999
BUFFALO FIELD OFFICE
BUFFALO WY

Wyoming Regulatory Office
2232 Dell Range Blvd., Suite 210
Cheyenne, Wyoming 82009-4942

Mr. Richard Zander
U.S. Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

Dear Mr. Zander:

This letter is in response to your request for comments on the Wyodak Coal Bed Methane Project Draft Environmental Impact Statement (DEIS) dated May 1999. We received a copy of the DEIS on May 17, 1999. The DEIS addresses cumulative impacts associated with exploration and development of up to 5,890 coal bed methane (CBM) wells in the Gillette area. The project area covers approximately 2,400 square miles, primarily in Campbell County, and includes the Gillette North and Gillette South Assessment Areas.

In response to the scoping notice for the Gillette South EIS dated January 27, 1998, we provided a letter dated February 19, 1998, with clarification of our agency's regulatory role in regard to CBM production activities in that project area. Essentially, the U.S. Army Corps of Engineers regulates activities that result in a discharge of fill material into wetlands and other waters of the United States as authorized primarily by Section 404 of the Clean Water Act (33 U.S.C. 1344). Although the previous letter was sent in response to another EIS, the information contained in our previous letter is general in nature and we agree that it could also apply to the Wyodak CBM project area and we do not object to its inclusion in Appendix A of the DEIS.

We have reviewed portions of the DEIS that are relevant to our regulatory program and offer the following recommendations:

1. On page 3-37 it should be clarified that wetlands are a separate category of waters of the U.S. The statement implies that wetlands are jurisdictional only if located in other waters of the U.S. such as draws and playa lakes, which is misleading. Isolated wetland areas are also subject to regulation. The statement regarding the addition or elimination of produced water to waters of the U.S. also needs clarification by adding "if the activity does not include a discharge of fill material into waters of the U.S." at the end of the sentence. There are instances where placement of fill material could result in the addition or elimination of produced water such as construction of an outfall structure. Page 4-85 contains the same statement and should also be modified.

BUREAU OF LAND MANAGE
JUN 21 1999
BUFFALO FIELD OFFICE
BUFFALO WY

2. On page 4-11 under Water Use, it should be noted that authorization from the Corps would normally be required for construction of ponds or reservoirs.

3. It is confusing to discuss other regulatory programs in the context of describing the purpose and need and affected environment (Chapters 1 and 3). We recommend that all discussion of regulatory issues be consolidated into Chapter 5 by moving the discussion of authorizing actions and public participation from Chapter 1.

As you may be aware, our office is currently in the process of developing a Programmatic General Permit (PGP) for oil and gas exploration and development activities in Wyoming. If issued, PGP 98-08 will allow the BLM to assist operators in obtaining a Section 404 permit without contacting the Corps in advance based upon a few simple decisions regarding the level of impact. Essentially, PGP 98-08 would be a consolidation of various Nationwide Permits into a single permit that can also be administered by the BLM. However, the Corps will retain oversight and would be responsible for any compliance issues. It is a little premature to discuss the details of PGP 98-08 in the DEIS but you may want to add a simple statement regarding the Corps current initiative to streamline the permit process by issuing a PGP for oil and gas exploration and development activities with minor environmental impacts to alleviate some of the operators anxiety concerning the need to deal with multiple federal agencies.

Thank you for the opportunity to comment on the DEIS. Mr. Thomas Johnson is the primary point of contact in our office for these comments and PGP 98-08. If you have any questions concerning our involvement, please contact Mr. Johnson at (307) 772-2300. Please reference file No. 199940126 in any future correspondence with our office concerning the Wyodak CBM EIS.

Sincerely,

Matthew A. Bilodeau
Program Manager
Wyoming Regulatory Office

7

"Kathy Moriarty" <KMORIART@ewc1.ewc.whecn.edu> on 06/19/99 01:23:03 PM

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Please respond to kmoriart@ewc1.ewc.whecn.edu

To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: Environmental Impact Study/Wyodak Coal Bed Methane Project

---

Dear Mr. Zander:

I am writing to express my concerns concering the WyodakCoal Bed Methane project Environmental Impact Study. I believe the Study has some significant deficiencies which I would like to see addressed. Let me list several of them:

1. Wild life

The study notes that wildlife will definitely be affected yet no mitigation plan is set out for public comment. A process of receiving public input on these issues needs to be included.

2. Beneficial Use of Groundwater

Although it is stated that "the State of Wyoming requires water produced in conjunction iwth CBM be put to subsequent benefdicial use", the EIS does not adequately define what use the water may be used which would concitute beneficial use. There needs to be a clear benefiical use plan for citizens to commen on becasu4e most CBM water is simply being discharged onto the surface subsequently flowing into waterways.

3. Water Well AGreements

The Water Well Mitigation Agreement as currently laid out in the EIS, does not provide true protection or compensation for adverse impacts to landowner wells after the completion of the CBM project, or for as long as the affected aquifer remains in a depleted state.

4. Landowner Compensation and Mitigation

The EIS falls short in defining specific mitigation plans to compensate landowners if there is surface damage caused by methane seeps, underground coal fires, failure of reclamation efforts, and sufact flooding.

In summary, the above items represent siginifant concerns and should be addresed in the EIS.

Thank you for your consideration of these matters.

Sincerely,

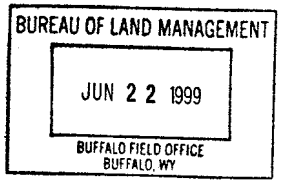
Kathy Moriarty

8

explorewld@webtv.net (gerald kresge) on 06/22/99 11:08:10 AM

To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: Impact Study for Wyodak

Richard Zander,
I'm deeply concerned over the deficiencies in The EIS statement in the following areas: 1. No beneficial use plan for discharged ground water.
2. No specific mitigation plans to compensate land owners due to consequences accrued do to drilling, etc. 3. No provisions for Public input regarding impact on wildlife habitat. 4. No provisions for protection or compensation for adverse effects on landowner's land wells. I would much appreciate a response, from you, regarding these concerns. sincerely, Gerald J Kresge



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Office of Federal Land Policy

122 West 25th Street ● Herschler Bldg., 3 West ● Cheyenne, WY 82002-0600 ● 307-777-7331 ● 307-777-5400 fax

June 18, 1999

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Richard Zander, Project Lead
BLM, Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834-2436

Re: Wyodak Coal Bed Methane (CBM) Project, Draft Environmental Impact Statement (DEIS)

Dear Mr. Zander:

This Office has reviewed the referenced document on behalf of the State of Wyoming. We also provided the DEIS to all affected State agencies for their review, in accordance with State Clearinghouse procedures. Enclosed you will find letters from the Wyoming Game and Fish Department, the State Engineer's Office (SEO) and the State Geological Survey resulting from their reviews.

The State of Wyoming supports the orderly and responsible development of our natural resources. The possibilities of CBM production are exciting and hold great promise. We support the proposed alternative, however, we have identified some issues that require further examination or discussion. As well, agencies have provided corrections to information presented in the DEIS for your use in preparing the Final EIS as accurately as possible. If mitigation of impacts for 5,000 wells is similar and feasible when compared to mitigation of impacts for 3,000 wells, the State suggests the BLM consider Alternative 1 as it would provide for more timely development of the CBM resource.

In any case, however, the State remains concerned regarding the quantity of groundwater that will be produced by this industry. The immense volume of produced water will likely lead to surface impacts that will multiply in the near future including erosion and water quality impacts beyond the point of discharge. Under current laws the CBM producers are allowed to produce water with a stock/miscellaneous use SEO permit, and discharge that water with a NPDES permit from the Department of Environmental Quality (DEQ). Producers operating with these permits are within the requirements of state laws. So while the CBM industry is under no particular obligation to do so, it would be a better use of the state's groundwater, a precious natural resource, to seek mechanisms to control water discharge problems and put the discharged water to beneficial uses.

A more thorough discussion of the positive and negative cumulative impacts including legal and administrative issues should be included in the Final EIS with regard to terrestrial and aquatic considerations.

BUREAU OF LAND MAN
JUN 22 1999
BUFFALO FIELD OFF
BUFFALO WY

In Chapter 2, the second paragraph of the summary should have one additional sentence (which would be the third sentence of the paragraph when inserted). The sentence should read, "The authority to set spacing rests with the Wyoming Oil and Gas Conservation Commission." Any other references to spacing should be clear on the authority to do so.

The Wyoming Department of Environmental Quality, Water Quality Division noted that summarizing the mean and maximum concentrations of metals from the Fort Union Formation is confusing to the reader (Page 4-10, paragraph 3, Table 3-6 summary). For example, the paragraph refers the reader to table 3-6 for a listing of parameters sampled but then only shows that sample numbers ranged from 4 to 36 for metals while the narrative indicates that sample numbers ranged from 95 to 366 samples. Does this mean that there were 95 to 366 samples collected at one location, or for the entire formation with table 3-6 being used as an example? Additional items of confusion included in the narrative are the statements that the drinking water standard for iron and manganese are 0.3 mg/l and 0.05 mg/l respectively while in table 3-6 there is "None" listed in the Drinking Water Standard column for the same parameters.

Further, on Page 4-85, paragraph 4, while banking wetlands does serve to record the existence or nonexistence of prior wetland status, there is no "temporary" mitigation. Wetlands used for mitigation purposes become jurisdictional and must be maintained in perpetuity. If wetland characteristics are lost due to inadequate hydrology, or other factors, then the banked credit is lost.

In addition to the permits presently required for CBM development, it should be noted that beginning no later than 5/31/2002, construction projects that clear **one** acre or more will be required to obtain storm water permit coverage under the National Pollutant Discharge Elimination System (NPDES) program. Types of oil and gas activities that may be covered include well pad construction, road construction, pipeline installation and any other activity that results in clearing, grubbing or, grading of the land surface.

This Office will need seventeen copies of future information and documents regarding this project for distribution to affected State agencies. Existing Memoranda of Understanding and other working agreements with individual agencies remain in place and unaffected.

The State of Wyoming appreciates this opportunity to comment.

Sincerely,

Stephen A. Reynolds

SR:jh
Enclosures (3)
cc: State Agencies

9a

WYOMING
GAME AND FISH DEPARTMENT

Jim Geringer, *Governor* — John Baughman, *Director*

"Conserving Wildlife —Serving People"

JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO WY

June 14, 1999

WER 8922
Bureau of Land Management
Buffalo Field Office
Draft Environmental Impact Statement
Wyodak, Coal Bed Methane Project
State Identifier Number: 98-130

Wyoming State Clearinghouse
Office of Federal Land Policy
ATTN: Julie Hamilton
Herschler Building, 3SW
Cheyenne, WY 82002

Dear Ms. Hamilton:

The staff of the Wyoming Game and Fish Department has reviewed the Draft Environmental Impact Statement for the Wyodak Coal Bed Methane Project from the Buffalo Field Office. We offer the following comments.

Terrestrial Considerations:

Cumulative Impacts and Mitigation: Positive and negative cumulative impacts should be more thoroughly addressed. For instance, many species will benefit from the increased availability of surface water and flows in drainages. Negative impacts such as displacement and loss of habitat over the large field development area may also occur. This is particularly true for species with large home ranges, such as sage grouse, raptors, and big game, and in seasons of the year when disturbance can be detrimental, such as during nesting or parturition. Mitigation of possible cumulative impacts of this large project area should be addressed.

Some specific comments follow.

1. Power lines: All power lines should be built to protect raptors from accidental electrocution, according to guidelines in the following publication:

   Avian Powerline Interaction Committee. 1996. Suggested practices for raptor protection on powerlines - the state of the art in 1996. Edison Electric Institute/Raptor Research Foundation, Washington, D.C.

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Fax: (307) 777-4610 Web Site: http://gf.state.wy.us

JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO WY

Also, power line corridors should avoid wetlands to reduce the chance of waterfowl hitting the lines.

2. Wetlands: It is assumed that many small ponds or wetlands could be built during field development. In general, consolidating several small ponds into one larger pond would provide more open water and a longer shoreline at one site, and may be more beneficial to wildlife. Larger ponds may also have the characteristics needed to support a fisheries.

   Fencing of wetlands and providing off-site watering for livestock would allow vegetation development and maintainenance of water quality in key wetlands, which would benefit several species of wildlife. If fences are used, they should be placed well back from the wetlands to prevent waterbird mortalities, and should be built to the minimum standards to allow big game movement.

   If possible, wetlands and ponds should be built on accessible public land where recreational users can benefit from the development.

3. Seasonal impacts to wildlife: It should be noted that the appropriate standard seasonal stipulations for raptors, sage grouse, and big game will be applied.

4. Roads: Because of the expected number of roads that could potentially be developed, roads should be constructed to the minimum standard needed, so that disturbance to soil and vegetation on each road would be minimized. Fences along service roads should be avoided unless absolutely necessary, in order to prevent a maze of barriers to big game movements. Fences should be constructed to minimum standards to avoid big game entanglements.

Aquatic Considerations:

As mentioned in our comments dated March 23, 1999 relative to the potential benefits of discharged water to fish and wildlife, we believe a more complete review of this, including legal and administrative issues, should be completed for inclusion in this Environmental Impact Statement.

Other Specific comments include:

WILDLIFE AND FISHERIES (pages 3-37 to 3-40): There is no mention in this section of reptiles and amphibians which inhabit the area and may be impacted by the proposed project. This applies to Chapter 4 as well. This information should be included in this document.

Page 3-40: *Ameiurus* is misspelled. *Platorynchus* is misspelled.

Table 3-16, page 3-45: The genus for the flathead chub is incorrect. The correct scientific name is *Platygobio gracilis*.

APPENDIX B, STANDARD "CONDITIONS OF APPROVAL" FOR APDS, Water Management: -- Development of reservoirs on natural stream courses could severely impact native aquatic species and their habitats. We recommend reservoirs developed as part of coal bed methane activities be sited in the uplands unless it can be shown they will provide benefits to fish and wildlife resources. Reservoirs could be allowed on stream courses (perennial, intermittent or ephemeral) if approved by this Department as providing such benefits. This condition is consistent with recommendations we have made to the Corps of Engineers relative to GP98-08.

Thank you for the opportunity to comment.

Sincerely,

Bill Wichers

BILL WICHERS
DEPUTY DIRECTOR

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

BW:TC:as
cc: USFWS

9b

WYOMING STATE GEOLOGICAL SURVEY
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STATE GEOLOGIST – Lance Cook

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Lance Cook
Appointed
Ronald A. Baugh Nancy M. Doelger
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INDUSTRIAL MINERALS AND URANIUM Ray E. Harris
METALS AND PRECIOUS STONES W. Dan Hausel
OIL AND GAS Rodney H. De Bruin
PUBLICATIONS Richard W. Jones

June 17, 1999

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

MEMORANDUM

TO: Julie Hamilton, Wyoming State Clearinghouse

FROM: Lance Cook, P.G., State Geologist

SUBJECT: Wyodak Coal Bed Methane Project DEIS
(State Identifier # 98-130)

There is a well documented seismic history for the Powder River Basin, and the Section has completed a basic seismological characterization for the area. In addition, landslides have been recently mapped. If this data should be discussed in this document, the Geological Survey can supply it.

There are some unresolved issues with selenium in the report. Water analyses referenced on pages 3-14, 3-20, and 3-22 usually are compared to standards for human consumption, livestock consumption, or irrigation. In those cases, the selenium levels appear to be acceptable. The US Fish and Wildlife Service has indicated that levels as low as 5 ppb can cause adverse effects in fish and waterfowl. This is especially important if any wetlands, ponds, or lakes may be formed or expanded as a result of the increased water discharge.

The Tongue River Member is not generally classified as an aquitard (Feathers, K.R., Libra, R., and Stephenson, T.R., 1981, Occurrence and characteristics of ground water in the Powder River Basin, Wyoming: Wyoming Water Resources Research Institute report to EPA, Contract Number G-008269-79). Unless the BLM has site specific data to the contrary, they may want to consider modifying the paragraph on the Tongue River/Lebo Aquitard on page 3-23.

The Abandoned Coal Mine Lands Research Program at the University of Wyoming has funded a project titled "Determination of Contribution to Cumulative Groundwater Impacts from Coal Bed Methane Development and Surface Coal Mining". The principal investigators are Borgman, Kern, Peacock, Brogan, and Meyer. A draft of the report has been completed, but the final has not been supplied to the University of

Wyoming. The results of the research might be appropriate for inclusion in the Hydrogeologic Framework Section of the final EIS.

There is a possibility that coal development in this area will encounter uranium mineralization. We request a notation that should this occur, the operator should contact the Industrial Minerals and Uranium Section of the Wyoming State Geological Survey.

JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

The area of proposed action includes outcrops of Eocene Wasatch Formation and Paleocene Fort Union Formation, both of which have yielded significant mammalian fossils, as well as reptiles, plants, fish, etc., in the Powder River Basin. This potential should be addressed and appropriate steps recommended for protection of any fossil resources uncovered during the coalbed methane drilling and development in the area.

The geology section of the document should reference the new 1:100,000-scale geologic map of Gillette Quadrangle (MS-49) by the Wyoming Geological Survey. It is the most recent geologic map of the area and contains references to more detailed maps. Maps referenced by the DEIS are earlier, less detailed maps.

In the Socioeconomics section (p. 4-114 to p. 4-126), State royalties are calculated using a 12.5 percent rate. Most of the State coalbed methane leases require a royalty rate of 16 2/3 percent. Another incorrect assumption is that State severance taxes and County ad valorem taxes are only paid on production from fee wells. State severance and County ad valorem taxes are paid on <u>all</u> wells. There is a deduction from these taxes on State and Federal wells for State or Federal royalties. The net result of these mistakes is to understate the economic benefits of this project to the State and local governments.

On p. 3-6 the Mowry Shale is listed as Lower Cretaceous. The Mowry Shale is now considered Upper Cretaceous.

On Table 3-20, Wyoming valuation under Other Minerals should be 293 million rather than 293 billion.

On page 3-51 the second paragraph the authors list the active mines in the area. To put this in agreement with later discussion, such as table 4-15, several names should be altered. Caballo is now known as Caballo-Rocky Butte. North Antelope-Rochelle operates now as a mine complex similar to Cordero-Rojo.

Also on page 3-51 paragraph 4, the study area has two not one major railroads. The Burlington Northern/Santa Fe and the Union Pacific are separate

railroads. Although they share parts of joint lines in portions of the study area, they also have their own lines in the area.

Paragraph 2 page 4-3 raises some concern for coal mines in the area. "Development of CBM wells would be precluded in areas of active or impending coal mining. Locating wells in areas where future mining may take place would preclude mining during the life of wells located in the proposed mining area." This is very cloudy in respect to what impending means. Is this based on a mine's twenty-year mine plan or some other time frame? A little more discussion on mining & CBM conflicts might be warranted, particularly in light of the Supreme Courts ruling in Amoco vs. Ute Tribe and the explicit wording of the Court's decision regarding incidental venting of methane during mining operations. Resolution of this conflict prior to the final EIS decision is very important.

Page 4-21 first Paragraph, the earliest surface mining along the Wyodak Zones outcrop besides the Wyodak mine (1925-present) included six or seven small surface mines active between 1933 to 1974. Although, by today's standards, their output was small, they were active. Modern large surface mines not including the Wyodak mine started in 1972 (Belle Ayr), not 1975 as stated. Also, the presently anticipated end of mining in year 2021 is not accurate. Current remaining reserves are sufficient for many mines to be in operation for many years after 2021. The date does not recognize the fact that most operations are now producing coal under 200 feet of overburden, while the next generation of mines will probably remove upwards of 300 feet of overburden, which conservatively keeps the operations going for an additional 20 to30 years.

Table 4-15 under permitted coal production has some numbers different to those we got in the past month from Wyoming DEQ. Some of these should be rechecked. The differences we show are as follows:
1.Buckskin 22.0 verses 24.0 as shown on Table 4-15.
2.Caballo 35.0 verses 51 as shown on Table 4-15 (the difference may be related to combination of Caballo with Rocky Butte?).
3. Ft Union 3.7 plus KFx 0.6 = 4.3 verses 9.4 as shown on Table 4-15.
4. Wyodak mine 9.2 verses 10 as shown on Table 4-15.
5. North Antelope/Rochelle 67 verses 65 as shown on Table 4-15.
6. North Rochelle 12.5 verses 20 as shown on Table 4-15.
The above numbers would bring the total permitted capacity down to 447.0 from 476.4 as shown on Table 4-15.

There is a statement on p. 2-24 that APDs for up to 400 Federal wells could be approved by BLM in a given year. We understand the BLM will be able to process more than 400 APDs per year in light of passage of the emergency spending bill by Congress, which allocates an additional $1 million for processing coalbed methane permits in Wyoming.

BUREAU OF LAND MANAGEMENT
JUN 22 1999

We are curious as to why Alternative 1 is not the Proposed Action, since it takes in a larger area and includes development that is proposed or ongoing. The Geological Survey supports Alternative 1 as the preferred alternative, as it will provide less hinderance to the timely development of the CBM resource.

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

9c

State Engineer's Office

Herschler Building, 4-E Cheyenne, Wyoming 82002
(307) 777-7354 FAX (307) 777-5451
seoleg@missc.state.wy.us

JIM GERINGER
GOVERNOR

GORDON W. FASSETT
STATE ENGINEER

Memorandum

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Date: June 18, 1999

To: Julie Hamilton, Wyoming State Clearing House
Office of Federal Land Policy

From: Richard G. Stockdale, Administrator
Ground Water Division

Re: Review of Draft Environmental Impact Statement for the Wyodak Coal Bed Methane Project (State Identifier No. 98-130)

My specific comments on the subject Draft EIS are listed by chapter, page and paragraph.

1-6: Paragraph 3 should be modified to read as follows:
The State of Wyoming considers water produced in conjunction with CBM development to be a beneficial use of ground water, and requires an approved permit from the Wyoming State Engineer's Office (WSEO) prior to the drilling of a CBM well. Stream channel modification, reservoir supply, construction of new reservoirs and/or dam modification on existing reservoirs also require permits from the WSEO.

2-16: Paragraph 5
The following statement regarding the indication of impacts two (2) wells, "This would occur if water levels drop below the lowest point of diversion in the vicinity of the well and well yields are reduced below historic production levels," is NOT correct. **Neither well yields or water levels are guaranteed by a water right.** A determination would have to show that CBM development is interfering with historic permitted usage of water.

2-17: Specific Monitoring Activities: Groundwater: Items 1 & 3
- Baseline static water levels, production capacity, and methane concentration: for all properly permitted water wells.....
- Periodic monitoring of static water levels in CBM productions wells as required by WSEO.

Reports are required to be submitted to the WSEO monthly. Current WSEO monitoring requirements are different than those listed in the DEIS. Enclosed is a copy of present WSEO Additional Conditions and Limitations attached to CBM well permits.

2-22: Surface Water: Item 1
- Monitoring of volume of produced water being discharge to the surface as required by WSEO under Conditions and Limitations specified under for each ground water permit, by the WDEQ under the terms specified in each NPDES permit, and as required by the WOGCC for surface flows encountered during drilling.

2-26: Injection of Produced Water Underground
In this section only the disposal of produced water to non-potable aquifers was considered. Consideration should be given to injecting produced CBM water to the Lower Ft. Union Formation aquifers in the Tullock Member. The City of Gillette has conducted a short term feasibility study with very encouraging results. (See Wester-Wetstein Association report to the City of Gillette, April 20, 1999.)

3-10 and 3-13
3-10 says 68% to Belle Fourche but 3-13 says 77%. Which is correct?

4-5 and 4-12: Water Flow
The following two (2) statements appear to conflict on the number of discharge points.
4-5: "Water would be discharged from an estimated 500 - 1,000 locations" {(?) NPDES discharge points}

4-12: "Approximately 2,500 discharge points will be utilized to implement the Proposed Action."

4-5: Paragraph 2
The last sentence says "velocity would decrease as slopes drop." The word "drop" is ambiguous.

4-5
Total conveyance losses at project boundary are stated to be 23-58% which doesn't line up with 3-10. 3-10 estimates used the Board of Control "rule of thumb" of 1% loss per mile everywhere. This is probably incorrect for dry draws or intermittent stream channels.

4-133
Discussion of water flow to Sakakawea is confusing since most flows into the Belle Fourche River drainage and tributaries of the Cheyenne River flow to Oahe Reservoir.

4-133
The use of average flows into Keyhole Reservoir, etc., are not too valuable since the "average" year rarely, if ever, occurs.

4-134
First sentence says, "... 4,000 acre-foot print..." Keyhole Reservoir is approximately 4,000 acres in size, not 4,000 acre-feet.

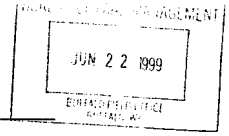
As a general comment, the State Engineer's Office recognizes that any predictive hydrologic modeling effort is only as good as the input data. It seems that some of the input data utilized in the Draft EIS is based upon assumptions that may not represent the "real world" conditions. Because of this, a monitoring system of sufficient magnitude needs to be created at act as an early warning system for all of the various environmental parameters that could be affected by CBM development.

If you have questions, please feel free to contact me.

enc.

BUREAU OF LAND MANAGEMENT
JUN 22 1999
BUFFALO FIELD OFFICE

PERMIT NO. U.W. _____



PERMIT STATUS

Priority Date _____ **Approval Date**_____

ADDITIONAL CONDITIONS AND LIMITATIONS:

The right to withdraw ground water under this permit to facilitate the production of natural gas is hereby granted subject to the following additional conditions and limitations:

1. The permittee or the permittee's successor or assigns shall, at its own expense, install and maintain on each production well such monitoring or other measuring devices as may be required and approved by the State Engineer.

2. A written monthly report shall be submitted to the State Engineer during the first ten (10) days of each month following the reporting period by permittee, or the permittee's successor or assigns, stating the following information:

   a) Well name, State Engineer Permit Number, well location
   b) Reporting period dates, the name of the individual responsible for the report, method of measurement (i.e. weir, meter, etc.)
   c) Total volume of water produced during the reporting period, total cumulative volume of water produced since reporting began, total volume of natural gas produced during reporting period and total cumulative volume of natural gas produced since reporting began
   d) Remarks or comments relative to meter changes, changes in methodology for obtaining bottom hole pressures, changes in number of producing gas and/or water wells within one (1) mile of the subject well, or any other pertinent information relative to changes which might influence data acquisition for this project

   The State Engineer may change the written report period if the permittee, or the permittee's successor or assigns, submits a written request to do so, or if the State Engineer determines that a change in the reporting process is necessary and desirable.

3. The State Engineer and any of his duly authorized agents or employees shall have the right at any and all times during the life of the permit and at the State's own expense, to run or conduct such independent tests and inspections as the State Engineer may require.

4. This well shall be cased with unperforated casing and cemented from the surface of the ground to the top of the coal zone from which methane is to be produced. A cement bond log may be required to determine cement distribution.

5. The permittee, or the permittee's successor or assigns, shall be responsible for measuring and reporting to the State Engineer the ground water level in nearby water wells mutually agreed to by the State Engineer and permittee of this well every six (6) months. The report shall be submitted to the State Engineer by July 31 and January 31 of each year stating the ground water level measurements obtained during the previous six (6) months period, the owners name, well name, location and State Engineer permit number if available.

6. The granting of this permit creates no obligation either express or implied for the State Engineer to grant any additional permits associated with this project.

7. The permittee, or the permittee's successor or assigns, may submit a written request asking for modification of these conditions and limitations.

8. This permit will be reviewed in five (5) years from the date of approval.

9. Part I of the Proof of Appropriation and Beneficial Use of Ground Water is required under this permit; however, Parts II and III are waived.

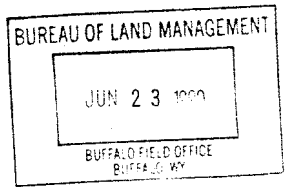
10. The conditions and limitations of the permit are binding upon any and all successors and assigns of the permittee.

11. The permit granted herein is subject to all other applicable requirements of State law not herein specifically stated.

_____ _____

DATE **GORDON W. FASSETT, State Engineer**

10



June 24, 1999

Richard Zander

Bureau of Land Management

1425 Fort Street

Buffalo, WY 82834

Dear Mr. Zander:

I wish that my name, address, city, state, etc. be kept confidential.

In reviewing the Wyodak Coal Bed Methane Project Draft Environmental Impact Statement I have developed the following suggested changes:

Chapter 2, Page 2-11, Well Production Facilities

Suggested Change

A downhole pump and electronic pressure sensor will be utilized to produce water from the uncased open hole interval ....

Chapter 2, Page 2-14, Produced Water-Gathering System and Discharge Facilities

Suggested Change

... NPDES permit within the project area. In accordance with WDEQ all discharge points will have continuous flow monitoring.

Chapter 2, Page 2-16 & 17, Hydrologic Monitoring and Mitigation

Suggested Change

This information will be greatly supplemented when all monitoring information being gathered by operators is brought into one common database.

Chapter 2, Page 2-17, Hydrologic Monitoring and Mitigation

Suggested Change

... but until this work is completed no new APDs will be issued.

Chapter 2, Page 2-17, Specific Monitoring Activities, Groundwater

Suggested Change

... by the Water Well Agreement in Appendix D. A static water level is defined as data obtained from the bottom of the hole pressure sensor taking recorded readings of not less than every 5 minutes. The well will not achieve a static condition until such a time as the bottom of the hole pressure does not increase more than 2 psi in a 5 hour period.

Chapter 2, Page 2-17, Specific Monitoring Activities, Groundwater

Suggested Change

Periodic monitoring of static water levels in CBM production wells as required by the WSEO. Based on current WSEO requirements, it is expected that the WSEO will require the operator to submit monthly reports containing the following information in addition to static water level measurements for each CBM well:

Chapter 2, Page 2-18, Specific Monitoring Activities, Groundwater

Suggested Change

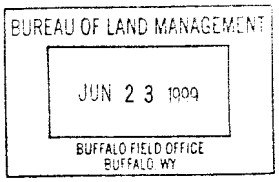
Periodic spot checking of measurements made by operators not using third party data collection on their monitoring wells. The CBM operator will be charged for the spot check.

Thank you for this opportunity to participate in your DEIS. I would be happy to answer any questions that you may have concerning my suggested changes. I will state again, I wish that my name, address, city, state, etc. be kept in confidence.

Thank you,

11

Scott Phinney <phinn66@cyberhighway.net> on 06/23/99 05:59:53 PM



To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: RE: Wyodack Coalbed Methane DEIS

Comments on the Wyodack Coalbed methane DEIS:

Being a resident of Wyoming I am concerned about the impact the Coal Bed Methane project will have on our State's wildlife, environment & landowners. The water being pumped out of the aquifers needs to be put to beneficial use, and what these uses are need to be clearly stated so that the citizens of Wyoming can comment on the use of this water. Simply pumping it into our streams and rivers or over the ground to erode or pick up harmful chemicals or minerals which can then be deposited in our waterways is irresponsible. Protection of existing stock and domestic water wells now and in the future must be of top priority.

The EIS states wildlife will be affected, HOW? We need to know and be able to voice our concerns and comments. We also need to know how these problems will be mitigated.

Landowners need a definite plan telling how they will be compensated or protected from the impact of this project.

Thank you,
Scott Phinney

12

SCIENTIFIC GEOCHEMICAL SERVICES

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Casper, WY 82602

(307) 266-4409
FAX 266-1113

BUREAU OF LAND MANAGEMENT
JUN 24 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

June 22, 1999

Mr. Richard Zander
Bureau of Land Management
1425 Fort Street
Buffalo, Wyoming 82834

Re: **Comments on the Draft Environmental Impact Statement (DEIS) for the Wyodak Coalbed Methane Project.**

Dear Mr. Zander:

On June 2, 1999, I had the opportunity to visit with Messrs. Ed. Heffern (Geologist), Mel Schlagel (Regional Coal Coordinator), and Ms. Vickie Mistarka (Geologist) all of the U.S. Department of the Interior, Bureau of Land Management (BLM), Wyoming State Office in Cheyenne Wyoming. During that meeting I discussed my concerns regarding the impacts coalbed methane development is and could have on the environment. These concerns were also addressed in several letters I sent to your office dated February 9, 1998 and April 27, 1999.

I reviewed the DEIS and continue to be concerned that adequate thought and science have not been given to the potentially disastrous environmental damage resulting from the "run-a-way" coalbed methane program. The DEIS has acknowledged problems such as methane venting, loss of water wells, loss of vegetation, coalbed fires, aquifer collapse (with subsequent recharge uncertainty) and others that are and may continue to occur but offer very limited (if any) assurance that these problems will be acceptably resolved. By merely identifying the potential problems that are and will occur is simply not enough care for public land.

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The massive amounts of water removed from the coalbeds present both surface and subsurface problems. As stated in my previous letters to your office and recently to the BLM employees in Cheyenne, management of the produced water at the surface is a monumental task. Equally as important but more complex is understanding the effects the dewatering has on the subsurface. Soil (reservoir) collapse, water level decline (well loss), methane venting, coalbed fires, and other problems are occurring or will occur and will surely intensify over the 10 to 20 year life of the coalbed methane program.

Soil (reservoir) collapse and recharge complications.

In parts of the United States surface elevations have been lowered as much as 15 feet due to the removal of vast amounts of subsurface water for irrigation purposes. After the collapse (subsidence) of the reservoir, it is impossible to recharge the system. The aquifer is permanently damaged. The DEIS states that ",overpumping of water from the coal could shut off methane flow if the cell structure collapses," (page 3-6). Collapsing (subsidence) of the coal and/or shallow aquifers is a real possibility resulting in surface damage (slumping, etc.) as well as recharge complications.

Water level decline (well loss) & methane venting.

Removal of water from the coalbeds has resulted in water wells going dry. Mitigation between the well owner and the operator generally results in a new and most likely deeper well. The lost well is reflecting the lowering of water levels not only in the well but also nearby. Reservoir collapse, recharge complications, methane venting, and coal fire potential are more widespread than just near the lost well.

Recently, I visited a ranch located approximately 25 miles south and 5 miles east of Gillette, Wyoming where a domestic well began frothing and hissing. The well did not have a past history of this type behavior. Copious amounts of methane are venting from the well. A methane fire at the well head destroyed the well's electrical system. The soil near the well contains elevated levels of methane. The well is now useless. The land owner may be in danger if methane collects in the ranch house basement or elsewhere and is accidentally ignited. Coalbed methane operations surround this ranch.

I have visited several other ranches where coalbed methane operations are ongoing and water wells have been impacted.

I have also visited areas where water wells are "gassy" and coalbed operations have not yet begun. These places represent sites where the balance of natural forces (water and gas) are somewhat at equilibrium. A slight shift in either direction (i.e., more groundwater or less groundwater) could sway this balance. These sites should be "Red Flagged" as those most likely to be adversely

BUREAU OF LAND MANAGEMENT
JUN 24 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

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June 24, 1999

Richard Zander

Bureau of Land Management

1425 Fort Street

Buffalo, WY 82834

email: richard_zander@blm.gov

Dear Mr. Zander:

I wish that my name, address, city, state, etc. be kept confidential.

In reviewing the Wyodak Coal Bed Methane Project Draft Environmental Impact Statement I have developed the following suggested changes:

Chapter 2, Page 2-11, Well Production Facilities

Suggested Change

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Chapter 2, Page 2-14, Produced Water-Gathering System and Discharge Facilities

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... NPDES permit within the project area. In accordance with WDEQ all discharge points will have continuous flow monitoring.

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Chapter 2, Page 2-18, Specific Monitoring Activities, Groundwater

Suggested Change

Periodic spot checking of measurements made by operators not using third party data collection on their monitoring wells. The CBM operator will be charged for the spot check.

Thank you for this opportunity to participate in your DEIS. I would be happy to answer any questions that you may have concerning my suggested changes. I will state again, I wish that my name, address, city, state, etc. be kept in confidence

14

devon
ENERGY CORPORATION

20 North Broadway, Suite 1500
Oklahoma City, OK 73102-8260

Telephone 405/235-3611
Fax 405/552-4550

June 22, 1999

BUREAU OF LAND MANAGEMENT
JUN 25 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Certified Mail
Return Receipt Requested

Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

RE: Wyodak Coal Bed Methane Project Draft Environmental Impact Statement - May 1999

Dear Mr. Zander:

Following are the Devon Energy Corporation (Nevada) comments on the subject DEIS:

1. At various places in the DEIS, a comment is made regarding the potential for methane migration into water wells.

   - Methane is valuable to producers and, ultimately, the public. Therefore, it is incumbent upon each operator to assure methane recovery is optimized for eventual sale.

2. Page 2-11, top paragraph, "A downhole pump will be utilized to produce water from the uncased open hole interval located below the steel production casing."

   - This statement implies that a downhole submersible-pump is the only method to be utilized on all wells. In some situations, another suitable method may be more economic and efficient than a downhole submersible-pump. We recommend that this issue be left open to evolve with the play.

3. Page 2-16, third complete paragraph, "If no water well falls within the initial COI, the COI would be expanded to the next nearest water well."

   - We recommend this sentence be changed to read:

     "If no water well falls within the initial COI, the COI would be expanded to the next nearest permitted water well, not to exceed one mile."

     We recommend this change because industry standards by most government agencies with oversight responsibility are 1/2 to 1 mile.

BUREAU OF LAND MANAGEMENT
JUN 25 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

   - We are not aware of water wells that have not been permitted. Water wells outside our recommended distance limitation are not likely to be impacted by CBM activity.

4. Page 2-17, third bullet on the bottom of the page, "Based on current WSEO requirements, it is expected that the WSEO would require the operator to submit monthly reports containing the following information in addition to static water level measurements for each CBM well:"

   - What is the definition of static water level?

   - This requirement will result in a significant amount of unnecessary information and substantial burden to field operations. We recommend that the bottomhole-pressure reporting be reduced to a maximum of one well per month per township. This will still provide sufficient information to monitor de-watering and aquifer pressure on a regional basis. Also, this would relieve the BLM, operators and other governmental agencies of a huge administrative burden. It would be virtually impossible for the BLM and each governmental agency to monitor static-pressure data from thousands of CBM wells each month. For field operations, the suggested change would relieve a huge operational burden and provide for more consistent field operations. Under the draft proposal, the operators will experience great losses in production and reduced de-watering efficiency. For example, a well that produces 300 MCFD would lose 800 mcf in production in one year if shut-in 8 hours each 45 days. **If an operator has 1000 wells, the total lost production approaches nearly 1 bcf.** Finally, the burden on operations is significant. For example, for a 100-well program, an operator would have at least two wells shut-in every day. For a 1000-well program, an operator would have over 20 wells shut-in at any one time. Cycling wells in this fashion will result in more trips to the well than we believe is appropriate on a two track road system. During times of poor weather conditions, it is impossible to reach some locations even with a 4x4 vehicle. If we are forced to shut-in wells as frequently as stated, we will experience rutting conditions, stuck vehicles, and extensive road repairs. As an operator, we are trying to limit the number of trips we make to each well. We strongly recommend that this requirement be reconsidered and changed.

5. Page 2-20, top paragraph, "In coordination with the WSEO, an adequate number of monitoring wells would be added to the existing monitoring wells that were established previously as part of the Gillette North CBM Project EA and Gillette South CBM Project EIS assessment and decision process (Table 2-4)."

   - A sufficient number of monitoring wells already exist.

BUREAU OF LAND MANAGEMENT
JUN 25 1999
BUFFALO FIELD OFFICE
BUFFALO WY

6. Page 4-14, bullet #4, "Alternate discharge points will be utilized, as appropriate, to minimize spring flooding of fields or to provide for other seasonal use."

   - Since all discharge points must be permitted in NPDES permits and monitored regularly (including water quality sampling), why would alternate discharge points be required?

7. Page 4-14, bullet #6, "Existing downstream culverts may need to be replaced with larger sizes to handle new flows. New culverts will need to be sized considering total flows." and page 4-15, bullet 5, "Downstream impoundments may need new or redesigned outlet works in order to handle the steady inflow provided by CBM discharge water."

   - How far downstream must this be analyzed? Who will be asked to do this? Under what authority will the request be made?

8. Page 4-14, bullet #7, "Discharges will be limited to a volume less than or equal to the naturally occurring mean annual peak flow that can be handled by the channel cross-section under anticipated conditions, including flood events such as the 2-year 24-hour storm."

   - Some drainages have near zero mean annual peak flow, especially the Belle Fourche drainage basin. How would CBM flows be discharged at all in these areas, even for a single well? The third bullet on page 4-14 provides all information needed for produced water discharges. The wording as quoted above should be changed to say the same as the third bullet on page 4-14, or eliminated.

9. Page 4-15, bullet #7, last sentence, "River monitoring plans will be developed in consultation with the USGS and the BLM."

   - Will the operators be asked to do this? Why is it necessary?

10. Page 4-15, bullet #10, "Reclamation must produce a natural appearance and must be consistent with site conditions, area management standards, and projected uses, as agreed upon by the operator, landowner or lessee, and appropriate state and federal agencies."

    - This bullet should be worded: "Reclamation is intended to restore the condition of the disturbed area as practicably as possible to its condition before the disruption."

11. Page B-1, top paragraph, "Not all of the mitigating measures in this second section are applicable to coal bed methane development."

    - Which mitigating measures in the second section ***are*** applicable to coal bed methane development?

BUREAU OF LAND MANAGEMENT
JUN 25 1999
BUFFALO FIELD OFFICE
BUFFALO WY

12. Page B-2, last bullet on the page, "Cumulative discharge must not exceed the naturally occurring, mean annual peak flow of the receiving channel."

    - Some drainages have near zero mean annual peak flow, especially the Belle Fourche drainage basin. How would CBM flows be discharged at all in these areas, even for a single well? The third bullet on page 4-14 provides all information needed for produced water discharges. The wording as quoted above should be changed to say the same as the third bullet on page 4-14, or eliminated.

13. Page B-4, under "Monitoring Plans," fourth bullet, "Downstream channel (below the well(s)/project) will be inspected for signs of accelerated erosion due to the continuous flow of produced water."

    - Who is responsible for the inspection?

14. Page B-6, #5, "A flare pit will be constructed on the well pad for use during drilling operations. It will be located at least 125-feet from the well head and will be located down-wind from the prevailing winds."

    - A flare pit is generally constructed for a conventional well. CBM wells will not have flare pits.

15. Page B-6, #7, "The reserve pit will be lined with an impermeable liner if permeable subsurface material is encountered."

    - This will be fresh water. There is no need for a liner.

We appreciate the opportunity to comment on the DEIS.

Sincerely,

G. N. Mollock, P.E.
Manager, Environmental, Industrial Hygiene & Safety

GNM/lce

15

Neil Miller <nmiller@trib.com> on 06/28/99 11:43:00 AM

To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: EIS for WYODAK Coal Bed Methane Proj.

Neil O. and Jennifer S. Miller
P.O. Box 742
Basin, WY 82410

Richard Zander
BLM Buffalo Field Office
1425 Fort St.
Buffalo, WY 82834

Dear BLM Managers,

We have several concerns with regard to the proposed WyoDak coal bed methane project which of 5890 wells at about 16 wells per square mile! Of utmost concern is the use/abuse of the groundwater which will be brought to the surface as a byproduct of the current methane technology. We do not feel this is the proper way to use this limited resource as we need to share this aquifer with future generations. Spilling it onto the surface with no specific use in mind but to access methane gas is a wasteful proposal. Wyoming is an arid state, and we must therefore look to the future use of that water a source of drinking water and irrigation water for our kids and grand kids. We feel that the technology of extracting methane needs to be improved so that it does not impact our groundwater.

Other concerns about the EIS include the lack of protection or compensation for the adverse impacts to landowner wells after the completion of the project or for as long as the affected aquifer remains in a depleted state. In addition, the EIS shows that wildlife will clearly be affected. What are the plans to mitigate the impact on wildlife. We say that the density of the wells needs to be drastically reduced to protect the wildlife of Wyoming. Finally, the EIS does not give specific mitigation plans to compensate landowners in the event of surface damage due to methane seeps, underground fires, failure of reclamation efforts, and surface flooding.

Please curtail this project as Wyoming's water and wildlife is worth much more than methane gas to the people of Wyoming.

Sincerely,

Neil O. and Jennifer S. Miller

16

"E. Barlow" <barlow@trib.com> on 06/28/99 07:38:08 AM

BUREAU OF LAND MANAGEMENT
28 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: Wyodak CBM EIS comments

Dear sir,

I am entering these comments in regard to the Draft Wyodak CBM EIS. I do not believe that there has been an adequate length granted for the comment period. The projected life of this CBM project is 12- 20 years and yet the public is allowed less than 60 days to comment. The comment period must be extended.

Because there are numerous issues and not much time I will comment specifically on several points.

1. Assumptions- this EIS and essentially every calculation within it are derived from "assumed" projections with regards to the development and production of CBM. The water is my greatest concern. Twelve GPM is a tidy number, but it must be underscored that in the western part of this area Devon is projecting 58 GPM. In addition, more recent figures obtained from the WOGCC for March indicate water production per well in excess of 14 GPM. Twelve GPM may be a gross underestimate at least locally, if not in general.

The 40 acre well spacing assumption is apparently incorrect. Numerous operators have told me they plan to or have actually drilled two wells on each "fourty". They are drilling to different depths is my understanding. This complicates both the number of wells projected, the water production figures and certainly the impacts on the land.

The statement is made that "400" wells could be permitted in a given year. What is this based on?

2. Monitoring/mitigation- these issues inadequately described and defined in this document. There must be monitoring of this activity, however it must be done in a proactive manner. This can only be accomplished by attaining an solid baseline prior to production. The drilling of monitor wells after production has started is not proactive in obtaining a reasonable baseline. Mitigation is largely defered out of this document. I feel there must be certain parameters set in place within the EIS to guide the process.

3. Beneficial use of the water- it is my contention that the production of copious amounts of groundwater, that for all practical purposes is not "used", is wrong.
The statement regarding livestock, irrigation and fisheries are short-sighted at best. The average cow requires 12 gallons per day, not per minute. Irrigation is a good idea except that what do you do with the water outside of the less than 120 day growing season. Also topograghy and soil stability are concerns. I would suggest that if this is a viable option the BLM should start some pilot projects.

4.Water management plan- I think this is essential for all parties to participate in this process and I appreciate its inclusion. It must be further developed. It is my belief that this is the one area which has the ability to make some very positve contributions or dangerous impacts. The concept of cumulative downstream effect must be addressed and this plan could greatly facilitate that. I want it to be a requirement for approval of APD. Currently, the EIS uses terms like request and ask. Do you want it or not? I insist that it be required and that it be a focal point of the process.

5. Reinjection- this relates back to the beneficial use concerns I have. I do not believe that letting the water run down the drainages is a beneficial use. It may benefit Montana or South Dakota, but will have little positive impact locally. In fact, I believe that there will be tremendous negative impacts locally. So, the lack of attention that the EIS gives to reinjection is a dissappointment at best and negligent at worst. This area must be fully investigated as an option for the produced water. It seems there are currently producers in contact with the WOGCC with regard to this issue. This EIS must extensively address this option, not simply dismiss it.

This is a very abbreviated list of concerns I have. I have attached a letter which I wrote to Governor Geringer with a variety of concerns. I request that it be included as part of my comments.

I thank you for your time and consideration. I sincerely look forward to a longer comment period and your response to my concerns.

Sincerely,

Eric Barlow

- gov_.wps

17

Wildlife Management Institute

Len H. Carpenter, Field Representative
4015 Cheney Drive • Fort Collins, Colorado 80526
Phone (970) 223-1099 • Fax (970) 204-9198
E-Mail xxcarpenth@interserxxxxx
lenc@verinet.com

BUREAU OF LAND MANAGEMENT
JUN 28 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

ROLLIN D. SPARROWE
President
LONNIE L. WILLIAMSON
Vice-President
RICHARD E. McCABE
Secretary

June 24, 1999

Richard Zander
BLM Resource Area Office
1425 Fort Street
Buffalo, WY 82834

Dear Mr. Zander:

I am the Southwest Field Representative for the Wildlife Management Institute. The Institute is a private, nonprofit, scientific and educational organization founded in 1911 and dedicated to the restoration, conservation, and sound management of natural resources, especially wildlife, in North America. I have the following comments on the DEIS for coal bed Methane Development Projects in Campbell and Converse Counties, Wyoming.

First of all, I am concerned and disappointed in your choice of alternatives. Alternatives in a DEIS should be broad enough to allow for reasonable decision space. In this DEIS, there is the proposed action (3000 wells), one alternative (expanded project area) with 5000 new wells, and the no action alternative. Why is there not an alternative that analyzes the pros and cons of a reduced project area? In Chapter 2, you outright dismiss an alternative that would reduce the number of federal wells to no more than 1500 by saying that the flexibility in the implementation of the Proposed Action will handle that possibility. This approach violates the purpose of developing viable alternatives in NEPA documents. A wide range of alternatives and their analyses better informs the public(s) and decision makers of expected impacts. It should not be the role of the agency to decide this before hand. In the search for a creditable document I urge the BLM to consider adding a reduced project area alternative in the FEIS. If this is not done, the FEIS must justify with more than a sentence or two and providing documentation on how the Proposed Action can hold well development below 1500.

In the scoping comments I raised the issue of the validity and currency of the biological data used in the DEIS analysis for wildlife and fisheries resources. The DEIS only heightens my concerns. Given that nearly 17,000 acres of terrestrial wildlife habitat will be affected during the life of the project it is important that data used for the analysis of impacts on terrestrial species be as valid

and relevant as possible. Chapter 4 presents the environmental consequences of the selected alternatives. Compared to other DEIS documents that I review, this chapter is grossly inadequate. A good example of the inadequacy is on page 4-89 in the paragraph on upland birds. It is stated "numerous grouse leks have been identified with the project area." What kind of information is this? Undoubtedly, the grouse referred to is sage grouse. Given the concern for sage grouse throughout their range at this time, it is required that the document reveal to reviewers what the species is and what the expected impacts will be. My point is that this kind of document preparation is sophomoric, lazy, far from scientific, and highly questionable in value. This same kind of generality toward individual wildlife species is spread throughout the chapter on environmental consequences. The DEIS does not reveal the source or currency of any of the information. I request that this sloppy attention to detail be cleared up in the FEIS! Again, it appears that the BLM is simply jumping through hoops and is meeting neither the intent nor spirit of NEPA documentation.

At what point does the density of development (wells, coal fields, coal bed methane projects), reach the critical carrying capacity where it is no longer possible that the development can be managed in such a way as to provide for other natural resources and the use and enjoyment of those natural resources by people? The inherent number of roads with increased traffic levels and increased dust will seriously impact air and water quality. It is time that the BLM begins addressing cumulative impacts on some other basis than project by project.

Finally, I am concerned about the "sense of place." The natural environments of Wyoming are unique and provide habitats for a wide variety of animals. They also provide unique opportunities for the American public to enjoy the great out of doors in a variety of ways. Continued energy development at the pace described in this proposal threatens those values. The FEIS should address this issue. At some point in the near future the BLM must acknowledge what is happening to the public lands in Wyoming and begin to limit the growth of the energy industry and the concomitant loss of other natural resources. Federal law requires that the BLM exercise its long term stewardship responsibilities in land use decision making. The BLM is not in place to simply accommodate every use that is requested.

Thanks for the opportunity for comment. Please be sure I receive the FEIS.

Sincerely,

Len H. Carpenter

Len H. Carpenter
cc:
R. Sparrowe, WMI
T. Fry, BLM, Washington, D.C.
A. Pierson, BLM
J. Baughman, Wyo. G&F

18

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4000 Airport Parkway
Cheyenne, Wyoming 82001

ES-61411
kd/W.02/WY2582.kd/cbmgillt.ltr

June 24, 1999

Memorandum

To: Richard Zander, Bureau of Land Management, Buffalo Field Office, Buffalo, Wyoming

From: Field Supervisor, Ecological Services, Cheyenne, Wyoming (ES-61411)

Subject: Wyodak Coal Bed Methane Project Draft Environmental Impact Statement

Thank you for providing the Draft Environmental Impact Statement for the Wyodak Coal Bed Methane Project in Converse and Campbell Counties, Wyoming. My staff has reviewed this document and we have the following comments.

Threatened and Endangered Species

The status of the mountain plover (*Charadrius montanus*) has been changed from candidate to proposed. In the Federal Register dated February 16, 1999, the U.S. Fish and Wildlife Service gave notice of a proposal to list the mountain plover as a threatened species pursuant to the Endangered Species Act (Act) of 1973.

ESA regulations at 50 CFR 402.10 allow for conferencing with the Service on any action the Federal agency determines may affect a proposed species, and requires conferencing with the Service on any action that is likely to jeopardize the continued existence of any proposed species. On page 7599 of the proposed rule to list the mountain plover, the Service has identified some actions that will likely trigger section 7 conferencing. We believe the proposed action qualifies as one of these actions, and consequently the BLM should determine whether the project may affect the mountain plover. If so, we ask that you coordinate with this office to discuss whether the action is likely to cause jeopardy to the mountain plover, and identify measures that would minimize or eliminate any proposed adverse effect. By doing so, the need to consult with the Service may be eliminated or the consultation process may be significantly streamlined should the mountain plover actually be listed as threatened.

Surveys for nesting mountain plovers are recommended if ground disturbance (wells, roads, pipelines, etc.) of the proposed project occurs between May 1 and June 30. If the mountain plover is listed during the project and an effect is likely, then consultation would be necessary and operations may cease until adverse effects can be addressed. Also, please recognize the

mountain plover is a migratory bird protected under the Migratory Bird Treaty Act, 16 U.S.C. 703.

Additionally, we believe the BLM should commit to consultation with the Service in accordance with section 7(c) of the Endangered Species Act of 1973, as amended, on black-footed ferrets (*Mustela nigripes*), Ute ladies'-tresses (*Spiranthes diluvialis*), and the bald eagle (*Haliaeetus leucocephalus*). By regulation, a biological assessment must be prepared for "major construction activities" which are considered to be Federal actions significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act. The biological assessment will help determine whether informal or formal consultation under section 7 of the Act is necessary.

Migratory Birds

The DEIS states that special habitats for raptors will be analyzed site-specifically during the review of APDs or Sundry Notices. We recommend that the DEIS establish a disturbance-free buffer zone of ½ mile during the nesting season (February 1 through August 15) for all raptor species except listed threatened and endangered species and the ferruginous hawk, which should be protected by a 1 mile disturbance-free buffer zone. We can then consider modifications todify buffer zones, if necessary, at the APD process level.

Additionally, the DEIS does not address burrowing owls (*Athene cunicularia*), a resident in prairie dog towns. There is concern that burrowing owl populations are declining. Therefore, we recommend measures be implemented to minimize impacts on this species. If take of burrowing owls or their nests appears likely, a permit from the Migatory Bird Office of the Service is needed.

Sage Grouse

Sage grouse are declining throughout their range. There are several proposed hypotheses for this decline, including development of underground energy resources. Given the high public interest in this species, we can likely expect a listing petition in the near future. If sage grouse are listed prior to completion of this project, consultation under section 7 of the Act may be necessary. Potential impacts to sage grouse from this project should be thoroughly analyzed at this time to minimize any activity which may contribute to their decline. We recommend that the ¼ mile buffer zone around a lek be changed to ½ mile to reduce the likelihood that proposed activities will disrupt breeding and nesting activities.

Water Quality

We are concerned that produced water from coal bed methane production that is discharged into shallow impoundments may not only create highly saline reservoirs or ponds as stated in the DEIS, but also may create an attractive hazard to many species of birds and wildlife through the evaporative concentration of selenium. Therefore, we recommend against storing water in closed impoundments.

Elevated waterborne selenium concentrations have been documented in the groundwater and surface water from Campbell County and disposal of wastewater with elevated selenium concentrations into closed basins can adversely affect birds and wildlife. To protect waterfowl, shorebirds, and other wildlife from adverse effects, waterborne selenium concentrations should be 2 µg/L or less (Skorupa, J.P. and H.M. Ohlendorf. 1991. Contaminants in drainage water and avian risk thresholds. In: A. Dinar and D. Zilberman, eds., *The Economics and Management of Water and Drainage in Agriculture*. Kluwer Academic Publishers. Norwell, Massachusetts. pp. 345-368.). Waterborne selenium concentrations >3 µg/L exceed the bioaccumulation threshold for wildlife. Food organisms can bioaccumulate selenium from the water and supply a toxic dose of selenium to wildlife. The selenium concentration may not affect the health of the food organism (Lemly, A.D. 1993. Guidelines for evaluating selenium data from aquatic monitoring and assessment studies. Environ. Monit. Assess. 28: 83-100) but top level consumers in aquatic systems, such as waterfowl can readily accumulate selenium concentrations that lead to low reproduction, embryonic deformities and increased mortality (Ohlendorf, H.M., A.W. Kilness, J.L. Simmons, R.K. Stroud, D.J. Hoffman, and J.F. Moore. 1988. Selenium toxicosis in wild aquatic birds. J. Toxicol.Environ. Health. 24: 67-92.).

Cumulative Impacts

We do not believe the DEIS fully discusses all cumulative impacts of the proposed action to wildlife and migratory birds. Specifically, cumulative impacts associated with other activities such as coal mining, railroad construction, and other natural resource leases in and around the project area should be addressed more thoroughly. Additionally, the cumulative impacts of roads and pipelines to wildlife and migratory birds need to be discussed more thoroughly, particularly with respect to the number of roads, total mileage of roads, and the amount of disturbance associated with pipeline installation. The discussion should verify that excavated soils from pipeline trenches will remain within the right of way and the potential impacts associated with new transmission lines or meter stations if current facilities are not sufficient.

The DEIS does not offer any supporting information that suitable habitat for wildlife species and migratory birds adjacent to the project area is available for displaced animals. Specifically, no information has been provided on whether these areas are already occupied by these or other species which may prevent the displaced animals from successfully relocating to these areas. The DEIS should provide quantifiable data documenting that these adjacent habitats are not currently at carrying capacity for those species to be displaced by the proposed activities.

Furthermore, following surface disturbance, the lands will be reclaimed. However, for many species reclaimed areas will not be immediately available as habitat as these areas may differ significantly in vegetation composition and structure, as well as distance to disturbance, from the previously undisturbed habitat. Therefore, the significance of impacts to wildlife and migratory birds are understated and the DEIS should be revised to more accurately portray such impacts. If surveys indicate that mountain plovers are present in areas where ground disturbance is necessary, native vegetation should be planted to reestablish plover habitat.

These comments are made pursuant to the National Environmental Policy Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act. Please keep this office informed of any developments or decisions concerning this project.

If you have any questions please contact Kim Dickerson of my staff at the letterhead address or phone (307) 772-2374, extension 30.

Sincerely,

Michael M. Long
Field Supervisor
Wyoming Field Office

cc: Director, WGFD, Cheyenne, WY
Nongame Coordinator, WGFD, Lander, WY

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BUREAU OF LAND MANAGEMENT
JUN 29 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

To: Richard Zander
BLM, Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming, 82834

Dear Mr. Zander,

I am writing to address concerns about the EIS for the WYODAK Coal Bed Methane Project. I am concerned about deficiencies in the following areas:

1.) What "beneficial use" is the discharged water being put to? As far as I know, it's just being dumped on the ground. This runs contrary to Wyoming laws;
2.) Landowner mitigation is not assured in cases of seeps, fires, flooding, etc.;
3) What are mitigation plans for wildlife?;
4) No protection for landowners for adverse impacts to wells after the project is completed.

Wyoming has the rainfall of a desert. We can't afford to foul or waste what little water we have. Once again, developers are looking to make a fast buck and they don't care about the long-term effects on us Wyomingites.

Sincerely,

Pam Christensen

Pam Christensen
450 Idaho Avenue
Sheridan, Wyoming 82801

20

Office of Federal Land Policy

122 West 25th Street ● Herschler Bldg., 3 West ● Cheyenne, WY 82002-0600 ● 307-777-7331 ● 307-777-5400 fax

BUREAU OF LAND MANAGEMENT
JUN 30 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

June 28, 1999

Richard Zander
BLM, Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834-2436

Re: Wyodak Coal Bed Methane Draft Environmental Impact Statement

Dear Mr. Zander:

Enclosed you will find comments from the Wyoming Department of Environmental Quality, Air Quality Division. Please incorporate these comments into the packet of comments sent to you on June 18, 1999 from the State of Wyoming. Thank you.

Sincerely,

Julie L. Hamilton
Planning Consultant

Enclosure (1)

20a

THE STATE OF WYOMING

JIM GERINGER
GOVERNOR

BUREAU OF LAND MANAGEMENT
JUN 30 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

ADMINISTRATION	ABANDONED MINES	AIR QUALITY	INDUSTRIAL SITING	LAND QUALITY	SOLID & HAZARDOUS WASTE	WATER QUALITY
(307) 777-7758	(307) 777-6145	(307) 777-7391	(307) 777-7368	(307) 777-7756	(307) 777-7752	(307) 777-7781
FAX 777-7682	FAX 634-0799	FAX 777-5616	FAX 777-6937	FAX 634-0799	FAX 777-5973	FAX 777-5973

June 21, 1999

Through: Julie Hamilton, Wyoming Office of Federal Land Policy

Mr. Richard Zander
USDI-Bureau of Land Management
Buffalo Resource Area
1425 Fort Street
Buffalo, WY 82834-2436

Re: Wyodak Coal Bed Methane Draft Environmental Impact Statement

Dear Mr. Zander:

The Air Quality Division (AQD) of the Wyoming Department of Environmental Quality (WDEQ) has reviewed the Draft Environmental Impact Statement and Air Quality Technical Reference Document for the Wyodak Coal Bed Methane Project. Attached you will find the Division's specific comments.

I would like to bring to your attention that the regulatory authority for mobile sources (i.e., rail, on-road, and off-road) lies with the Environmental Protection Agency (EPA) not the WDEQ-AQD. As such, questions on mobile source emissions control due to the contribution of mobile sources to the cumulative visibility impacts in the Class I and sensitive Class II areas should be directed to EPA. The Division believes that this is an important point to disclose to the public.

The Northern Cheyenne Reservation is a redesignated Class I Area not a federally mandated Class I Area and as such visibility impairment within the area is not addressed by the recently signed regional haze rule nor the existing visibility regulations for reasonably attributable impairment. Although the Division understands the desire to calculate visibility impairment at the Northern Cheyenne Reservation, the Division also believes that it is important to disclose the difference between this Class I Area and the two other federally mandated Class I Areas considered in the visibility impact analysis.

BUREAU OF LAND MANAGEMENT
JUN 30 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

The documents disclose that the Limits of Acceptable Change (LACs) have been established by a US Forest Service policy for evaluating impacts to Air Quality Related Values in Wilderness Areas but fail to mention that the LACs are not regulatory limits or standards. Failure to disclose that LACs are not regulatory limits or standards may lead the average reader into believing that an air quality standard or limit is being violated based on the results of the visibility impact analysis.

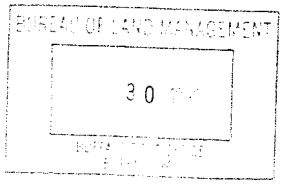
Although the Division continues to maintain that there are more appropriate locomotive source characterizations that would certainly affect the magnitude of the projected cumulative visibility impacts, we also recognize that the projected visibility impacts from the Wyodak CBM Proposed Project are minor, probably using either characterization method, in comparison to the projected cumulative visibility impacts. Consequently, we will not press the issue and are satisfied that our more substantive comments have been addressed by the BLM.

If you should have questions regarding the comments, please feel free to contact this office.

Sincerely,

Dennis Hemmer
Director

cc: Dan Olson
Bernie Dailey
Darla Potter



Comments on Draft Environmental Impact Statement

Page 1-1, Last Paragraph, 2nd Sentence
The Air Quality Division does not conduct Prevention of Significant Deterioration (PSD) analysis on all permit applications submitted to the Division. PSD analysis is only conducted for permits submitted by sources subject to the PSD regulations. Please reword this sentence to read

"At that time additional site specific air quality analyses, such as a Best Available Control Technology analysis or Prevention of Significant Deterioration increment analysis, may be performed."

Page 1-13, 2nd Paragraph, 2nd to Last Sentence
This statement is incorrect as the Wyoming Department of Environmental Quality does not have rules regarding noise limits. This sentence is also inconsistent with information contained in the DEIS in the 3rd sentence of the 2nd to last paragraph on page 4-113. Please delete this sentence from the text.

Page 4-62, 3rd Paragraph, 3rd Sentence
The Division only has regulatory authority over point sources not mobile sources. The regulatory authority for mobile sources (i.e., rail, on-road, and off-road) lies with the Environmental Protection Agency. Please reword this sentence to read as follows

"Prior to construction and/or operation of any pollutant point sources analyzed in this EIS, the WDEQ-AQD has the regulatory authority to review permit applications and to require permits, fees, and control equipment."

and add an additional sentence as the last sentence of the paragraph to read as follows.

"The US Environmental Protection Agency has the regulatory authority to control emissions from the mobile pollutant sources analyzed in this EIS."

Page 4-68, Last Full Sentence at top of page
The Division believes that the sentence contains a typographic error and should read as follows.

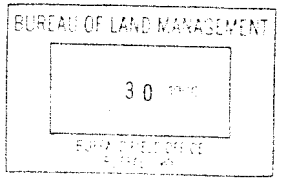
"...catalytic controlled rich-burn engines..."

Page 4-69, 1st Full Paragraph, 2nd to Last Sentence
To make this sentence correct it should be revised to read as follows.

"The average annual NO_2 background ..."

Page 4-71, 4th Paragraph, 1st Sentence
Please revise this sentence to accurately disclose what the WDEQ-AQD does during the permitting process.

"...complex, would address the risk of exposure to formaldehyde."



Page 4-74, Last Paragraph, Last Sentence
To accurately reflect the methods used to calculate aerosol extinctions this sentence needs to be revised to read

"For ammonium nitrate and ammonium sulfate the maximum..."

Table 4-20, 2nd Column Heading
This column heading lacks consistency with the rest of the DEIS as the word "airshed" is used instead of "area" to characterize the type of area of concern. It has been the Division's experience that the word "airshed" typically refers to an area encompassing most, if not all, sources contributing to air quality impairment at a specified receptor as opposed to the receptor itself. The Division requests that the word "airshed" be replaced with the word "area".

Comments on Air Quality Technical Reference Document

Page i, 3rd Paragraph, 2nd Sentence
The Air Quality Division does not conduct Prevention of Significant Deterioration (PSD) analysis on all permit applications submitted to the Division. PSD analysis is only conducted for permits submitted by sources subject to the PSD regulations. Please reword this sentence to read

"At that time additional site specific air quality analyses, such as a Best Available Control Technology analysis or Prevention of Significant Deterioration increment analysis, may be performed."

Page ii, 3rd Full Paragraph, 3rd Sentence
This sentence is incorrect. To accurately reflect the background visibility data used in the calculation of visibility impairment this sentence needs to be revised to read

"...considered the mean of the cleanest 20% background visibility data ..."

Page 2-1, Section 2.1, 2nd to Last Sentence
The Division believes that the sentence contains a typographic error and should read as follows.

"...catalytic controlled rich-burn engines..."

Page 2-8, 1st Full Sentence
The Division believes that the sentence contains a typographic error and should read as follows.

"...Gillette NO_2 monitoring."

Page 5-29, 1st Sentence
The sentence contains a typographic error and should read as follows.

"...operations, truck dumps, wind..."

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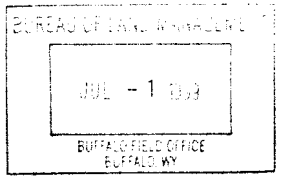


2452 So. Hwy 50
Savageton Rt.
Gillette, WY 82718
June 28, 1999

BLM
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

Dear Mr. Zander:

We had already begun this letter in regards to our personal problems and concerns on our house well when the notice arrived telling of the extension to the comment period on the Wyodak Coal Bed Methane (CBM) Environmental Impact Statement (EIS). Please consider this letter both a comment on the latter, as well as a statement as to our predicament.

In May of 1995 we wrote to you with concerns about our water well as it is on the same aquifer as the Lighthouse Coal Bed Methane Project. (See enclosed) Knowing that it would do us no good "to stand in the way of progress" we simply requested that our water well be monitored. Response was that, as we were lead to believe, our well would be monitored. (See enclosed) To date we have never seen or heard from anyone in regards to this.

At this point it may be like "shutting the gate after the cow has gotten out", but the fact of the matter is, we no longer have the water we used to have. Do you know how disconcerting it is to be in the middle of your shower and shampoo and suddenly no water? Have you planted and landscaped for twenty years, planted an annual vegetable garden, and then tried to squeeze out an hour or two worth of trickle irrigation per day to keep the most important alive? There is no overflow from the cistern to feed the little pond for stock water, ducks and geese. It is no longer possible to even fill the cistern more than one third, and that is with keeping a close watch on our household consumption.

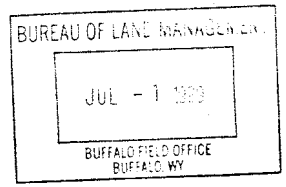
We believe that the Lighthouse Methane Project is, without a doubt, the cause of our loss of water. As a domestic water source, our well holds priority in Wyoming statutes for preferred uses. Our request is that you would act expediently in supplying us with information and procedure in rectifying this situation so that we might once again appreciate this life-giving resource, water.

As to our comment on the Wyodak CBM; how much longer will a government that was established "for the people, of the people" continue to allow, nay, encourage the rape and pillaging of our earth. When one of our most important natural resources is gone, how will the people live here. We cannot trust a government where bureaucrats and big business worship the "almighty dollar", laying sacrifice the many individuals who are the true stewards of this beautiful land.

You who have been entrusted with decision-making powers must use that power wisely. Think not of just today but project yourself into the future. Nothing lasts forever, but please, preserve our water, and our freedom and ability to live here in this area, even to our grandchildren.

We are sincerely and anxiously awaiting your reply.

Gary and Louise Kay
Gary and Louise Kay



BUREAU OF LAND MANAGEMENT
BUFFALO RESOURCE AREA
95 MAY 15 AM 10:57

BUREAU OF LAND MANAGEMENT
JUL - 1 1995
BUFFALO FIELD OFFICE

7

2452 So. Hwy. 50
Savageton Rt.
Gillette, WY 82718
May 12, 1995

Area Manager
Bureau of Land Management
Buffalo Resource Area
189 North Cedar
Buffalo, WY 82834

Dear Mr. Pomerinke:

Having analyzed the environmental assessment for the American Oil and Gas Lighthouse Coal Bed Methane Project we would like to make comment.

Of the three God given resources, air, water and land, we Wyomingites must put the highest value on water as it is the shortest in supply. Wyoming water rights are historically based on the first to put water to beneficial use has the first right or, perhaps simply put, "first come, first served." In the past, water was sufficient to supply the small agricultural population. Therefore, the waters of Wyoming flowed out-of-state and our neighbors dutifully established their water rights. Now, as industry grows in our state, water use and consumption is of major importance. Since Wyoming no longer holds the "first rights" to most of its tributaries, and surface water is minimal, we must look to ground water as the source available.

Geologists and hydrologists assure us that ground water supplies are magnanimous; that much of the water is unfit for human consumption. We are to assume, therefore, it is best put to industrial uses. At one time we were told the Madison Aquifer could not be used domestically, yet, several thousand people now use this ages old water daily. As to this great supply, if ones' well has " gone dry", there is no. access to the supply and life is, at best, difficult.

Wyoming water laws give us the definition of preferred uses; first in that list is drinking water for humans and livestock. However, last on the list is water for industrial purposes.

Our particular concern is with ground water, and individually, that of our domestic use well as it is in the coal aquifer. We feel that knowledge of the impact upon the aquifer by the Lighthouse Project is uncertain. Too little consideration and protection is provided for the established ground water rights. We feel the area monitored should be enlarged and more proviso, namely monitary, should be available for mitigation.

1. We would like to request monitoring of our domestic well; this to include a baseline inventory and a periodic aquifer monitor. This could also be considered a test base to determine impact of the project outside the boundary and away from surface mine interruption.

We hope you will consider these, as well as other, points in deciding the fate of our life-giving sustenance, water.

Sincerely Yours,

Gary & Louise Kay

Gary and Louise Kay

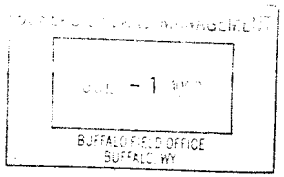
copy;
Jill Morrison
Powder River Resource Council

BUREAU OF LAND MANAGEMENT
JUL - 1 1995
BUFFALO FIELD OFFICE
BUFFALO, WY

Response to comments received from Gary and Louise Kay

1. The operator has agreed to monitor wells outside the 2-mile buffer zone if requested. The BLM has contacted the Kays, and will contact the operator to arrange monitoring for this well.

   Please refer the response to the Powder River Basin Resource Council for additional discussion of water monitoring and mitigation.



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BUREAU OF LAND MANAGEMENT
JUL - 1 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

June 29, 1999

Mr. Richard F. Zander
BLM, Buffalo Field Office
1425 Fort St.
Buffalo, WY 82834

Dear Mr. Zander:

I am writing in response to the Environmental Impact Study regarding the Coal Bed Methane Project for the WYODAK Coal Bed Methane Project.

As a landowner within the described zone and as a property targeted by a methane company for drilling, I have many concerns regarding the coal bed methane industry.

I have concerns regarding water well agreements, landowner compensation, water deployment, wildlife issues, etc., but I will only address my concerns not necessarily covered in the impact statement.

As a grazing permitee, I have entered into a grazing management plan with the BLM on our ranch. We have been fortunate to have the BLM aid us in a water pipline project, as well as providing fencing materials. These projects have helped us improve range management through moving cattle and directing grazing by turning water tanks on and off in predetermined patterns.

If the water produced by methane drilling practices is allowed to flow down draws and/or placed in numerous reservoirs, it obviously reduces our ability to use water that we can control to direct grazing, and thus possibly negatively affecting our grazing plan to the detriment of the resource.

More emphasis should be placed on working with the grazing permitees and landowners to not have their ranch negatively impacted by the helter-skelter deployment of water. Some may feel every rancher wants and needs more water, but many have plenty already and more water would certainly be a detriment to their operations.

The BLM should also be concerned and willing to recognize the possible negative impact methane development will have on the aesthetics of the land as well as the current way of life in the proposed areas. We should not be so concerned and motivated by the almighty dollar that developers are allowed to just trample over the beauty and tranquility of the open range land. Many landowners and ranchers live in these remote areas because of the solitude and remoteness, and are not anxious to change their way of life.

Every effort should be extended to work with the affected landowners, as well as their neighbors. I would hope that the BLM does not just open the flood gates and allow the methane developers to run wild. We have seen too many examples of hurried development and later say we should of thought before we cashed the check..

Thank you for your time and consideration.

Respectfully submitted,

Peter J. Dube
8885 US 16 West
Buffalo, WY 82834
307-684-2528

23

CITY OF GILLETTE

P.O. Box 3003 • Gillette, Wyoming 82717-3003
Phone (307) 686-5200

BUREAU OF LAND MANAGEMENT
JUL - 2 1999
BUFFALO FIELD OFFICE
BUFFALO WY

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

June 30, 1999

Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

RE: Wyodak Coal Bed Methane Project
Comments on Draft Environmental Impact Statement

Dear Mr. Zander:

I have reviewed the draft EIS and have prepared the following technical comments regarding the anticipated impacts. In addition, Mr. Larry Wester of Wester-Wetstein and Associates, Inc. of Laramie has reviewed the draft document at my request. I have incorporated his technical comments into this letter. Mr. Wester's comments are easily identified as they are mostly directly related to groundwater, geology and modeling.

1. Page 1-13, paragraph 2 states "No permits would be required for the proposed project from the affected counties, the City of Gillette, or the City of Wright." It is not clear if this statement applies only to air quality and noise or is a general statement. Construction within the City of Gillette could require that a permit be obtained. The City, by ordinance, issues construction permits for drilling within the jurisdiction. Use of existing rights of way or easements dedicated or owned by the City would require permits. Discharge of water within the City limits into the City's storm drainage system, including surface drainage, requires a permit. The City does have noise ordinances that could affect drilling or construction within the jurisdiction.

2. On Table 2-1, the maximum annual volume under the proposed action (3,000 more wells) is calculated to be 58,072 ac-ft/yr. Under the Alternative 1 (5,000) additional wells, the maximum annual volume is calculated to be 96,787 ac-ft/yr. The table indicates that this is the maximum volume, but these numbers seem to be based on an average production of 12 gpm per well. For purposes of this study, they have assumed an average production

of 12 gpm on page 2 -13. It would appear that the volumes represented would be average discharges rather than maximum discharges. It should also be noted that these discharges are in addition to the current discharges associated with existing CBM (coal bed methane) wells and the natural discharge from the streams. To put these discharges in a municipal use context they are 36,000 gpm (51,840 mgd) and 60,000 gpm (86,400 mgd) for the Proposed action and Alternative 1 action respectively. To put these discharges in a stream flow context, they are 80 cfs and 134 cfs, respectively. For comparison, recordings on Stonepile Creek just upstream of Interstate 90 for Water Year 91 show no recordable flow for 5 months of the year and a mean monthly flow that varied from 0.091 cfs to 1.10 cfs for the remaining seven months. Even with conveyance losses, the increase in flow at specific locations may be dramatic.

3. Table 2-2. The disturbed areas under all alternatives do not address erosion disturbance of intermittent streams that would be carrying the total estimated water production.

4. Page 2-13. The 12 gpm assumed for the average production per well is based on 300 CBM production wells located in the project area in 1998. They had some records that showed less production - 10.4 gpm, and reports to the Wyoming Oil and Gas Conservation Commission which showed an average of 14.6 gpm. I am not sure if these averages would be the same with the inclusion of the production of wells located along the Highway 50 corridor. This is a key issue relative to potential impacts. The average might be significantly greater than 12 gpm when factoring in new data which could consequently result in higher impacts. The preparers of the draft EIS are in somewhat of a disadvantage because the dynamics of the development are changing rapidly.

5. On page 2-14, it is noted that the operators will be asked to develop water management plans where multi-well projects are planned. To be cost effective, it appears that almost all of the development will be through multi-well projects and it seems that water management plans should not be optional. I keep thinking about the potential impacts to Donkey Creek and Stone Pile Creek. What will be the flows in these drainages and is the flooding protection currently in place adequate with a sizeable increase in the base flow. Also, will these discharges aggravate the groundwater problems currently encountered in Gillette? A pod of 6 wells producing at 12 gpm will increase the base flow of its receiving drainage by 0.16 cfs. This increase for a single pod is greater than the mean flow recorded for 6 months on Stonepile Creek in Water Year 91. Water management plans should be required that

fully address these issues. The City of Gillette needs to be fully involved in the water management plans for the CBM wells that are upstream of the community.

6. Page 2-22. The CBM operators should bear the cost of any improvements to the major floodways through communities when such improvements (or repairs) are directly related to the CBM operation.

7. On page 2-24, the total project life, including production, is expected to be 12 to 17 years. It would be good to know what this is based on and how this life span was derived.

8. On page 2-26, the prospect of injecting produced underground water is discussed. It is concluded that the water cannot be injected into the lower Ft. Union Formation. This is not what we were told during our meeting with representatives from the DEQ in Cheyenne. They further conclude that the water can be put to a number of subsequent beneficial uses once it is pumped to the surface. From our discussions with the State of Wyoming Officials, I do not think the concept of re-injecting the water was adequately addressed or the potential benefits recognized. We have conducted a re-injection test by removing a pump from a well completed in the Ft. Union formation and letting system water reverse flow into the well. Over a sustained period, the in-flow rate was about 120 gpm. This did not involve pumping. Based on this test and using the value of 72 gpm per pod of six wells, it is reasonable to assume that a re-injection well would handle most of the water produced from two pods of six wells.

9. On page 3-6, the draft EIS indicates that methane can migrate long distances along naturally occurring joints or fractures in rocks. I think this is a significant concern for those developers in and adjacent to the City of Gillette and neighboring subdivisions. There are no recommendations for the developers to address this issue. This is a serious issue as coal bed methane was the proximate cause leading to the closure of an entire subdivision north of Gillette.

10. Page 3-8 indicates flows in the Belle Fourche range from 0 to 10,300 cfs. The mean and median flows should be emphasized as they are more closely related to baseflows. This would be more in line with the way the CBM production is described (averages, means, etc,).

11. Table 3-3 shows a current outflow of 17,400 ac-ft/yr on the Belle Fourche River. From the figures provided on page 3-13, the outflow will be increased

by 8,904 ac-ft/yr. This is more than a 50 percent increase of Powder River Basin water that will be going to South Dakota, much of it flowing through Gillette.

12. Page 3-13 indicates that sediment loads will be increased. Page 3-16 identifies Gillette Fishing Lake as not supporting all of its designated uses due to silt and phosphate. The EIS should evaluate the impact of increased sediment load on the Gillette Fishing Lake and possible impacts to the dam itself from more frequent overtopping. A paved road is located on the top of the dam and also serves as part of the emergency spillway. What impacts can be anticipated?

13. On Page 3-23 the Tongue River Member is lumped together with the Lebo Shale member of the Fort Union Formation as an aquitard. This seems incorrect based on the information we have obtained from well logs. The Tongue River Section is the major aquifer in the Fort Union Formation in the Gillette area. This is where the best quality of water and coarsest sands are located and is really the main water producing zone. In this section of the EIS, they consider it a confining layer which separates the Wyodak coal seem from the Tullock member of the Fort Union. While the Lebo Shale member may effectively do this in places, the Tongue River member is the main aquifer everyone is shooting for and directly underlies the Wyodak coal seam.

14. Page 3-24 indicates that the Tullock yields are 200 to 300 gpm making it the attractive zone for municipal and industrial development. Later on the same page is stated that all water for domestic consumption is derived from groundwater supplies predominately from the Tullock aquifer. This is simply not true. With the possible exception of City of Gillette Well S-22, we have tried to use as much of the Tongue River member as possible. We installed bridge plugs in COG Wells S-11 and S-12 because of water quality. The bridge plugs were installed to seal off the underlying Tullock member and produce water from the overlying Tongue River member. If you will look at the COG wells you will note that as we go from east to west, the water quality generally improves. This is because we are able to use more of the Tongue River member for water development in the westerly wells.

15. Table 3-9 shows problems with iron and manganese, if some of the water was to be used for municipal drinking water. Use of the water for municipal use is not thoroughly discussed in the report. We have been in contact with several CBM operators regarding reuse by the City. The most advanced

discussions are with Pennaco. It is my belief that with proper well design and construction, the water could be used for municipal uses. Such uses could include re-injection for aquifer restoration, irrigation of large parks and golf courses, development of water related recreational areas, and, with appropriate treatment, use as a complete municipal source.

16. Page 3-25 indicates that water for domestic and livestock uses can generally be found less than 1,000 feet below the surface. This is true, but throughout most of the Gillette area at 1,000 feet or less the water is coming from the Tongue River member of the Fort Union Fm. (This is in conflict with statement presented in Paragraph 14 above.)

17. On page 3-25, they make the statement municipal water supply wells in the project area are predominately associated with the City of Gillette use of the Tullock aquifer. Again, while we do produce water from the Tullock, we try to get as much water as possible from the overlying Tongue River member because the yields are higher and there is a lower concentration of fluorides. This statement is generally wrong. Existing recent reports that were complete for the Wyoming Water Development Commission on Cook Road, Pine Butte, American Road, Sleepy Hollow, Wright, and the City of Gillette wells are all available from the WWDC, the State Engineer's Office and in most cases the University of Wyoming. These reports clearly indicate the producing members of the overall Fort Union aquifer.

18. Page 3-25 indicates municipal use in Gillette exceeds two million gallons annually. This is correct in that use does exceed two million gallons per year but totally inaccurate. Non-peak use is about two million gallons per day with peak use of about 11.5 million gallons. These values include water sold to customers outside of the city jurisdiction. The values do not include water consumption in several subdivision or I &S districts located in or adjacent to the jurisdiction of the City of Gillette.

19. On page 4-2, the EIS acknowledges that methane could migrate over considerable distances and emerge in water wells near coal bed methane activity affecting water wells and residences. Again, the developers in and around the City and surrounding subdivisions should proceed with caution.

20. Page 4-2 discusses likely impacts to mine sediment structures designed to accommodate historical flows. The City of Gillette major storm drainage system is design to accommodate historical flows. Overtopping of these structures and channels due to an increased base flow could have immediate

and devastating effects on the community. This needs to be fully addressed. Also the local city and county emergency management officials need to be notified of the potential for impact.

21. On page 4-4, it is indicated that the productive life of a CBM well is estimated to be 12 to 15 years. I am not sure if this in conflict with 12 to 17 year life span indicated on page 2-24. The 12 to 17 year life span may reflect more of the coal bed methane production life rather than individual wells. If so, this would indicate that the wells will "dry up" before the life span is over. This should be clarified.

22. On page 4-5, the EIS indicates the flows are expected to increase from 15.1 million gallons per day to 66.1 million gallons per day. 66.1 million gallons per day calculates to 74,047 ac-ft/yr which doesn't correspond with the figures shown on Table 2-1 (refer to Paragraph 1). Which is right?

23. Page 4-5 indicates infiltration will be about 20% of the conveyance losses that are estimated to be 23 to 58 percent of projected discharges. There is already a significant shallow groundwater problem in Gillette. What effect will the calculated conveyance losses in-stream and upstream of Gillette have on shallow groundwater levels? Is there a possibility of accelerated foundation and basement damage? Who mitigates the problem if it occurs?

24. On page 4-6, it is indicated that the outflow of the Belle Fourche River will double which is significantly more than what is represented on Table 3-3 and page 3-13. On page 3-13, a flow 12.3-cfs or 8,904 ac-ft/yr is anticipated to be added to the Belle Fourche River. On table 4.1, the expected CBM Well discharge at the Bell Fourche River is anticipated to be 19,243 gpm allowing for conveyance losses. 19,243 gpm equates to about 43 cfs or over 31,000 ac-ft per year. There is a conflict here.

25. Page 4-6 has a reasonable good discussion of the potential impacts to the land by the produced CBM water. These include erosion, flooding, etc. See previous comments.

26. On page 4-12, it is concluded that CBM generated flows, alone, are unlikely to cause significant flooding within the project area. I am not so sure this is true particularly where the drainages are so poorly defined and at least the initial yields may average substantially more than 12 gpm. If overbanking occurs within a developed area such as Gillette, there may be more significant impacts than the formation of overbank deposits.

27. On page 4-20, they indicate that 8 layers were used in the model. The upper six layers are associated with Wasatch Fm. and the Wyodak coal seam, and the lower two layers were used to represent the Lebo shale and Tongue River "aquitard" separating the Lebo from the Wyodak coal bed. This indicates that they did not include the Tongue River member as an aquifer in the model. As indicated elsewhere in my comments, the Tongue River member is the most important Ft. Union Fm. member to the City and other users of the Ft. Union Fm. If my understanding of the construction of the model is correct, I believe this to be a very serious flaw in the model and the EIS in general since none of the results reflect the impacts to the Tongue River member.

28. On page 4-35, it is indicated that water level changes above or below the coal are not expected to be significant because the coal is partially confined both above and below by a low permeability claystone layer. In the Gillette area we often have a very thick, medium to coarse-grained sand under the coal. They also indicate that the Lebo member is 800 to 1,000 feet thick. The Lebo and Tongue River members together are 800 to 1,000 feet thick. We have never found the Lebo member to be 800 to 1,000 feet thick when reviewing the numerous geophysical logs looked at during the course of the Ft. Union Aquifer Study. Most of the time, we found the Lebo Shale ranged in thickness from 200 to 300 feet and in some areas the Lebo Shale is very difficult to identify because it is very similar in composition to the overlying and underlying Ft. Union members. This thickness corresponds very well to the stated thickness' for the Lebo shale member contained in USGS Professional Paper No. 404, Stratigraphy and Structure of the Northern and Western Flanks of the Black Hills Uplift, Wyoming, Montana, and South Dakota. This paper further describes the Tongue River member, at the top of the formation, as consisting of sandstone, some shale and several thick coal beds. It also indicates that the difference between the Tongue River and Lebo becomes less pronounced in the southern part of Campbell County. From the work done in the Gillette area, we have noted are three very pronounced members, the Tongue River, the Lebo shale and the Tullock in descending order.

29. The preparers of the EIS indicate that they consider the 12 gpm to be very conservative. Is this the case considering the recent drilling?

30. On page 4-52, the EIS predicts 575 feet of drawdown in the general area we have sited as a municipal well field. It would appear that either the estimated drawdown is high considering the amount of sands in the Tongue River Formation or the anticipated withdrawals are low. If the 575 feet of drawdown is real, and extends into the sands below the Wyodak, this could be a severe

depletion of a valuable resource. Basically, because of the way they treated the Tongue River member of Ft. Union Fm., the model may be flawed and not accurately predicting the impacts of the development.

31. On page 4-61, the EIS predicts 675 feet of drawdown in the proposed municipal well field. The same concerns apply.

32. The EIS discusses monitor wells. The focus of these monitor wells appears to be on the Wyodak coal seam and the overlying Wasatch Fm. There is very little discussion, if any, relative to constructing multiple completion water wells with completions in the good sandstone sections below the Wyodak coal seams. Inadequate attention has been given to zones underlying the Wyodak coal seam.

33. It appears from the description of their groundwater models, that the authors of the EIS do not have a thorough understanding of the geology associated with the Fort Union Formation. This presents a real problem with the forecasted impacts on the groundwater resources in the area and may result in underestimating of the impacts on both groundwater and surface water.

As you can readily determine, I am primarily interested in the impacts to the City of Gillette's municipal water source, possible augmenting our water resources, impacts to our drainage system and impacts due to an increase in shallow groundwater resulting from seepage. I do not think the potential impacts are insurmountable but I do feel strongly that they be addressed in the EIS.

Thank you for providing an opportunity to make comments on the draft EIS.

Respectfully,

Bill A. Carson

Bill A. Carson, PE
Public Works Director/City Engineer

BAC/cla
Cc: John C. Darrington, City Administrator
Jon C. Young, Director of Utilities
Tom Langston, Director of Community Development
Larry Wester, Wester-Wetstein and Associates, Inc.
Dick Stockdale, State Engineer
Mike McDill, Campbell County Engineer
BAC:99-034

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United States Department of the Interior

BUREAU OF RECLAMATION
Dakotas Area Office
Rapid City Field Office
515 9th St., Room 101
Rapid City, South Dakota 57701

IN REPLY
REFER TO:

DK-700(Anderson)

JUL 1 1999

BUREAU OF LAND MANAGEMENT
JUL - 2 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

Subject: Review and Comments of Draft Environmental Impact Statement for the Wyodak Coalbed Methane Project

Dear Mr. Zander:

The Dakotas Area Rapid City Field Office, Bureau of Reclamation, is the owner and operator of Keyhole Dam and Reservoir near Moorcroft, Wyoming. We appreciate the opportunity to comment on the Draft Environmental Impact Statement (DEIS) and would like to be informed of developments concerning the project due to the impacts in operation of Keyhole Dam and water quality concerns for the irrigators on the Belle Fourche River in both Wyoming and South Dakota. The following are our comments on the DEIS and the project in general.

1. Water Quantity: If the projected outflows shown in Table 4-1 of the DEIS are correct, this will have a definite impact on the operation of Keyhole Dam. The outflows shown for the no action, proposed action, and alternative 1 scenarios all exceed the mean annual inflow of 21,000 acre-feet for Reclamation's 46-year period of record at Keyhole Reservoir. The outflows projected could cause Reclamation to release more water downstream to the Belle Fourche River. The public, Crook County Irrigation District, Belle Fourche Irrigation District, Keyhole recreationists and others need to be informed of the potential impacts of coalbed methane development.

2. Water Quality: Information from the DEIS would indicate good water quality from the project. The Crook County Irrigation District, Belle Fourche Irrigation District, and the public need to be informed of any potential impacts to the Belle Fourche River.

Thank you for the opportunity to comment. If you have questions please contact Curt Anderson or myself at (605) 394-9757.

Sincerely,

Jeffrey L. Nettleton
Rapid City Field Office Manager

cc's: Ms. Sue Lowry
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Mr. Ron Siefert, Park Superintendent
Keyhole State Park
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Mr. George B. Waters, Chairman
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Randy Oliver, Manager
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BUREAU OF LAND MANAGEMENT
JUL - 2 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

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"Kris Korfanta" <kkor@wavecom.net> on 07/06/99 03:27:04 AM

To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: coal bed methane project

Dear Mr. Zander:

I know I'm just 2 days late with sending my comments, but I hope they will be considered.

I am really concerned that we may rush through the process of permitting coal bed methane projects. I just returned from a trip back east, and am even more convinced that Wyoming has to do what it can to preserve our land for future generations--there isn't enough for the growing populace now. It's our responsibility to do all we can to ensure a quality environment.

Groundwater is a major concern....just how are we going to treat it? We need to put it to the best use possible before it's piped who knows where.

Reclamation is another major concern....are you going to require that the land be reclaimed at the highest level--to natural habitat--or just to minimum standards? Our wildlife is our state's greatest resource (except for the habitat the wildlife depends upon). It's the resource that all the people in more populated states crave to see when they visit.

We also need to be concerned about the landowners wells and land...are plans in place for this?

Thanks for your time and energy on this matter.

Sincerely,

Kris Korfanta

address: P.O. Box 453 Ranchester, WY 828399

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Gillette
Area
Groundwater
Monitoring
Organization

BUREAU OF LAND MANAGEMENT
JUL - 7 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

c/o Peabody Group
Caller Box 3034
Gillette, WY 82717

July 6, 1999

Attn: Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

RE: Wyodak Coal Bed Methane Project Draft Environmental Impact Statement.

Dear Mr. Zander,

The Gillette Area Groundwater Monitoring Organization (GAGMO) is composed of coal mines which share their ground water level and chemistry information on an annual basis. GAGMO has presented nearly twenty years of data to regulatory agencies and the public. We wish to express our concerns with the hydrology portions of the Draft Environmental Impact Statement for the Wyodak Coal Bed Methane Project (DEIS). GAGMO believes that a new calibrated and verified groundwater model is needed. The current model is so poorly calibrated that all of the predictions made from it are in question. This model must include the most probable number of wells rather than the comparatively small number of wells predicted in the DEIS, and the well discharge rate must be better predicted. The EIS must also objectively consider all potential impacts due to coal bed methane development.

GROUNDWATER

♦ GROUNDWATER MODEL

The groundwater model used for the DEIS is based on the Little Thunder stochastic model for the Black Thunder, Jacobs Ranch, and North Rochelle Mines as well as the Lighthouse and Marquiss EIS models. The results of the former showed such poor calibration that the model was rejected by the WDEQ/LQD, one of the organizations responsible for it, and a variation has unfortunately resurfaced here. The premise with these models was that the model parameters are statistically estimated since very little actual data are available for the aquifer. For the CBM EIS model, unique average parameters for each geologic unit were chosen. However, as with the Little Thunder, Lighthouse, and Marquiss models, much available data were not utilized for the DEIS groundwater model. Only 44 wells in the coal were used for the model calibration despite the model extent of almost 20,000 sq. mi. Once again, GAGMO must comment that the BLM has attempted a groundwater model for an extremely large area with very little data.

The model is poorly calibrated. As Table 1 shows, differences between actual and predicted heads are well over 100 feet over much of the model area, even around the mines. In the southern part of the basin, near the North Antelope/Rochelle Complex and Black Thunder Mine, the differences between actual and predicted heads range from 176 to 267 feet. Depending on the model parameters, this should lead to similar or greater underestimates of drawdown in the central part of the basin. This is described as a "reasonable" match with observed water levels. Drawdown comparisons are made between GAGMO maps and model drawdowns for 1995. The maps are at different scales and there is no legend on any of the maps in the model technical review. The scales are such that the sections on one map look like the townships on the other. However, digitized map comparisons (Figure 1 of this package) show that there is not good agreement with up to 8 miles of difference between the actual and modeled 5 feet drawdown lines. This is described as "comparing favorably" and as "lending credibility to the model" on the top of page 6-1 in the model technical report. The graphs on Figures 5-9 and 5-10 show apparent underestimates in modeled drawdowns.

Numerous recent groundwater models and pump test data are available in mine permits. Most of these models were performed with various MODFLOW variations as was the DEIS model. The information available from these models was apparently not used in the creation of the EIS groundwater model. The model information is partly based on the Little Thunder Pilot CHIA which showed similar technical problems (calibration, failure to incorporate structures, etc) and the 1988 USGS CHIA which was constructed when there was a much more limited data set.

The North Antelope/Rochelle ground water model completed in 1996 had premining calibration residuals of between 0 and 10 feet in the coal and between 1 and 31 feet in the overburden. In 1990, verification error were between 0 and 6 feet in the coal and 2 and 16 feet in the overburden. The mean absolute error for the coal and overburden were 3 and 13 feet respectively. In 1995, verification errors were between 1 and 12 feet in the coal and 0 and 15 feet in the overburden. The mean absolute error for the coal and overburden were 6 and 8 feet respectively.

The Caballo Mine recently completed a groundwater model for the forthcoming amendment to incorporate the North Caballo property into the mine. This model, which covers the area between the Wyodak and Coal Creek Mines, is a modified version of models completed for the Belle Ayr Mine and the Rocky Butte permit application. The initial head calibration residual for the coal in this model is from 0 to 9.6 feet. Due to the highly discontinuous nature of the overburden in this area with isolated relatively permeable sands within relatively impermeable clays, no calibration was made for the overburden in this model.

The Little Thunder area, the same general area covered by the Little Thunder pilot CHIA, has been modeled recently for the North Rochelle and Black Thunder Mines. Steady-state calibration was between 0 and 9.5 feet. 1995 verification was to within 6.7 feet of actual drawdown. As with the Caballo model, no overburden calibration was conducted for the North Rochelle and Black Thunder models. The groundwater model for the Buckskin Mine, north of Gillette, had a set calibration standard of 10 feet.

The description of the model does not agree with the model itself, aside from the generous descriptions of accuracy previously discussed. The model has eight layers although only two are actually considered effective. The coal is modeled as a single homogeneous unit. However, it is claimed on page 4-20, that faults and lineaments are incorporated into the model. The failure to account for structures may explain much of the error in the model. Lineaments that coincide with streams are visible on the drawdown maps available from GAGMO and discussed in groundwater models from the mines. The modeled CBM well pumping rate of 12 gpm may currently be

accurate near to the current CBM field near to Cordero. However, some wells will pump over 100 gpm, as seen in recent CBM wells drilled west of Hwy 50, and some will initially produce less than 5 gpm. However, fracing is now commonly used to increase the yield of CBM wells. Fracing in mine dewatering wells and CBM wells has often more than trebled water production.

The increased level of fracturing in the southern portion of the basin (see below) and away from the outcrop where the coal is thicker would explain the discrepancy between the 12 gpm modeled pumping rate and the greater pumping rate reported by mines and CBM operators. Given the hydraulic parameters for the coal aquifer presented on Table 4-1 and one-quarter mile well spacing, it is doubtful that 12 gpm would be a high enough discharge rate to cause the significant dewatering needed for CBM production. The members of GAGMO are concerned about the low modeled pumping rate, not only because the impact on aquifers will be underestimated, but also since the impact of high surface discharges needs to be properly predicted.

It is not accurate to model the coal uniformly across the Powder River Basin (PRB). While the estimates for the average coal conductivity and storativity are not necessarily inaccurate, by not accounting for the structures in the coal, the authors miss the main conduits of drawdown and subsurface flow. When dewatered, these zones essentially act as huge sinks to dewater adjacent tighter areas. Table 2 shows a comparison of aquifer parameters from the DEIS Model and recent mine groundwater models. The Porcupine Creek area within and upgradient from the North Antelope/Rochelle Complex is an example of such a fracture zone in the southern portion of the DEIS model area. Similar structures are known from other mining areas including the Little Thunder Creek area. Pump tests from the mines in the southern part of the basin indicate that the coal is indeed more fractured in this area (see page 4-13 last paragraph of the Technical Report). Numerous pump tests have been completed for the mines in this area since 1986. Only six wells from the area south of Wright were used for calibration of the DEIS model. The calibration difference in this area was between 176 and 267 feet. Why didn't the authors try to adjust this model with recent pumping test data from this area?

By having the initial heads too high, the model far exceeded actual drawdown near the mines (see Figure 1). It is also possible that the heads are too high due to the coal being modeled too tightly (i.e. too low a conductivity) as shown by the exaggerated early recovery of the recovery curves (Figure 5-9 and 5-10). This should have been adjusted for during model completion, or at least discussed. If it is indeed true that the coal was assigned an anonymously low conductivity, then the model will underestimate the pumping rate, amount of discharge, extent of drawdown, and possibly the final amount of drawdown depending on the time of dewatering, especially in the southern portion of the model area. One glaring error in the model is that the drawdown shown near the outcrop at the mines is much more than the premining saturated thickness. This error is more than 100 feet in many instances. This is related to the elevated initial heads. The global water balance of the model may be off by only two percent, but the geology of the model is not accurately depicted and the model not calibrated, therefore, this result is meaningless. Of course, it is possible that there are modeling errors that cannot be gleaned from reading the technical report.

The overburden is modeled homogeneously as a fine-grained sand which rarely occurs in the PRB as channel and aeolian deposits. Sand bodies are quite common, however, in the current CBM area between the Caballo and Cordero Mines. These sands are often not hydraulically connected. For instance, a monitoring well completed in a permeable sand layer less than one quarter mile from the Caballo pit has seen less than 0.8 feet of drawdown in one year. At some other mines, however, the highwalls are almost entirely clay with very little intervening sands or coals. It is also not realistic to model the layer between the overburden and coal as impermeable clay in all cases, although the DEIS model vertical conductance is greater that that of the recent mine groundwater models. Since very little overburden dewatering will occur due to coal dewatering according to the model, most overburden dewatering will occur due to mining. The model undoubtedly over-predicts the impact of mining on overburden water levels and under-predicts that due to CBM. The North Antelope / Rochelle model predicts that the extent of drawdown in the overburden will be less than a few miles compared to the 25 miles shown by the CBM model. If the overburden portion of the groundwater model is intended to be an accurate representation of the hydrogeology of the area, why is there no comparison made to actual head data?

The plots on Figure 5-9 and 5-10 show 50 percent recovery at the BLM monitoring wells within 10 to 25 years. Similar plots from the mine groundwater models show that 50 percent recovery will take much longer. Since under the DEIS modeling scenario, neither the overburden nor the Fort Union Formation below the coal can recharge the coal aquifer, the water level at the mines must recover prior to recovery of the coal in the CBM area. Why is the recovery period for the CBM well area so short? No estimate is made of full recovery time in the CBM model. Following the curve, complete recovery may take 1,000 or more years even if wells are turned off in 2015 and the model accurately predicts drawdown. Why is there no estimate for long term recovery of the coal aquifer?

The groundwater discussion on page 4-134 and 4-135 of the DEIS which compares CBM and mining impacts under the heading of cumulative groundwater impacts has no business being in this document, most of all for its technical inaccuracy. Yet, It is not the mandate of the BLM to actively support an industry during the EIS process, let alone compare one industry to another. As stated above, the Little Thunder CHIA pilot was not published because it was rejected by one of the sponsoring agencies.

Once in print, groundwater models tend to be taken by the public as statements of fact rather than predictions. In this case, a new groundwater model for the EIS is needed. The calibration errors shown on Table 1 are too great and show fundamental setup problems with the model. Drawdowns in excess of saturated thickness and the elevated initial heads are merely symptoms. Calibration should meet, or at least approach, those from the mines' groundwater models in the same general vicinity. The grid spacing of the current DEIS model is not too wide to achieve this goal. Unless the model is revised, however, the model results must be questioned.

The modeled geology must match that of the project area and known structures need to be incorporated into the model. The pumping rate for the well pods must be adjusted for local hydrologic conditions. Estimates of long term recovery to pre-pumping conditions at different locations on the model must be made. After completion of the new model, a technical review and comment period must be allowed for.

- A recharge area is apparently shown on a perched alluvial aquifer which sits on a breached playa along Tisdale Creek at the Caballo Mine.

- The member mines of GAGMO can help the modelers with obtaining data for a new EIS groundwater model. In addition, there are consultants available with extensive groundwater modeling experience in the PRB. The references indicate that only the Belle Ayr and Caballo Mine permits were reviewed and that these permits were not the most up to date versions. It is known that the mine permits at the Denver Office of Surface Mining are not being kept up to date with the large number of permit revisions occurring. It is, therefore, possible that the mine plans in the model are not current. However, groundwater models have been shown to be insensitive to non-significant mine plan changes. The modelers need to review mine permits on

file at the Cheyenne and Sheridan offices of the WDEQ/LQD. In addition, WDEQ/LQD staff members have a large amount of experience reviewing mine groundwater models.

- The DEIS states that the coal seam will only be dewatered to the top of coal at the well head. The dip of the coal seam should better be taken into account. Over the approximately 36 mile width of the Alternative 1 area, the coal seam will dip almost 1,700 feet as shown on the cross sections in the model technical report. At Caballo, the coal drops about 70 feet per mile on the west side of the mine (approximately 0.8 degrees), or about the thickness of the Wyodak seam. A well one or more miles west of a certain point on the coal could potentially remove all water from the coal seam at that point depending on the hydraulic properties of the aquifer. When wells are added on one-quarter mile centers across the basin, the coal near the east side of the basin may become almost completely dewatered and significant dewatering will take place towards the west. This has happened at the Belle Ayr and Cordero Mines due to nearby CBM wells (See Figure 4-2). This will greatly expand the recovery times presented in the mines' groundwater models.

- Comparisons are made to the San Juan Basin. Depressurization of coal seams by mining and recently by CBM in the PRB has caused gas migration towards mine faces and probably outcrops as recent evidence has shown. Monitoring wells near mines and CBM wells produce more gas as dewatering occurs. The 1953 Selvig and Ode reference is rather old and could only apply speculatively to PRB coals. Dewatering below the top of coal in shallower coal portions (i.e. < 300 feet overburden thickness) does not compress the coal seam as experience at mines has shown. Dry coal at some mines and around current CBM production areas still produces lots of gas. This is probably also true in deeper portions of the Wyodak coal seam. As CBM operators test how much dewatering can take place and the relative gas production, there may be a significant increase in dewatering. One current CBM operator was researching drawing the water table in deep coal seams in the PRB to the bottom of coal in order to release highly pressured gas. What increase in environmental impact will be observed if the CBM operators dewater to the bottom of the coal seam?

- The extent of the project life is not well explained. While wells may be taken out of use (e.g. from 40 acre spacing to 160 acre spacing), it remains unknown as to what the cutoff points will be for wells or what gas prices will be in 20 years. Therefore, the statement that pumping from CBM wells will stop after 2015 may be incorrect. As reported in the model technical report, water production from the producing CBM fields has remained steady after more than ten years of pumping. As well, according to local coal bed methane producers, gas production from long producing wells has maintained a steady rate or increased in many areas over that same time. If the current CBM wells have pumped for more than ten years with little decrease in pumping rate or gas production, why is the project life set at only 15 years?

- CBM wells are already being drilled west of Highway 50. Therefore, Alternative 1 may be much more realistic than the other alternatives. The maximum number of wells covered under the EIS Alternative 1 is 5890. However, CBM industry projections are that 15,000 CBM wells, as reported in the Gillette News-Record on June 7, 1999, may be drilled in Campbell County in the next 15 years. Why didn't the DEIS consider the full cumulative impact of CBM production on the Wyodak coal seam?

- Page 4-22 of the DEIS states that CBM development is primarily from the Upper Wyodak seam in the north part of the PRB, near the Rawhide and Buckskin Mines. However, it is known that CBM development is already occurring in multiple seams in the north part of the basin, including both Wyodak seams and other seams; and probably in other areas as well. The BLM needs to determine the amount of multiple seam CBM well production and the resulting environmental consequences, especially in terms of water production and aquifer dewatering.

- The increased migration of gas towards residences due to dewatering of the coal seam, as may have happened at Rawhide Village, is scarcely mentioned. CBM wells have been drilled adjacent to the Sleepy Hollow and Antelope Valley subdivisions in Gillette. Specific discussions should take place concerning the possibility for migration of gas towards homes in these areas. The ground water model seems to show connection between the Wyodak coal and the clinker near Antelope Valley. Has the BLM considered the effect of CBM related dewatering under inhabited areas of Campbell County and what are the potential impacts?

- Alluvium along the east side of the basin near to the outcrop rests directly on the coal in many places. The coal mines have been required to monitor alluvial water levels and quality and in some cases to maintain alluvial water levels at minimum levels while mining. What monitoring of alluvial water levels will the CBM operators need to perform? While the effect of alluvial drainage may be mitigated somewhat by CBM drainage down streams, what will the effect on alluvial water levels be when CBM wells have dewatered the coal seam near the outcrop and pumping of CBM wells has stopped?

- The DEIS does not explain how the typical CBM production well is constructed using open hole caving. This type of well may not be able to have the pump below the top of coal and is subject to filling with coal particles. Ranchers may not be able to use this type of well reliably for water supply when the water table declines below the top of coal and following years of pumping. This needs to be discussed in the EIS. How will ranchers use water from the coal if the water table has been drawn down so far?

- State O&G commission staff have stated that operators of CBM wells have been withholding static water level and pumping rate information for reasons of confidentiality. This should be checked and if true, be stated in the EIS since it limits the accurate determination of cumulative environmental effects.

- Statements are made about potential CBM water uses whether those uses are practical or not. Are there agreements in place for the air-cooled Two Elk power plant to use coal bed methane water as stated on page 2-14 or is this only a possibility?

SURFACE WATER

- Increased surface water flows may alter, but not necessarily improve the water quality. The high alluvial ground water salinity (actually over 30,000 mg/l TDS in many cases) and salinity of adjacent rock units may leach salts. While much is made of the capacity of major streams to handle CBM water, the CBM users are actually using minor ephemeral streams in many cases to discharge waters increasing the potential for leaching of salts and erosion. Due to its low initial sediment content, CBM discharge water has much erosive potential. What requirements will be in place to correct salinity and erosion problems occurring on streams due to CBM discharge waters?

- Very little is made of the potential for icing of streams and reservoirs due to CBM discharge. Ranchers are in some cases having to remove dams to prevent icing of meadows. Unlike

natural discharges and most mine discharges, CBM discharges will continue through the coldest part of the winter. Ranchers will not be able to use CBM water unless they can keep it warm. The EIS needs to further clarify and discuss the potential for stream icing problems due to CBM related discharges.

- Most of the coal mines have upstream large flood control structures. These structures are designed to capture the occasional storm or snow melt event. Therefore, the mines will face considerable difficulty pumping water on a daily basis to keep these reservoirs available for flood events. This needs to be included in the impacts due to the pumping of CBM produced waters. It should also be mentioned that stream reclamation will be delayed by CBM discharges unless water can be diverted or pumped around mines. The EIS must discuss the effect of the large amount of water discharged by CBM operators on the mines and the potential mitigative measures.

CONCLUSION

The members of GAGMO believe that it is of paramount importance to the State of Wyoming, the general public, local landowners, and industry that the completed EIS accurately and objectively depict the cumulative impacts of coal bed methane production from the Wyodak coal seam. We therefore request that:

- **The groundwater model in its current form must be rejected and a new model constructed. The model must accurately depict the geology of the eastern Powder River Basin. The available information (structures, pumping test information, mine plans, etc.) must be included in the model. The model must be calibrated for the coal to known water level information. Modeled overburden water levels should closely match existing data. The mines' have already set a standard for calibration that should be met or exceeded in their vicinity.**

  The groundwater model must include a defensible number of wells (i.e. greater than 15,000). The pumping rate of recently developed CBM wells should be researched and the probable pumping rate for a "pod" of wells based on the local hydrologic data. The pump placement point within the typical coal bed methane well must be researched. Long term recovery plots must be developed and a time for complete recovery of the coal aquifer must be given. The units must be kept similar (preferably standard rather than metric) and maps, with legends, must be presented at the same scale.

  Following completion of the new groundwater model, it must be presented to the public for technical review and a comment period allowed.

- **The text descriptions in the EIS should match the presented information. Statements such as "reasonable" or "close" need to be backed up by similarly accurate findings. The EIS should, therefore, objectively describe the findings of EIS related studies and list the full potential environmental consequences of coal bed methane production.**

- **The EIS must include the number of wells possible and the cumulative environmental impacts of this number of wells. The probable project life must be better determined, especially given the recent history of coal bed methane production.**

- **The potential effect of coal bed methane production on gas migration towards homes and other structures in the Gillette vicinity should be researched and discussed. This can only be done after a new groundwater model is completed.**

- **The effect of multiple seam coal bed methane production must be quantified and discussed.**

- **The effect of coal bed methane discharges causing problems such as erosion, leaching of salts, and winter icing on streams, landowners, and mines must be determined and discussed.**

The members of GAGMO appreciate the opportunity to comment on the DEIS. Please call me at (307) 687-6934 if you have any questions or comments.

Sincerely,

Philip A. Murphree
Chairman-GAGMO

Table 1: CBM EIS Modeled Versus Actual Head Difference (Premining)			
North of Interstate 90			
Well Name	**Modeled Head**	**Actual Head**	**Difference**
7-11-M	3779.31	3801.84	-22.53
15-6-M	3716.10	3671.92	44.18
USGS OW-1	3854.38	3694.00	160.38
MALLI (OW-2)	3864.20	3702.98	161.22
SH-2 (OW-4)	3926.61	3891.99	34.62
WK-12 (OW-5	4004.00	4045.00	-41.00
ECHETA (OW-6)	4024.65	4024.00	0.65
GN-6 (OW-18)	4406.87	4268.04	138.83
OW-20	4560.92	4387.14	173.78
Between Interstate 90 and Wright			
FED. 12-2	4315.83	4265.25	50.58
HWY (OW-10)	4637.88	4466.00	171.88
WCH-6	4649.43	4465.88	183.55
WRRI-10A (OW-21)	4668.05	4457.02	211.03
MC-2-1-P	4598.21	4491.47	106.74
SHOGRIN FED. #2	4622.71	4649.44	-26.73
USGS OW-9	4751.92	4611.97	139.95
CCR-17	4841.58	4586.38	255.20
South of Wright			
CDL TR-12 (OW-24)	4855.49	4616.14	239.35
BTR-28	4875.35	4608.27	267.08
ECH-8	4818.85	4596.46	222.39
NA-38A	4792.93	4594.59	198.34
TCSE-1 (OW-27)	4831.91	4655.51	176.40
SBW-109	4784.84	4580.67	204.17
See Figure 5-1 in the Technical Report for the Groundwater model for well locations.			

Table 2: Comparison of Model Input Data from Three Mines and DEIS Model

Northh Antelope / Rochelle Model Conductivities

Unit	K (ft/day)	K (m/s)	EIS Model	EIS Model/Mine
Alluvium	2	7.05556E-06	1.00E-04	14.17
Alluvium 2	20	7.05556E-05	1.00E-04	1.42
Overburden	0.1	3.52778E-07	5.00E-07	1.42
Overburden 2	8.00E-08	2.82222E-13	2.00E-09	7086.61
Coal 1	1	3.52778E-06	2.00E-05	5.67
Coal 2	15	5.29167E-05	2.00E-05	0.38

NARC Model Storativities

			EIS Model		EIS Model/Mine	
Unit	S	S_y	S	S_y	S	S_y
Overburden	1.00E-05	1.00E-03	5.00E-05	0.01	5.00	10.00
Coal 1	1.00E-06	1.00E-04	5.00E-06	1.00E-04	5.00	1.00
Coal 2	2.00E-05	2.00E-02	5.00E-06	1.00E-04	0.25	0.01

Alluvial conductivities were set at 2 ft/day in the upstream portions where there is little alluvium and 20 ft/day in the downstream portions of Porcupine Creek. The overburden conductivity was set at 0.1 ft/day with a vertical conductance of 8.00E-08 ft/day. The range of coal conductivities was between 1 and 15 ft/day depending on aquifer test data. Storage was set according to aquifer test data.

Caballo Model Conductivities

Unit	K (ft/day)	K (m/s)	EIS Model	EIS Model/Mine
Overburden	0.01	3.52778E-08	5.00E-07	14.17
Overburden 2	2.00E+01	7.05556E-05	5.00E-07	0.01
Overburden 3	8.00E-06	2.82222E-11	2.00E-09	70.87
Coal 1	0.01	3.52778E-08	2.00E-05	566.93
Coal 2	5	1.76389E-05	2.00E-05	1.13

Caballo Model Storativities

			EIS Model		EIS Model/Mine	
Unit	S	S_y	S	S_y	S	S_y
Overburden	1.00E-04	5.00E-03	5.00E-05	0.01	0.50	2.00
Overburden 2	1.00E-03	1.00E-01	5.00E-05	0.01	0.05	0.10
Coal 1	1.00E-05	3.00E-03	5.00E-06	1.00E-04	0.50	0.03
Coal 2	1.00E-03	3.00E-02	5.00E-06	1.00E-04	0.01	0.00

Overburden conductivities range from 0.01 to 20.0 ft/day with a vertical conductance of 8.00E-06 ft/day. Coal conductivities were set between 0.01 and 5.0 ft/day. In all, 47 ranges of conductivity were used based on aqifer test data. Storage information was set according to aquifer test data.

Table 2 (con't): Comparison of Model Input Data from Three Mines and DEIS Model

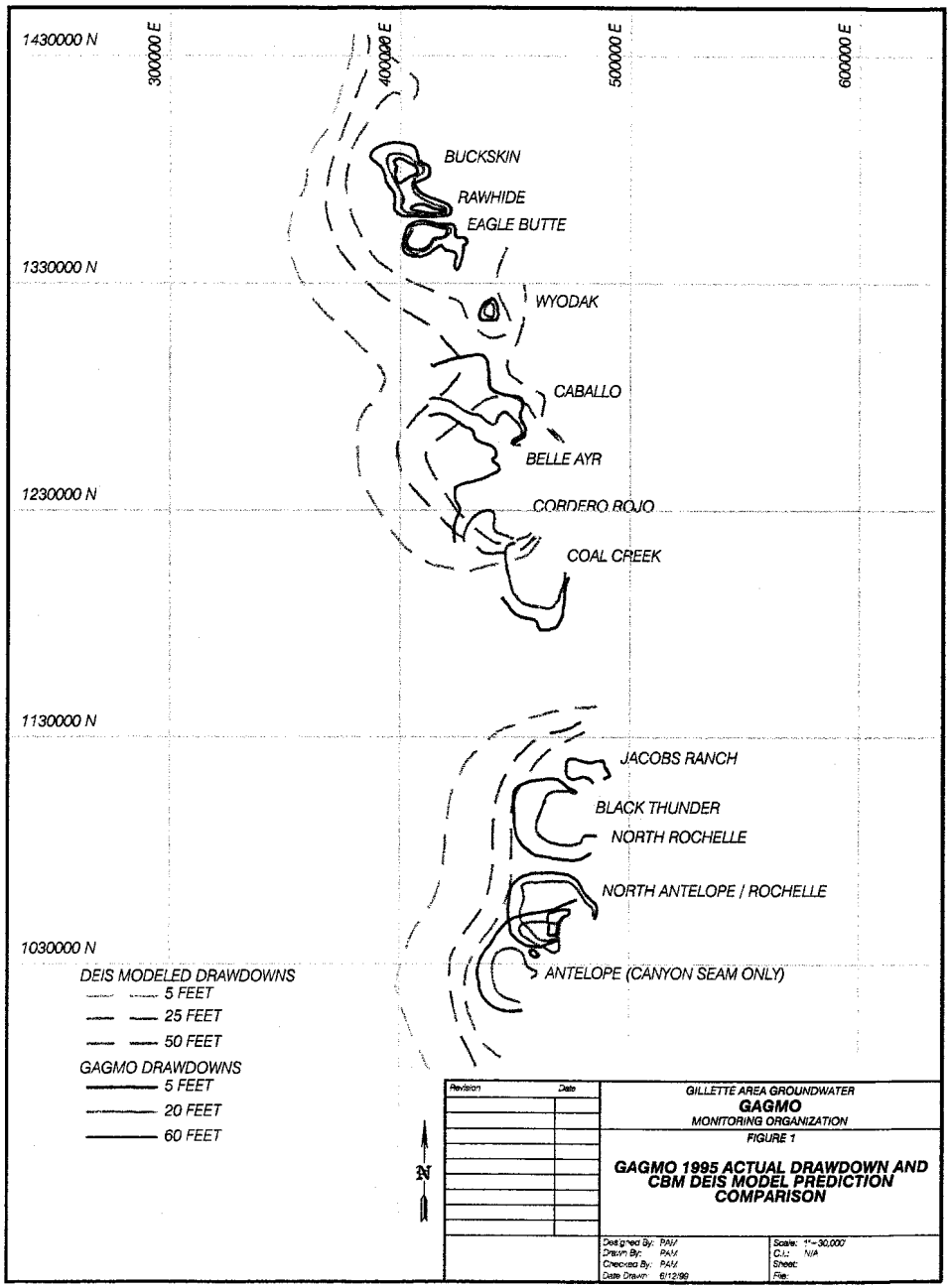
North Rochelle Model Conductivities

Unit	K (ft/day)	K (m/s)		EIS Model		EIS Model/Mine
Overburden	0.01	3.52778E-08		5.00E-07		14.17
Overburden 2	9.74E+00	3.43606E-05		5.00E-07		0.01
Coal 1	0.01	3.52778E-08		2.00E-05		566.93
Coal 2	815	0.002875139		2.00E-05		0.01

North Rochelle Model Storativities

		EIS Model			EIS Model/Mine	
Unit	S		S		S	
Overburden	1.00E-01		5.00E-05		5.00E-04	
Coal 1	3.00E-03		5.00E-06		1.67E-03	
Coal 2	4.00E-04		5.00E-06		1.25E-02	

Pump test data show hydraulic conductivities of between 0.01 and 9.74 ft/day for the overburden and 0.01 and 815 ft/day for the coal. Storage information was also gathered from aquifer tests and the ranges are shown above.



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Petroleum Geology
Hydrogeology
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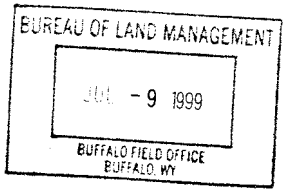

July 7, 1999

United States Department of the Interior
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

Attention: Richard Zander

Re: Wyodak Coal Bed Methane Project Draft Environmental Impact Statement Comments

Dear Richard:

The following comments are made on behalf of Yates Petroleum Corporation of Artesia, New Mexico. Yates is a major leaseholder in the EIS study area and has supported this effort both technically and financially. Yates appreciates the opportunity to comment on the Wyodak draft EIS. Yates Petroleum Corporation strongly supports the level of activity proposed in Alternative 1, the Expanded Project Area.

These comments are made relative to Chapter 2 - Proposed Action and Alternatives

HYDROLOGIC MONITORING AND MITIGATION

Page 2-16, fourth paragraph, A maximum limit on the circle of influence (COI) should be one mile. Extending to the next nearest well may require moving out several miles which would certainly be well beyond the circle of influence of a CBM well. Also, it should be stated that if a water well is already covered by a water well agreement from another operator, a second agreement is not necessary as long as the operator closest to the water well has the agreement.

Page 2-17, third paragraph, The reason for GAGMO is that the coal mines do not have water well agreements and the DEQ/LQD Mine Permit requires control of the water levels in an aquifer. CBM is trying to draw down the water in the coal seam just far enough to release the gas. The aquifer will not necessarily be depleted. CBM operators do have water well agreements and thus what is the purpose of PRAGMO? Any well affected by CBM activity will be covered by a water well agreement. Yates asks this question to avoid reporting unnecessary data.

Page 2-17, last bullet on the page, It is not possible to get a static water level in areas where wells around the monitor well are pumping. Please recognize that the monitored level would be a working level.

These comments are made relative to Chapter 4 - Environmental Consequences.

SURFACE WATER

Page 4-14, fourth bullet, Alternate discharge points are a matter between the surface owner and the lessee. Change the word "will" to "may". Both the DEQ NPDES discharge permit and the BLM water management plan (see comments under Appendix D) address prevention of flooding and erosion.

Page 4-14 sixth bullet, Needs to be reworded as "operators should observe existing downstream culverts on lease and determine if they need to be replaced with larger sizes to handle total flows. Off lease, it is recommended that the operator attempt to work with other operators and with the surface owners in the same drainage to replace existing undersized culverts in the area downstream that would be affected by their discharge."

Page 4-14, seventh bullet, I am unaware of the authority granted BLM to restrict discharge volumes. This statement denies the opportunity to use reservoirs, or other uses of the water to reduce the flow of the cumulative discharges. Will BLM deny discharges from federal lands because discharges in the same drainage from lands not under BLM jurisdiction exceed the mean annual flow for a 2-year 24-hour storm? The intent may be good but the wording is inadequate.

Page 4-15, fourth bullet, This item again implies the BLM has authority off lease. BLM authority is limited to the discharge method and point on lease. The statement should be "The operators and landowner or lessee may consider irrigation diversions to increase channel length and in-stream impoundments, as appropriate, as measures to address issues of erosion or flooding."

Page 4-15, seventh bullet, Please drop the last statement of the paragraph. Neither the BLM nor the USGS have authority for river water quality. BLM can ask that they be notified of plans on federal lands.

Page 4-35 Second to last sentence at the bottom of the page. " For individually impacted water wells, see the "Mitigation Measures" section." I cannot find this section relative to groundwater. Surface Water has a Mitigation Measures section.

AIR QUALITY

Page 4-75, The results shown in table 4-9 are based on the Flag method of analysis. This is an extremely conservative analysis. It is doubtful that these few days calculated to exceed the 0.5 deciview change would actually occur.

These comments are made relative to APPENDIX B, STANDARD CONDITIONS OF APPROVAL FOR APDS

Page B-1 Item 2. Yates agrees in the need for watershed management and for off site mitigations where reasonable and fair. This appears to be a non-jurisdictional area for BLM. Yates does not believe that BLM has authority to make APD approval dependent on the treatment of non-jurisdictional lands in the water management plan. Approval of any "hydrologic watershed analysis" will certainly extend BLM's approval to non-jurisdictional lands.

Monitoring plans must be limited to BLM jurisdictional lands. Inspection of private lands is between the owner and the operators.

Page B-4, Item 4. If the surface is privately owned, a Class III cultural inventory may not be possible if the landowner objects.

Page B-5, Item 5. The private surface owner may dictate a seed mixture.

These comments are made relative to Appendix D - Water Well Agreement

Yates agrees that a water well agreement is right and reasonable as part of potential damage mitigation. Yates offers this type of agreement to all owners on all type of mineral leases. Yates believes that to make the agreement a requirement in order for BLM to approve an APD for private wells that exist on non-jurisdictional lands (off federal minerals and/or surface) exceeds BLM's authority.

Respectfully Submitted,

Gene R. George, Regulatory Issues Agent For Yates Petroleum Corporation

Copy: Kathy Porter, Darrick Stallings, Lisa Norton, Yates Petroleum Corporation

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"Mark Winland" <markgwyn@vcn.com> on 07/13/99 09:54:38 PM

Please respond to "Mark Winland" <markgwyn@vcn.com>

To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:
Subject: Wyodak CBM DEIS Comments

July 13, 1999

Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

Dear Mr. Zander:

Thank you for the opportunity to comment on the Wyodak Coal Bed Methane Project Draft Environmental Impact Statement (DEIS) on behalf of the Wyoming Wildlife Federation, Wyoming's oldest and largest conservation organization.

While the amount of water to be removed from our groundwater resource by coal bed methane activity over the next two decades offends the sensibilities of our organization's members as well as most longtime Wyoming residents, we do not stand adamantly against development of the coal bed methane resource. We do, however, believe that the resource should be utilized in a fashion that is responsible to our other natural resources. The vague discussion of impacts and mitigation in several sections of the DEIS leave us with significant reservations. In short, we feel that major revisions are necessary in order to produce a document that is responsible to both the public and the wildlife resource. Our specific concerns related to the Wyodak Coal Bed Methane (CBM) Project DEIS follow.

1. Impact Analysis and Mitigation Measures: In most instances, the DEIS avoids delineation of specific potential impacts and specific actions to be taken to mitigate those impacts. While the sections relating to groundwater and air quality provide some substantive, data-driven analysis relating to the potential impact of the CBM project, most other sections provide little genuine impact analysis. Instead, broad generalizations are provided, coupled with vague assurances that the impacts will be analyzed and mitigated at the APD or Sundry Notice level. Consequently, we find little of substance to base comments upon in many areas, as little of substance is provided.

This strategy of generalizing both impacts and mitigation measures clearly skirts the BLM's responsibility under the National Environmental Policy Act (NEPA), which requires that impact analyses and mitigating measures be presented for public review and comment. This deferral of genuine impact analysis violates both the letter and the intent of NEPA.

Further, this strategy calls into question the accountability of the BLM or CBM operators under the DEIS. The vagueness (or absence, in many cases) of specific potential mitigation measures leaves a landowner or affected member of the public with little recourse should they or the resources they represent be unduly impacted by CBM activity. Quite simply, neither the BLM nor the operators can be held accountable or liable for lack of mitigation when the public is not aware of the potential mitigating measures and the conditions that will trigger their use. Again, the BLM appears to be skirting its responsibilities.

While we recognize that the elucidation of site-specific impacts and mitigation measures over the entire geographic area is impossible, the BLM should provide a much more specific listing of potential impacts, the arsenal of mitigation measures that the BLM has available to alleviate these impacts, and the circumstances under which the mitigation measures will apply. We strongly suggest the BLM re-address any and all sections of the DEIS that defer impact analysis and mitigation to the APD and Sundry Notice levels without providing this information.

2. Wildlife Impacts: The wildlife sections of the DEIS leave us with several questions, and with strong concerns regarding the impact of CBM development on the ferruginous hawk population. Among the questions:

*On page 4-159, the DEIS states that surveys for Ute-ladies' tresses and mountain plovers are required in "potential habitat" prior to surface disturbance. How (and by whom) is "potential habitat" identified? Has "potential habitat" already been identified, and is this information available, or is it a "site-specific" decision relegated to the APD or Sundry Notice level??

*Also on p. 4-159, the DEIS states "Any potential impacts to special status species, including threatened and endangered species and FS sensitive species, are expected to be mitigated if these environmental protection measures are followed." Unfortunately, no environmental protection measures, aside from the surveys for Ute-ladies' tresses and mountain plovers, are mentioned. Where are these "environmental protection measures" listed?

*Aside from mitigation measures listed for sage grouse leks and power pole design for raptors, the DEIS mentions few specific wildlife mitigation measures. Instead, the DEIS states (throughout) that "Special habitats will be analyzed site-specifically, as needed, during review of APDs or Sundry Notices, and impacts minimized through the application of special conditions of approval for drilling or production operations". What specific mitigation measures is BLM referring to in its reference to "special conditions of approval"? In reference to the "as needed" portion of the sentence - how are decisions made as to whether site specific analysis is needed, and what constitutes a "special habitat"? Again, we feel that BLM, in order to uphold its responsibilities under NEPA, must be more forthcoming in identifying potential impacts and mitigation measures. We also strongly recommend that all project sites receive site specific, on-the-ground analysis by a qualified biologist prior to permit issuance.

Under all alternatives presented in the DEIS, we feel that the threat to ferruginous hawk populations in the Powder River Basin (PRB) is potentially severe. Ferruginous hawks are identified as a FS sensitive species, and as a USFWS "Migratory Bird of High Federal Interest". Of all raptor species that breed in the PRB, ferruginous hawks are the most sensitive to disturbance, especially during the early incubation period, often abandoning nests after a single disturbance event. This is compounded by the fact that nesting sites are unpredictable from year to year. A single ferruginous hawk territory can contain over ten alternate nest sites, any one of which could be used in a given season, or a new nest could be added. Additionally, territories exhibit volatility as well - past inactivity does not indicate future inactivity of a ferruginous hawk territory (the wildlife sections of annual reports of the PRB coal mines bear these assertions out).

Under the density of wells proposed in the DEIS, it is conceivable that a very large proportion of the ferruginous hawk nests in the study area could be within the one mile line-of-sight disturbance buffer used as a guideline for active ferruginous hawk nests by the USFWS (guideline from telephone coversation, USFWS). In addition, it is quite possible that many inactive (thus potentially active) ferruginous hawk nests were missed during aerial surveys which are generally accepted to be less reliable than ground surveys.

The monthly well service visits predicted by the DEIS over a period of twenty years (p. 2-2) therefore clearly present a high probability of causing abandonment of a potentially significant number of ferruginous hawk nests during the incubation period. The BLM must address this potentially grave threat with specific mitigation measures designed to eliminate the possibility of nest abandonment/failure. We suggest locating any and all CBM facilities at least = mile from any ferruginous hawk nest site, and eliminating all well service visits in project areas containing any ferruginous hawk nests during the incubation season unless the area has been cleared by a qualified biologist. Monitoring of all known nests, and searches for new ones, should be performed on an annual basis.

In addition, the BLM should list specific impact analyses, guidelines, and mitigation measures for all sensitive and listed species likely to be found

in the study area.

3. Vegetation Resources: The threat of noxious weeds and reduced habitat productivity posed by the project presents a cause for serious concern. Roads, pipelines, drill pads, and the mud flats created when waters recede must receive prompt and adequate reclamation. While the DEIS appears to be complete in its analysis of potential impacts and listing of potential mitigation measures, it falls short in failing to state that these measures will be applied in a timely and complete fashion and provides no guidelines concerning what may constitute a reasonable time frame for reclamation. On page 4-83, the DEIS states that "the potential for the occurrence of reduced productivity would be heavily dependent upon the level of mitigation activities conducted during the project and after it ends." We would like to see clear assurance that the BLM will be vigilant in ensuring that the level of mitigation activities referred to in this sentence will be maximized.

4. Recreation: Further consideration should be given to the recreational impact of road crossings being potentially washed out or under water due to CBM discharge, and how this potential impact will be mitigated.

5. Water Well Agreement: The water well agreement (appendix D) fails to state the duration of the agreement. Is the operator responsible for well impairment for the duration of the project, or the duration of the impairment? We feel the latter should apply.

This concludes our comments. Thank you again for the opportunity to comment, and for your thorough consideration of these comments. Feel free to contact Mark Winland (307-682-6749) or Kim Floyd (WWF office - 307-637-5433) with any questions or concerns. Please keep both Mark Winland and the WWF office (addresses below) apprised of any developments in this area. Thank you.

Mark Winland
Board of Directors
Wyoming Wildlife Federation

Wyoming Wildlife Federation
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BUREAU OF LAND MANAGEMENT
1 3 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

July 12, 1999

Richard Zander
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Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

RE: Wyodak Coal Bed Methane Project Draft EIS Comments

Dear Mr. Zander:

True Oil Company offers the following comments for BLM consideration regarding the above referenced draft Wyodak EIS.

Specific Monitoring Activities - Groundwater (Page 2-17)/Surfacewater (2-22)

Numerous monitoring data are required to be submitted to BLM. In most cases, this data will be primarily collected and submitted to satisfy other agencies (WSEO, DEQ, and WOGCC) permit requirements. As an operator is already submitting, for example, water quality discharge information to DEQ as part of a NPDES permit, the operator should not be required to duplicate its effort and provide BLM separate copies. What is the purpose of BLM collecting all of this type of information? How will BLM use this data? As water quality is the responsibility of DEQ and water quantity is the responsibility of WSEO, the purpose of BLM also collecting this information is questionable. The BLM, WSEO, DEQ and WOGCC should work together to share the collected information rather than requiring all agencies be provided with redundant information.

It is also confusing to include in the draft EIS different agencies permit requirements. Given the dynamic nature of other agencies permit requirements, BLM should not be including within this section "expected" or "possible future" permit conditions that another agency may be considering. For example, recent permits received from the WSEO do not include a requirement for bottom hole build-up pressure tests as referenced in this subsection. This section should clearly state that agency requirements vary on a case-by-case, permit to permit basis instead of attempting to reiterate conditions that may or may not apply.

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Mitigating Measures (Page 4-14)

As described in the draft EIS, the development and implementation of a water management plan will be achieved through a committee type process. The water management plan should be landowner and operator driven and designed to ensure that BMP's are met. The proposed text describes a study in land and water management by a variety of agencies and special interests that do not have jurisdiction on this issue. The creation of such a committee will likely guarantee failure of the proposed project. BLM should remember that for the most part, the federal mineral leases are overlain by private surface. These lands are not public lands whose management is decided in the public process. The primary responsibility of land stewardship should rest on the individual(s) that divert and appropriate the water. In this case, resource management should remain the responsibility of the individual parties, and not be dictated by committee.

Socio-Economics (4-13 & 4-114)

The overall tone of these sections is extremely negative and misleading. These sections fail to discuss the economic benefits the local area, or the State of Wyoming will experience during the 20+ years that drilling, and production will occur. The focus should not be on the end of the project; it should instead describe both the positive and negative socio-economics of the project through the entire 20-year continuum.

It is stated on page 4-115 that "Socioeconomic impacts resulting from CBM development are a major concern because considerable energy-related development has occurred in and around Campbell County during the past 30 years." However, it is unclear from the text what the "concern" is. Campbell County is quite prepared to absorb any increased activity or population resulting from the CBM play. If such a warning is to be included in the document, it should be supported by facts and figures.

Appendix B - Standard Conditions of Approval for APDs

Operators are required to provide water management plans (WMP) for each well as part of an APD application. As CBM wells are typically developed in "pods", with the "pods" linked to NPDES discharge points, requiring a WMP for each well is unreasonable and an inefficient use of operators limited resources. It is suggested that WMPs be prepared on a field, a "pod" or a discharge basis instead of on a well by well basis. As the permanent plan must look at the entire watershed area, operators should not be required to piece it together on a well by well basis.

Except for the inclusion of a topographic map, all seven of the items required to be addressed in a temporary WMP are more conditional in nature than informational. As examples, "only surface piping is allowed...", "prior to any discharge of water, a water quality analysis must be submitted", "water energy dissipation measures must be designed and utilized". It is suggested, these seven conditions instead be included as conditions when the APD is issued, and the requirement for a temporary WMP be deleted.
Water quality information is required to be provided to WQD. What is the purpose of BLM requiring this information as well? Data should only be collected by the agency that is responsible

for that resource. It is again suggested the agencies share the information and not require operators to submit the same information to multiple agencies. Collecting data for the sake of collection serves no useful purpose.

Appendix D - Water Well Agreement

Item 1 of the agreement states a producer must test for the presence of methane in water in accordance with the attached test procedures. No test procedures are attached. What is the purpose of the testing? Is an operator testing for methane in the well casing or in suspension within the well water? Guidance on the purpose of the testing should be included.

The producer is required to establish a continuing water well monitoring program. However, no guidance on frequency and content of the program is provided by BLM. It seems that sufficient monitoring is already required by other agencies and there is no need for this condition.

Operators should have the flexibility and freedom to develop their own water well agreement with a landowner. Specific issues should be left for negotiation between the parties and not prescribed by the BLM. Inclusion within the EIS document of an **example** water well agreement that describes the minimum acceptable components is appropriate. However, it should be made clear in the EIS that Appendix D is strictly an example with suggested minimum acceptable components of a water well agreement.

General Comment

The document fails to point out that CBM development is an evolutionary process that occurs from start to finish, gradually and methodically over time. All of the proposed 3000 ± wells will not be drilled, completed, produced and abandoned instantly. Therefore, the impacts (both positive and negative) from the proposed project will increase and decrease gradually over time. There is a negative bias in the text throughout the entire document. The purpose of an EIS is to provide a balanced discussion of the positive and negative impacts of a project. The overall tone and text of the document should be revised to reflect a balanced portrayal of the issues, benefits and impacts.

Thank you for the opportunity to provide comments.

Sincerely,

Renee Taylor
Environmental Coordinator

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Enron Oil & Gas Company
600 Seventeenth St., Ste. 1100 N
Denver, CO 80202
(303) 572-9000
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July 8, 1999

Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

RE: Comments for Wyodak Coalbed Methane EIS

Ladies and Gentlemen:

Enron Oil & Gas Company ("Enron") appreciates the opportunity to review the captioned EIS and provides the following comments:

1. Enron and its partner, Coleman Oil & Gas, Inc., own federal and fee leases in Township 46 North, Range 77 West; Township 46 North, Range 76 West; Township 46 North, Range 75 West; and Towsnhip 45 North, Range 75 West, where we are attempting to establish coalbed methane production through a five well pilot program in Section 23, Township 45 North, Range 75 West. We strongly support the approval of the subject EIS for the Alternative Project Boundary.

2. Enron is concerned that the staffing needs for the Bureau of Land Management to timely process future APD's is both understated and underestimated. We believe that a thirty day turnaround should be a firm target and that a staffing plan should be developed to meet that turnaround time.

3. The EIS projects future natural gas production from coalbed methane development in the study area but does little to examine changes in natural gas supply from other areas of North America and increases in North America natural gas demand. Enron operates ±800 wells in the greater Green River Basin and knows all too well what decline rates have done in the past three years to diminish our daily production volumes. The recent depression of worldwide oil prices led to historic lows in nationwide rig activity. Enron feels strongly that the delicate natural gas supply/demand balance that exists in North America is in jeopardy due to increasing demand and diminishing supply. The development of natural gas new reserves will be very important to ensure adequate supplies to municipal and industrial consumers. This EIS needs to consider the positive/negative impacts on our domestic North American natural gas market associated with project approval/denial.

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4. The EIS assumes that produced water will most likely be discharged into local drainages and thereafter allowed to contribute to local hydrology as would any other runoff. No consideration or analysis seems to have been made for retention on a local or regional basis. The effect of retention on modeled aquifer drawdown and recharge should be included in the EIS.

Thanks again for the opportunity to provide these comments.

Respectfully,

ENRON OIL & GAS COMPANY

Ty Stillman, CPL
Project Landman

TS/das
17519T

Natural gas. Electricity. Endless possibilities.

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THUNDER BASIN COAL COMPANY
A Subsidiary of Arch Western Resources LLC

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Mr. Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

Re: Comments to Draft EIS Wyodak Coal Bed Methane Project 1793 (930)

Dear Mr. Zander:

Enclosed are the comments of Thunder Basin Coal Company, L.L.C. in response to the above referenced draft environmental impact statement. In addition, Thunder Basin joins in the comments filed by the Wyoming Mining Association, and the Gillette Area Groundwater Monitoring Organization.

Standard of Review

As the BLM has stated, "[i]n considering whether to approve APDs, the BLM must consider the possible project-specific and cumulative environmental impacts to ensure compliance with the National Environmental Policy Act of 1969 (NEPA). This draft EIS was prepared to meet that requirement." (DEIS 1-1) In construing NEPA, the Supreme Court has expressed the purposes of the act in similar terms.

NEPA has twin aims. First, it "places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action." *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519 at 553, 98 S. Ct. 1197, at 1216. Second, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process. *Baltimore Gas & Electric Co. v. NRDC*, 462 U.S. 87 at 97; 103 S. Ct. 2246, at 2252 (1983).

In order for the current DEIS to meet the requirements of the law and form the basis of a final EIS that will support the recommended decision of the BLM, the agency must respond to the substantive comments offered by the public (30 CFR §1203.4). Only by responding to these comments can the agency meet its obligation both to consider "every significant aspect" of the potential impacts, and to ensure that the public has been informed of those environmental concerns. Thunder Basin Coal has identified the following issues, which either are incorrect in their analysis or inadequate in the environmental significance which has been ascribed to them. It offers the following substantive comments to these issues that it hopes will be addressed in the final document for the purpose of completing a valid EIS.

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The draft EIS document raises issues regarding potential conflicts between energy development interests. The EIS contains the following statement at page 4-3:

> "Conflicts between CBM drilling and existing or potential surface coal mining may occur. Development of CBM wells should be precluded in areas of active or impending coal mining. Locating wells in areas where future mining may take place would preclude mining during the life of wells located in the proposed mining area. Coal in these areas could be mined after CBM extraction is completed or terminated, or after an agreement is negotiated between the CBM operators and the coal mine operators."

This language fails to consider all alternatives and to complete a social economic impact analysis as required by NEPA on BLM's apparent policy decision to prohibit surface coal mining from expanding into areas where coal bed methane production may be occurring. Based upon the broad geographic application of this EIS and the projected CBM development thereunder, such a prohibition policy could in fact prevent any and all expansion of all existing surface coal mine operations within the Powder River Basin, until such time as the coal bed methane has been extracted.

BLM should conduct the requisite social economic impact, which would appropriately take into consideration the relative economic impacts to federal, state and local economies of the financial gains realized from both surface coal mining and coal bed methane extraction.

BLM should not utilize the EIS to adopt an apparent policy regarding surface coal mining and coal bed methane extraction.

Independent of the EIS process, BLM should develop comprehensive guidelines that recognize (1) the relative economic values in the production of coal and the production of CBM, (2) the relative values of the investments heretofore made and hereafter to be made by the coal mining operators and the CBM operators.

Comments to Draft Environmental Impact Statement

Authorizing Actions (Page 1-5)

This discussion is misleading and inaccurate. It confuses two related but separate issues: the ownership of coal bed methane (CBM) and the disposition by the BLM of that resource to a private party.

The Supreme Court has decided that the reservation by the United States of "coal" under

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land patents issued for the surface of lands under two statutes, (Coal Lands Act of 1909, 35 Stat. 844, 30 USC §81, the Coal Lands Act of 1910, 36 Stat. 583, 30 USC §§83-85) did not contain within the reservation the CBM which occurs naturally in the coal. *Amoco Production Company v. Southern Ute Indian Tribe*, No. 98-830 (June 7, 1999). This means that any person who patented lands under the 1909 or 1910 Coal Lands Acts received within the title of the patent the ownership of the oil and gas in those patented lands. This also means that an oil and gas lease granted by a surface owner of those substances is valid on its face, including as noted in the EIS, any claim of ownership of the CBM by the United States, (P.L. 105-367).

This significance of this recent decision, however, is not accurately portrayed in the EIS discussion. First, a minority of the area within the project area described in the EIS was patented under either the 1909 or 1910 Acts. A larger percentage of lands was patented under the 1916 Stock Raising Homestead Act which reserved to the United States unequivocally both the oil and gas (including CBM) as well as the coal. Second, even land that was patented under the 1909 and 1910 Acts was frequently reacquired for mineral purposes under the Bankhead-Jones Act in the 1930's and thereafter. This means that the right to lease CBM may be the legal right of the United States and not the surface patentees. For that reason, the description of the federal oil and gas ownership constituting 50% of the proposed project area may be inaccurate.

The second inaccuracy in the description of the authorizing actions is that CBM, "currently is leased by the federal government as an oil and gas right." As the draft EIS notes in the next paragraph, the 1981 Solicitor's Opinion which concluded that the CBM was encompassed within a federal oil and gas lease was withdrawn by the Solicitor prior to the submission of the Interior Department's brief in the *Southern Ute* case. Therefore, it is not clear as a matter of current BLM policy if outstanding oil and gas leases do or do not include the CBM. Whether any outstanding federal oil and gas lease may be developed for CBM is a matter of factual inquiry as to the legal status of the lease.

Recommendation: Revise this section of the document to describe more accurately the legal context of the BLM's actions.

Surface Water (pages 4-4)

- Increased surface water flows may alter, but not necessarily improve the water quality. The high alluvial ground water salinity (actually over 30,000 mg/l TDS in many cases) and salinity of adjacent rock units may leach salts. While much is made of the capacity of major streams to handle CBM water, the CBM users are actually using minor ephemeral streams in many cases to discharge waters increasing the potential for leaching of salts and erosion. Due its low initial sediment content, CBM discharge water has much erosive potential. What requirements will be in place to correct salinity and erosion problems occurring on streams due to CBM discharge waters?

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- Most of the coal mines have upstream large flood control structures. These structures are designed to capture the occasional storm or snow melt event. Mines will face considerable difficulty pumping water on a daily basis to keep these reservoirs available for flood events, in addition to dealing with potential sediment loading of these structures. This needs to be included in the impacts due to the pumping of CBM produced waters. It should also be mentioned that stream reclamation will be delayed by CBM discharges unless water can be diverted or pumped around mines. The EIS must discuss the effect of the large amount of water discharged by CBM operators on the mines and the potential mitigative measures.

- Pages 4-1 and 4-2 of the draft EIS states that "CBM development occurring upstream from nearby surface coal mines could affect coal mining operations. CBM generated water discharged upstream from coal mines could increase surface flows in the vicinity of coal operations or decrease the rate of groundwater withdrawals that currently accompany ongoing coal mining operations. There likely will be impacts to sediment structures in the coal mine permit areas. These structures have been designed to accommodate historical flow rates that do not include contributions from CBM generated flows. Some design aspects of mining operations may need to be changed. Any required revisions to approved mine plans would impact operators and agencies involved in reviewing proposed changes."

This discussion implies several disturbing and unrealistic assumptions. First, that coal mine operation sediment control ponds will accept CBM discharge runoff. Second, that coal mine operations will change some structural designs to accommodate CBM discharges. Third, that coal mine operators and related regulatory agencies will conduct coal permit changes to accommodate CBM activities and discharges. These assumptions raise clear questions of trespass, offsite damages and illegally imposed burdens. BLM must revise this section by removing these assumptions or by adding clear directions that CBM operators must obtain appropriate landowner consent prior to any discharge, to address any and all of these projected impacts.

Groundwater (4-17)

- Comments submitted July 6, 1999, by the Gillette Area Groundwater Monitoring Organization have identified numerous concerns regarding the insufficient model calibration, inaccurate modeling parameters, and inappropriate assumptions in the groundwater models and results of the draft EIS. The review by that group resulted in a determination that the EIS groundwater model must be rejected and a new model constructed to address several deficiencies. TBCC concurs with those points of concern, and agrees that BLM must address them through remodeling prior to finalization of this EIS process.

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Air Quality (4-62)

General Comments

Due to the standards normally used in performing an EIS, lesser levels of accuracy were used to define existing industries (i.e., Coal Mining, Coal Transportation), and more refined attention was given to the newly added industry (Coal Bed Methane). As a result of this, quantitative assumptions can not be drawn from this modeling effort unless it is only referring to the newly added industry. As such, the results and inferences related to Coal Mining, and Transportation Industries can not be accepted without informing the reader of these inaccuracies. To assure a clear understanding by all readers of the final EIS, BLM must also address each of these critical issues within the cover letter of that final document.

A more complete discussed of these errors and omissions are detailed in the comment sections below.

- Clarify the differential modeling treatments as it refers to the levels of accuracy and detail between coal bed methane, coal mining, and coal transportation.

- Our review of the Technical Document does not concur with the author's quantitative interpretation as shown in Table 4-17. The author states an incremental emission increase of 64% by coal trains. This information is not quantitatively available in the modeling effort. If the author has another source it should be noted.

- The cumulative analysis for visibility impacts from NOx, SO2 and PM10, as described on pages 4-140 to 4-152, focuses only upon emissions estimated for CBM activities and coal mining related activities. The only mobile sources considered are road dust from CBM vehicle traffic, mining vehicle exhaust and coal train locomotive emissions. The modeling exercise fails to account for impacts from exhaust emissions from CBM vehicles, and for exhaust emissions from general public vehicles. This latter source particularly needs to be considered relative to visibility impacts at the Class I and Class II areas in the analysis. Strong vehicle use rates at several of these sites (e.g., Badlands National Park, Mount Rushmore National Monument, Devil's Tower National Monument, etc.) during the higher Ox-ozone seasons must be considered in any impact analysis.

Visibility Comments

The DEIS predicts significant impacts to visibility due to incremental growth of emissions in the Powder River Basin, as well as stationary sources in northeast Wyoming, southeast

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Montana, western South Dakota, and northwestern Nebraska. **It is important to note that DEIS estimates tend towards WORST CASE impacts, and cannot be used as a regulatory mechanism or should the results be relied on as a given result.** This conclusion should be clearly stated in the Final Environmental Impact Statement (FEIS).

The DEIS states, for the far-range cumulative emissions inventory:

"7. Potential incremental increase in surface coal mining NO_x emissions from blasting, vehicles, and train traffic at the mine areas, based upon a comparison between NO_x emissions resulting from 1995 coal production and the level of NO_x emissions that would be expected in 2015 if the mines attain their reasonably foreseeable coal production (NO_x).

8. Potential incremental increase in surface coal mining PM_{10} emissions, based upon a comparison between PM_{10} emissions resulting from 1995 coal production and the level of PM_{10} fugitive emissions that would be expected in 2015 if the mines attain their reasonably foreseeable coal production (PM_{10}).

9. Potential incremental increase in mining vehicle exhaust emissions, based upon a ratio of NO_x vehicular emissions and a comparison between NO_x emissions based on 1995 coal production and the level of NO_x emissions that would be expected in 2015 if the mines attain their reasonably foreseeable coal production in 2015."

These statements clearly show that the emission estimates are simply based on straight ratios between 1995 and 2015. This type of approach is fine for a WORST CASE estimate, but will significantly over-estimate the emissions that will likely occur. This is due to the ever increasing productivity and efficiencies that are being achieved by the coal mining industry. Following are some examples that demonstrate that this improvement in production/efficiency with a corresponding decrease in emissions per unit of material moved.

- Review of the coal train emissions modeling suggests that train emissions were not modeled realistically, as continuous low-level emissions, but instead with highly artificial as cumulative fixed sources at intervals along the track line. This treatment produces exaggerated emissions at those fixed locations, producing unrealistically high readings at any nearby receptors. This treatment should be qualified with respect to any over predictive modeling effects.

- Coal locomotive fuel usage rates applied to the Near-Range and Far-Range models appear to be unrealistically high, approximately 23 gallons of diesel per rail mile, rather than the 8 to 9 gallons suggested by the supporting documentation in the draft EIS.

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Corresponding emission rates are thereby significantly exaggerated, exacerbating the over predictive modeling effects.

- In a Memorandum dated 1/12/95, the EPA suggests that modeling of Locomotives Emissions should included emission reductions resulting from court ordered standards for both NOx and PM10. These reductions range from 7.9% in the year 2000 to 45.3% for years 2010 and later. The draft EIS acknowledges on Page 4-146 that modeling did not account for the 46% decrease in locomotive NOx emissions. By not using these EPA Air Quality Guidelines, the emissions associated with coal transportation are significantly exaggerated. The author should explain why this EPA guidance was not considered.

- Advances in mining haul truck technology has reached a level were the same technology used in locomotive engines is used in new haul trucks. There are many of these trucks already in the Powder River Basin. NOx and PM10 emission reductions similar to the EPA guidance mentioned above should be used in the modeling of diesel emissions from mine haul trucks. In addition, most PRB mines have been using ever larger haul trucks to move overburden and coal. When the mines were first opened, the standard was 100-ton haul trucks. Currently, the standard is in the170-240 ton range. The Black Thunder Mine is now on the cutting edge of technology, running a fleet of 360-ton haul trucks. This represents a 50% productivity increase per unit of material moved from a 240-ton haul truck, and a 112% productivity increase from a 170-ton haul truck. The new trucks are also being built with higher efficiency, lower emission engines. This trend will continue throughout the Powder River Basin.

- The PRB mines are also increasing the size of their earth- and coal-moving equipment. Shovel capacities are now in the 70 cubic yard (cy) range, nearly double what was considered the norm only a short number of years ago. The Black Thunder Mine is also in the process of erecting its fourth dragline, with a bucket capacity of approximately 130 cubic yards. The current fleet of draglines have bucket capacities of 45, 90 and 160 cubic yards. This addition will mean that more material can be moved per unit of energy expended. The shovels and draglines are all electrically driven machines, and this equipment (particularly the draglines) displace equipment that burn diesel fuel. Since the source of power is currently obtained from southeastern Wyoming (primarily) from highly controlled power plants, NO_x and SO_2 emissions are minimized or even eliminated from the region. It is reasonable to assume that the mines in the PRB will continue to increase productivity/efficiency through the 2015 period, and that unit emissions will continue to decrease.

- ANFO is a generic term used to describe a wide range of high explosives that consist of Ammonium Nitrate, Fuel Oil, Additives, and Emulsions (ANFO). The AP-42 emission

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factor used for coal mining blasting activity in the air quality model was based on a small number (about 50) of test shots conducted by the Bureau of Mines in 1974 (RI7867) to simulate underground mine conditions. This study used a straight ammonium nitrate and fuel oil mixture, which ranged from 0 to 10% fuel oil. The EPA stated in this AP-42 that "Any estimates of emissions from explosives use must be regarded as approximations that cannot be made more precise". Due to technological advances, ammonium nitrate, fuel oil and emulsion blends are more commonly used in the Powder River Basin because it is more energetic then the older straight ammonium nitrate and fuel oil mixes. The explosives described in the AP-42 for ANFO are not the same explosives used today. Many explosive manufactures believe this AP-42 is too conservative to be used for ANFO Emulsions. In lieu of a more accurate emission factor, there should be some qualifying statement in the EIS that addresses the possible over estimating and inaccuracies in the emission factor used.

- One of the stationary sources that is probably included in the post-1995 inventory is the proposed Two Elk Power Project. This plant would be one of the most advanced plants in the United States, boasting flue-gas desulfurization (FGD) for SO_2 control and Selective Catalytic Reduction (SCR) for NO_x control. Further electrification of equipment in the PRB, which is supplied by highly controlled power plants (such as the Two Elk Project), will also help reduce unit emissions in the region. In permitting of this project, none of the state or federal regulatory agencies showed visibility impacts.

The purpose of the preceding discussion was to demonstrate that the estimates in the DEIS are representative of a WORST CASE analysis. Again, this needs to be highlighted in the FEIS.

Visibility Monitoring

The DEIS discusses visibility at eight wilderness areas, national monuments and national parks. Of these, only two are federal mandatory Class I areas (Badlands and Wind Cave) which merit specific protection under Section 169 of the Clean Air Act (visibility program). The other Class I and Class II areas appear to be included for general discussion. The FEIS should clearly denote the regulatory difference and level of protection afforded the areas.

Of the Class I/Class II areas identified, only one (Badlands) has an aerosol/visibility monitoring record. Data collection began at the Badlands Class I area in 1988. Figure 1 depicts $PM_{2.5}$ (fine particulate) concentration and visibility at the Badlands monitoring site. The graph was obtained from the IMPROVE network database maintained by Colorado State University. The graphs are depicted in a single year (syear) and cumulative year (cyear - 3-year rolling average). The graphs show that the best visibility days (Group 10) have been steadily improving

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over the period (with one spike in 1996). On the average (Group 50), visibility is better now than in 1988. Visibility on the worst days (Group 90) has been relatively steady to slightly decreased over the period. While the National Park Service has expressed concern that visibility on the worst days isn't showing steady improvement, the overall data set questions the DEIS conclusion that operations in the PRB are significantly impacting visibility in the Badlands Class I Area. During the 1988-1996 period (1997 data could not be developed in the short time allowed for comment), coal production in the PRB increased from 139 million tons to 257 million tons (see Table 1), while overall units moved (coal plus overburden) soared from 348 million units to 862 million units.

The question then becomes what is the source of the visibility impairing emissions that impact visibility in the Class I areas. The conclusion from the CalPuff model that the PRB is a significant source of visibility impairing emissions is suspect. However, it is recognized that the modeling effort did not allow sufficient time or resources for "ground truthing" the model with actual monitoring data, as it is contained in databases that are very difficult to manipulate and analyze in a reasonable amount of time.

The National Park Service has developed graphics that show the source of visibility impairing emissions to the Badlands Class I Area (Figure 2). While the PRB is included on this figure, the source of emissions includes much of the northwestern U.S. and portions of Canada. The graphic recognizes that visibility impairment is a regional issue and that the depiction of impacts solely from the PRB is meaningless.

The presentation of the conclusions in the DEIS is also subject to question. The U.S. Environmental Protection Agency (EPA) and the NPS base their evaluations of impact based on no degradation in the average of the 20% best and improvement in the 20% worst visibility days each year. The depiction of impacts on a daily basis is questionable from a modeling standpoint, at best, and inconsistent with the current regulatory framework.

The bottom line is that the discussion of visibility impacts from the PRB is very questionable, and irrelevant under the current regulatory framework (see the following discussion). **This should be clearly noted in the FEIS.**

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Figure 1

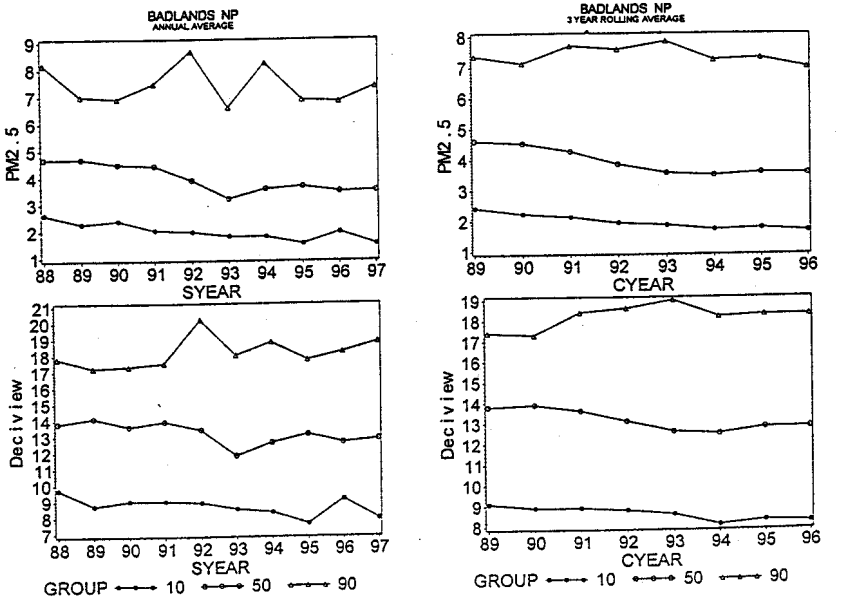

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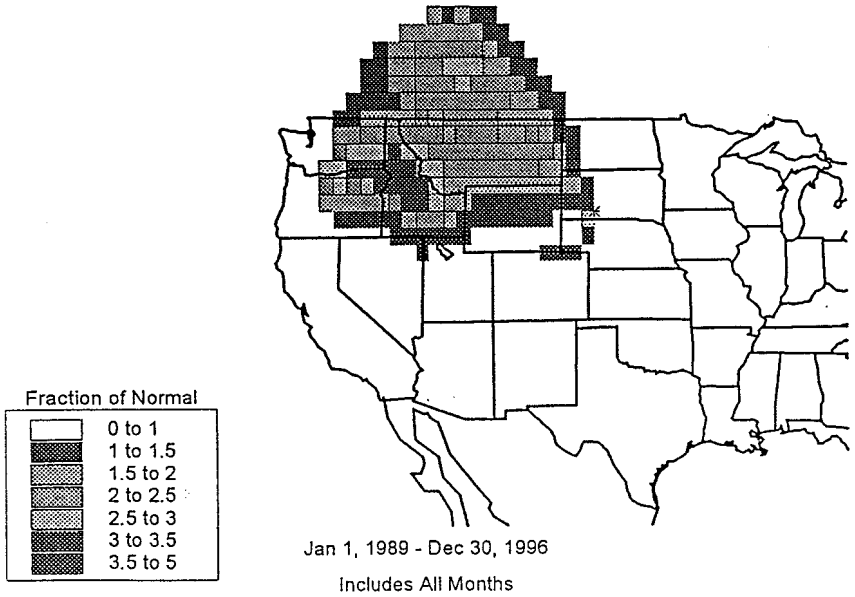
Figure 2

Badlands Overall Source Contribution



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Regional Haze Program

On April 22, 1999, the EPA issued the final Regional Haze Program (RHP) rules. The purpose of this program is to protect and enhance visibility in the 156 mandatory federal Class I Areas throughout the United States. It will also have a commensurate benefit on other non-mandatory Class I and Class II areas as well. The rule mandates that all States establish goals for improving visibility in national parks and wilderness areas and to develop long-term strategies for reducing emissions that impact visibility.

EPA has stated that "Because of evidence that fine particles are frequently transported hundreds of miles, all 50 states – including those that do not have Class I areas – will have to participate in planning, analysis, and in many cases, emission control programs under the regional haze regulations." The Regional Haze rule represents a comprehensive approach to managing visibility, and contains the following requirements:

- The rule requires States to develop long-term strategies including enforceable measures designed to meet reasonable progress goals. The first long-term strategy will cover 10 to 15 years, with reassessment and revision of those goals and strategies in 2018 and every 10 years thereafter.

- In identifying the emission reduction measures to be included in the long-term strategy, States should address all types of manmade emissions contributing to impairment in Class I areas, including those from mobile sources, stationary sources, area sources and prescribed fires.

State Implementation Plans (SIPs) are due under the RHP in the 2003-2008 time period. Refer to Figure 3 for the State Implementation Timeline. These SIPs must detail how emissions will be managed in order to achieve steady and continuous improvement in visibility in the Class I Areas. A copy of the Regional Haze Rule is attached, as well as a graphical depiction of the implementation schedule.

The FEIS needs to clearly acknowledge this newly promulgated program, and recognize that there is a program and process in place to manage visibility. The reader cannot be left with the impression that visibility will necessarily be impacted by economic growth in the PRB, and that development can be managed in conjunction with visibility concerns throughout the region. The FEIS and the Record of Decision should contain NO specific mitigation requirements relative to visibility, as this type of action would pre-suppose the outcome of the required State Implementation Plan developed under the Regional Haze program. The FEIS also needs to conclude that the visibility impacts discussed in the DEIS are WORST CASE.

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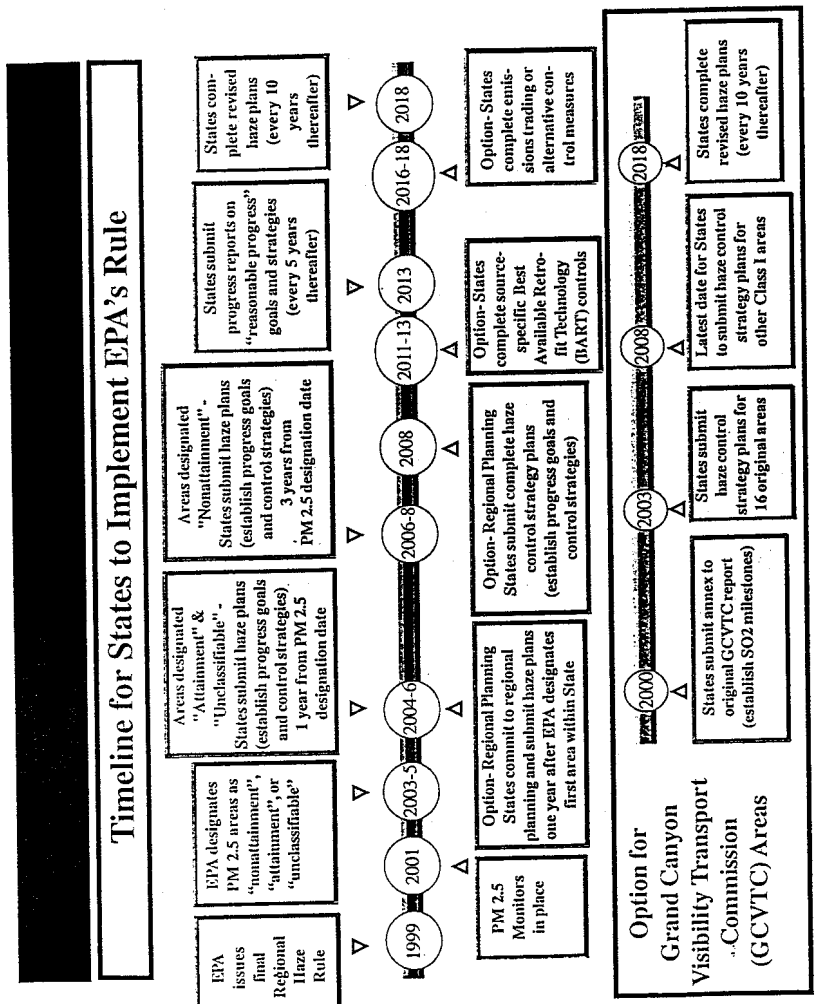
BUFFALO FIELD OFFICE
BUFFALO, WY

Figure 3



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BUFFALO, WY

Most of the issues appear to be related to the lesser levels of accuracy and refinement for coal related sources. Since this is an EIS for proposed coal bed methane actions, the reduced attention to accuracy and detail for coal mining and transportation activities is somewhat understandable. **However, the exaggerated projections of coal-related impacts from these surficial considerations can not be accepted.** These results are included in the report as equivalent to those derived from the much more refined coal bed methane treatment, establishing a basis for equivalent validity and interpretation. This is completely unacceptable. It is incumbent upon BLM to assure that the published results in the EIS do not provide a basis for misinformation or misinterpretation. Coal related impacts must be remodeled with equivalent refinement and accuracy.

Thunder Basin coal appreciates the opportunity to have provided these comments.

Sincerely,

Paul A. Lang, President

attachment

cc: Blair Gardner
Senior Council
Arch Coal Inc.

BUREAU OF LAND MANAGEMENT
1 3
BUFFALO FIELD OFFICE
BUFFALO WY

Attachment A

federal register

Thursday
July 1, 1999

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BUFFALO WY

Part II

Environmental Protection Agency

40 CFR Part 51
Regional Haze Regulations; Final Rule

The complete final rule was attached to this comment letter and is incorporated by reference.

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7-12-99

1 of 2

TO: Richard Zagder - Bureau of Land Mgmnt.
Buffalo Field Office
Buffalo, Wyoming 82834

BUREAU OF LAND MANAGEMENT
JUL 14 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

From: Richard L. Innes
1605 Birch Street
Casper, Wyo. 82604

Subject: Comments concerning Methane Gas Development.

I see serious disregard for the rights of Wyoming citizens who have Coal Bed Methane extraction activities upon their property and upon agriculture leases. My concerns are in three areas.

1. Water Rights
2. Waste of Wyoming Water
3. Pathetic smoke & Mirrors concerning the economics of the alternate use of water.
4. Land damage done by discharge of water.

I offer the following reasons for my objections to the Status Quo of Coal Bed methane water management.

1. I understand that if a water well is made useless by the pumping out of Coal Bed water, any new well, given to the affected land owner, takes on a very inferior current water right. This is absolutely outrageous. Must be changed!

7-12-99

2 of 2

1. (cont'd.) If a water right is damaged, it must be replaced or compensated.

2. Water is a resource of infinite value. You must not pump it out and then propose fairy tale uses of absurd economic & questionable value. No Fairy Tales allowed & Solid, proven economics or no deal!

3. In the 1950's & 1960's American genius gave Afghanistan irrigation systems. These systems rapidly turned subsistance farmers into no farmers at all. The land died of Alkaline destruction. Already you are creating Alkali flats and noxious weed fields. The waste of Wyoming water to create Alkali is not acceptable!

4. You have massive mitigation problems which have been neglected and they must be solved.

Your present Coal Bed Methane Program can be compared to Chengis Khan's economic program for Eurasia and Northern Europe in the years 1170 to 1227.

He Came, He Saw, He took, and left a big mess!

Richard L. Innes

33

840 Kimberly Ct.
Lander, WY 82520
July 13, 1999

BUREAU OF LAND MANAGEMENT
JUL 14 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Mr. Richard Zander
BLM, Buffalo Field Office
1425 Fort St.
Buffalo, WY 82834

Dear Sir:

I wish to comment on the Wyodak Coal Bed Methane Project.

It seems to me that the development of methane from coal beds in the Powder River Basin is the search for quick riches without adequate consideration of the long term consequences. A land is being sacrificed to the god of mammon for generations to come.

What is being pushed in the Powder River Basin is an impending catastrophe of immense proportions. The impacts on naturally occurring aquifers and whole land ecosystems is completely unknown. The waste of valuable fresh water should be considered intolerable. When the water is gone, 10, 15, or 20 years hence, who or what is going to be able to inhabit such a waste land? These are naturally dry, arid lands at a relatively high elevation.

What kind of mitigation will indemnify landowners for the loss of their lands and their income?

What happens when the water and the gas are taken and the earth begins to subside? Is there any anticipation of huge fires in the coal still remaining? There is ample evidence of once-huge subterranean fires one of which created the large, deep hole now occupied by Lake DeSmet.

There is a phenomenon now documented at and near Durango, Colorado, in which methane seeps to the surface when water is removed. The seeping methane has made houses uninhabitable, has killed trees and other vegetation, and has killed animal life. Is there any consideration of this type of effect over a large area? The relatively small effects of seep may already have raised their ugly heads at Rawhide Village near Gillette, and at Decker, Montana.

What about the wildlife? The EIS clearly sets out that wildlife will be affected. How can there be mitigation for loss of entire wildlife populations?

This whole project is being rushed without knowing the full and absolute consequences of area-wide effects. What will the cumulative effects be, not only on the Powder River Basin but on the entire state? Taken in conjunction with the huge natural gas developments in Southwest Wyoming, is Wyoming to be a national sacrifice area? Is unfettered and damaging development for the sake of quick, easy profits to be the fate of Wyoming?

Anytime there is haste there is waste. This whole project portends waste on an unimaginable scale. I hope all involved will use wisdom and good judgment.

Respectfully,

Tom Bell

Tom Bell

34

BUREAU OF LAND MANAGEMENT
1 4 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

POWDER RIVER BASIN RESOURCE COUNCIL
23 North Scott • Sheridan, WY 82801 • (307) 672-5809
P.O. Box 1178 • Douglas, WY 82633 • (307) 358-5002

Comments on Wyodak Coal Bed Methane Project Draft Environmental Impact Statement - Powder River Basin Resource Council
July 10, 1999

1. Inclusion of private wells in No Action Alternative:
The EIS examines the impacts of privately owned CBM wells in the Proposed Action section of the analysis. However, the No Action alternative in the EIS includes the privately owned CBM wells in the baseline for a No Action Scenario. The impact analysis includes the privately owned CBM wells in the Proposed Action because drilling of the private wells is proposed for inclusion in the federal action, and is thus connected to the federal action. Because drilling of the privately-owned CBM wells is connected to the drilling of the federally owned CBM wells, they are correctly included in the Proposed Action analyses, but should not be included in the No Action analyses. Either the privately owned well drilling is a connected action or it is not. One of the purposes of the No Action analysis under NEPA is to establish a baseline for analysis. Inclusion of the privately owned wells in both the Proposed Action and the No Action alternative prevents establishment of a true "no action" baseline as contemplated under NEPA. The No Action alternative should not include the privately owned CBM wells in order that an effective baseline can be established. (Note that on page 3-50, the EIS indicates that the mineral estate of lands within the study area is federally owned, at least in part, throughout most of the area - this statement provides additional support for the concept that the action of drilling private CBM wells is connected to the drilling of federal wells.)

2. Deferral of absence of impact analysis:
Throughout the EIS, reference is made to future analyses that will or can be conducted and included in APDs or Sundry Notices, through the application of special conditions of approval for drilling or production, or through future development of unspecified site-specific mitigation measures. The absence of analysis in each case is justified on the grounds that the analysis will or can be performed during review of APDs or Sundry Notices, or as required on a site specific basis. This deferral of analyses negates the purpose of NEPA, which requires that impact analyses and associated alternatives for mitigation be presented to the public for review and comment in an EIS. In each case, potential impacts should be included in this EIS, along with potential mitigation, so that the public has an opportunity to review and comment in accordance with the provisions of NEPA.

recycled paper

The analyses and mitigation alternatives should not be absent from this document or deferred. At a minimum, if it is for some reason impossible to include the analyses and mitigation alternatives in this EIS at this time, then future analyses and mitigation alternatives should be appended to the EIS and circulated for public comment and review, in order that the requirements of NEPA are satisfied. In fact, Appendix B of the EIS sets for "Standard 'Conditions of Approval' for APDS" that includes provision 1: "The operator is committed to **all** mitigation measures and monitoring contained in the EA/EIS." For the most part, this EIS does not include mitigation measures, but defers them to some future date or process. Impact analysis and mitigation needs to be included in this EIS so that they are subject to review and comment in satisfaction of NEPA and in order that mitigation requirements can be included in "Conditions of Approval" applied to APDs and Sundry Notice Drilling Plans and Surface Use plans. (See also, page 4-14, "Mitigating Measures")

3. Inclusion of information from related EAs and EISs in Cumulative Impacts section of the EIS observes:
"This EIS is being prepared because companies are proposing new CBM projects outside of previously approved areas or additional drilling in existing fields." At the same time, the Introduction section of the EIS indicates that "[o]ther aspects of the environment have been discussed in . . . " numerous other EAs and EISs listed on page 3-1. If other EAs and EISs must be consulted in order to get a clear impression of the environmental impacts of the Proposed Action, the impacts addressed in the EAs and EISs noted on page 3-1 should be addressed in the Cumulative Impacts section of this EIS in order to avert segmentation under NEPA. The public should not be forced to piece together numerous analyses from numerous sources in order to glean a clear picture of the impacts and related mitigation under this Proposed Action.

4. Application of water produced by Proposed Action to beneficial use by CBM producer:
On page 1-6 it is observed that : "The State of Wyoming requires water produced in conjunction with CBM development to be put to subsequent beneficial use and requires approved permits from the Wyoming State Engineer's Office (WSEO) to appropriate groundwater or surface water or to impound produced water." However, beneficial use requires that the water producer or user must itself put the water to beneficial use -- beneficial use can not be performed by a party other than the water producer or extractor and the use cannot be speculative. There does not appear to be a specific beneficial use by the producer of the water cited anywhere in the EIS document. For instance, on page 4-11, under "Water Use," the EIS provides that produced water from CBM wells is "most likely to be used for stock watering, fisheries, and irrigation." This section of the EIS also provides that discharged CBM waters "also may be used to create small ponds and reservoirs." These statements do not appear to conform

to the requirements for beneficial use. In addition, on page 4-88, the EIS provides that "groundwater appropriated as CBM produced water likely will have groundwater appropriation rights filed with the SWEO on behalf of the CBM operator and surface landowner." If the operator will be applying for appropriation rights, what is the beneficial use that the operator is claiming?

5. Protection of Wetlands:
What steps are being taken to maintain compliance with EO 11990 (Protection of Wetlands) in view of the numerous potential impacts to wetlands cited throughout the EIS? Wetlands are discussed on page 4-85. It is good that surface disturbance is prohibited within 500 feet of surface water, but any mitigation plans should be included in or appended to this EIS for public review and comment (as previously noted). On page 4-85, in the third full paragraph, the EIS indicates that landowners will have the opportunity to bank newly created or expanded wetlands from CBM discharges, which may also be used as temporary mitigation in the event a landowner requires a wetland credit. It seems unlikely that newly flooded or expanded areas satisfy the statutory definition of a wetland, which includes wetland vegetation, because these newly flooded areas will have no vegetation. In addition, if a wetland expands due to flooding, this could mean that existing wetland vegetation becomes non-viable due to flooding and may trigger EO 11990. This should be addressed as a potential impact with related mitigation alternatives, such as reduced discharges or modified discharge points.

6. Submission of Water Management Plans to BLM for approval:
The EIS reflects that Water Management Plans must be submitted to the BLM as elements of "Standard 'Conditions of Approval' in appendix B of the EIS. Since these water management plans will detail potential impacts of the Proposed Action and will set forth mitigation alternatives, they should be included in or appended to this EIS so that they are subject to public review and comment as required pursuant to NEPA (as previously noted).

7. Public review and comment of "Standard 'Conditions of Approval' for APDS (Appendix B):
Throughout the EIS, impact analyses and mitigation alternatives are absent or deferred for review in the APDs and Sundry Notice Plans. The "Standard 'Conditions of Approval' for APDs" set forth general requirements for the mitigation of various potential impacts, such as mitigation for the impacts of water discharges. Consequently, the impacts identified in the Standard Conditions for Approval for APDS, along with associated mitigation provisions, or "conditions", should be included in, or appended to, this EIS so that they are subject to public review and comment a required pursuant to NEPA.

8. Land should be restored by CBM producers:

The first sentence in the third full paragraph on page 2-11 should be restated as follows: At the conclusion of the project, roads, culverts, cattleguards, pipelines, stock watering facilities, or other structures will be removed unless left in place pursuant to agreement of the surface owner. Likewise, under the heading of "Electrical Distribution Lines" in the next paragraph, the second to last sentence should indicate that power lines will be removed unless the surface owner agrees that they should remain in place. The EIS should reflect that CBM producers will seek to restore the land to its original condition unless there is an agreement with the landowner to leave the land in an altered condition.

9. Monitoring should include provisions developed through the EIS process:
On page 2-15, hydrologic monitoring plans should also address any additional regulatory requirements, including requirements identified through the EIS process.

10. Water Well Agreements:
It is good that water well agreements are being required to be offered to affected surface owners (page 2-16). However, the Water Well Agreement provides that it applies only to permitted water wells. What mitigation is available to water users that are accessing water from a source other than permitted well? Of notable absence in the Water Well Agreement (Appendix D) is a provision regarding the length of time that the Agreement remains in effect. The agreement should provide that landowners should be compensated under the Agreement for water drawdowns that adversely impact their wells for as long as the condition continues.

11. Further explanation regarding Alternatives Considered But Not Analyzed in Detail (page 2-26):
The alternative for injecting produced water underground is dismissed because injection "into an exempt formation would make water now suitable for irrigation and livestock unusable for any future use." Why would injection be limited to an "exempt formation," and what is an exempt formation? Could water be injected at some other point with potentially positive effects on aquifers or groundwater? This alternative needs to be explained in further detail and possibly requires further analysis. Also, could water be transported to recharge areas for discharge with positive effects? Would moderating rates of discharge potentially improve recharge capabilities?

12. Fire mitigation:
On page 4-18m the EIS indicates that range fires and spontaneous combustion have ignited areas of exposed coal. What mitigation alternatives are available should this event occur? What compensation may be available to landowners for lost land productivity due to fires? What compensation or mitigation is

available to landowners that experience methane or other chemical contamination of their property resulting from CBM production?

13. Water Quantity mitigation:
The section on "Water Quantity" beginning on page 4-11 indicates that drawdown in some areas could potentially be severe in some ares, and may continue for long periods of time. What long term mitigation alternatives are available to landowners for prolonged, severe water drawdown? No term is specified in the Water Well Agreement, nor is mitigation for landowners accessing water sources other than permitted wells.

14. Soil and vegetation reclamation:
Soil impacts are discussed beginning on page 4-79. In all cases soil reclamation and revegetation should occur using native vegetation wherever feasible, and the reclamation of surrounding native plant communities should be stated goal of reclamation and revegetation. With regard to Wibaux soil, will alternatives to standard reclamation be feasible? What are the alternatives and mitigation options? On page 4-82, the EIS provides that most short-term disturbance areas will be revegetated within one to three years. Can language be added here that indicates that revegetation will occur as soon as possible after activity in an area is completed, in order to prevent erosion and to insure weed control? It is good that proposed mitigation, on pages 4-83, includes avoidance of disturbance within areas with soils that would be difficult to revegetate. In the Cumulative Impacts section of the EIS addressing reclamation, impacts are listed on page 4-155 which suggest that reclamation mitigation should include placement of some native shrub and tree species in areas frequented by wildlife.

15. Fish:
Page 4-91 indicates that mitigation for unspecified potentially adverse impacts may be included in site-specific conditions of approval for APDs. As stated in previous comments, examination of impacts and possible mitigation alternatives should be discussed in this EIS, not in some future document that is not subject to public review and comment pursuant to the requirements of NEPA. One potential impact to fish would be TDS levels that could impact reproduction. Mitigation alternatives for this and other potentially adverse impacts should be examined in this EIS.

16. Bald Eagle:
on page 4-92, the EIs provides that access to roost sites can be carefully controlled or avoided during the winter. The word "can" in this sentence should be changed to "will."

17. Noise:
On page 4-114, the EIS provides that noise levels around a compressor would be below 55dBA (the level at which noise is judged to affect public welfare) at an estimated 600 feet from

the compressor site. However, the welfare of members of the public who view and hunt wildlife would be affected if noise adversely affects wildlife at a distance closer that 600 feet (and higher than 55dBA), so potential mitigation for noise levels beyond 55dBA in certain wildlife areas should be discussed in the EIS.

18. Cumulative Impacts:
Numerous potential surface water impacts to land areas are mentioned on page 4-133. However, no mitigation alternatives are discussed, and these should be included in this EIS. Likewise, what are the mitigation options and alternatives for the reduced or irregular flows that may develop in regard to springs?

Very Truly Yours

Willis Scott
PRBRC Chair

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Prima Oil & Gas Company
1801 Broadway, Suite 500
Denver, Colorado 80020
(303) 297-2300 Office
(303) 297-7708 Fax

July 14, 1999

Bureau of Land Management
1425 Fort Street
Buffalo, Wyoming 82834

Attn: Richard Zander

Gentlemen:

Prima Oil & Gas Company would like to offer the following comments of the Draft Environmental Impact Statement (DEIS) for the Wyodak Coal Bed Methane Project. First, however, Prima would like to express appreciation for the hard work that the staff of the Buffalo Field Office of the BLM has put in on this project. What follows are some specific comments on the document which are not necessarily in any particular order .

From Appendix B, the last bullet point on page B-2, under **Permanent Water Management Plan**, the statement is made in the third sentence "Cumulative discharge must not exceed the naturally occuring mean annual peak flow of the receiving channel."

Likewise, on page 4-14, the second bullet from the bottom of the page, "Discharges will be limited to a volume less than or equal to the naturally occuring mean annual peak flow that can be handled by the channel cross section under anticipated conditions, including flood events such as the 2 year 24 hour storm."

Comment: Most of the drainages in the study are essentially dry. This could be interpreted as prohibiting the discharge of water into such drainages. This wording should be eliminated from the final draft as not being reasonable.

In Exhibit B, page B-3, the last bullet on the page under the heading **Permanent Water Management Plan** contains a requirement to do a hydrological watershed analysis including quite a number of specific points.

Comment: First the term ***watershed*** as used in the proposed "Conditions of Approval " is not defined and is too general. Such a condition could lead to abuse of the process. In itself, the requirement creates a very burdensome and expensive situation, and is unprecedented in our experience. The BLM itself is in a better position to do studies of larger areas cutting across lease and jurisdictional boundaries and should assume this responsibility.

On page 4-14, "Existing downstream culverts may need to be replaced with larger sizes.....

Comment: This "Mitigating Measure" is too vague and open-ended. While the idea appears to be reasonable, the practical aspects are not. For example, what if the downstream owners do not wish their culverts replaced.? Under what authority would such a thing be done? Also, how far down stream would this be analyzed? Theoretically, this could result in responsibility miles away from the point where the water was generated. We believe that this should be limited to the leasehold of the Operator.

Also on page 4-14, the second bullet "Produced water may be transported to distant discharge points..."

Comment: Again this is too open-ended. It assumes that the surface ownership situation is either consistent or at least the surface owners are in agreement as to the transportation of this water. If this left in the DEIS as a potential Mitigating Measure it should be clarified that it would be applied only in cases where all affected parties have agreed or where the pipeline would be limited strictly to the surface where the discharged water originated. Furthermore, it should be the at the option of the Operator. Otherwise a situation could be created that would be impossible to comply with.

Again on page 4-14 under the bullet beginning "Alternate discharge points will be utilized..."

Comment: The WDEQ already requires that all discharge points be permitted under the NPDES process. Requiring that additional discharge points be permitted to handle periodic or seasonal water flows is neither practical or reasonable. This potential Mitigating Measure should be either reworked or eliminated.

On page 4-14, bullet number 7 suggests that "River Monitoring" will be conducted.

Comment: It is not specified who will conduct or pay for such monitoring. We would suggest that once again such an open-ended statement is an invitation to misunderstanding at the very least. No such monitoring should be the responsibility of the Operators. Operators are already being asked to conduct a variety of tests and monitoring procedures. Such additional requirements are unreasonable. In addition, since it is likely that a variety of Operators may discharge water that ultimately may find its way in to such rivers, it isn't feasible to decide who should conduct or who should bear the expense of such monitoring. It should be made clear that such monitoring will be conducted by either the State of Wyoming or by the BLM.

7. On page 2-18 the paragraph beginning "The following monitoring would be continued by the BLM..." calls for costs to potentially be borne by the operators through "cost reimbursement".

Comment: The document should clarify exactly how this would work and what is the expected cost range. Excessive costs could have a detrimental effect on the expected economic return to the Operator and could cause the abandonment of the project. This would in turn result in huge losses both on the part of the Operators as well as the general public in the form of lost revenues from royalties and taxes.

On page 20-2, the paragraph starting "Where suitable wells do not exist..."

Comment: This requirement to drill "Additional Monitoring Wells" is both burdensome and unreasonable. In addition, it is arbitrary and subject to abuse. The very character of this project is to drill large numbers of wells. To require the drilling of additional wells, especially on lands not necessarily under the control of the operator is inviting trouble while compounding the surface disturbing activities for very little if any additional benefit. We believe that this entire concept and provision should be completely eliminated from the DEIS.

Again we would like to express our appreciation for the hard work that has gone into the preparation of this document.

Sincerely,
PRIMA OIL & GAS COMPANY

G. Walter Lunsford
Vice President, Land

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PETROLEUM ASSOCIATION OF WYOMING

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e-mail: paw@pawyo.org

July 13, 1999

BUREAU OF LAND MANAGEMENT
JUL 14 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Mr. Richard Zander
United States Department of the Interior
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

Dear ~~Mr. Zander~~ Richard

The Petroleum Association of Wyoming (PAW) whose membership accounts for the majority of oil and gas exploration and production occurring in Wyoming appreciates the opportunity to comment on the Wyodak Coal Bed Methane Draft Environmental Impact Statement (Draft EIS). Throughout the study area, numerous PAW members are active participants in the development of the Coal Bed Methane (CBM) resource. Though PAW has interest in the entire document our comments today are limited to the following:

PAW addresses Appendix B and D first due to a key concern regarding expansion of BLM authority on to non-federal lands to address water management issues. BLM's does not have the jurisdiction to mitigate impacts to non-federal lands caused by development of federal oil and gas leases. Nevertheless, PAW recognizes the need to address reasonable and fair off-site water management issues directly related to CBM development and we also encourage our members to do so.

Appendix B – "Standard Conditions of Approval" for APDS

In Section 1 of Appendix B, operators are required to provide BLM with a comprehensive *water management plan* for all lands affected by a project regardless of ownership. Approval of an APD is subject to approval of the *plan* and the *plan* requires submission of specific performance standards to be applied to non-federal lands, such as: use of energy dissipation measures, structure design criteria, monitoring requirements, oversight of remedial work, etc. What is BLM's legal authority to encumber operators with requirements such as these on non-federal lands? PAW is not aware of any specific authority and is of the opinion the lack of authority may result in subsequent challenge.

Appendix D – Water Well Agreement

Application of Appendix D creates a jurisdictional issue comparable to BLM's proposed application of water management plans. PAW believes that requiring an agreement on non-jurisdictional lands (i.e. non-federal) also exceeds BLM's authority. If BLM elects to require submission of water well agreements for wells on non-federal lands, please indicate in the final EIS the legal authority to do so.

Hydrologic Monitoring and Mitigation

Page 2-16, fourth paragraph: A maximum limit on the circle of influence (COI) should be one mile. Extending to the next nearest well may require moving out several miles that would certainly be well beyond the circle of influence of a CBM well. Also, it should be stated that if a water well is already covered by a water well agreement from another operator, a second agreement is not necessary as long as the operator closest to the water well has the agreement.

Page 2-17, third paragraph: The reason for GAGMO is that the coal mines do not have water well agreements and the DEQ/LQD Mine Permit requires control of the water levels in an aquifer. CBM is trying to draw down the water in the coal seam just far enough to release the gas. The aquifer will not necessarily be depleted. CBM operators do have water well agreements and thus what is the purpose of PRAGMO? Any well affected by CBM activity will be covered by a water well agreement. PAW asks this question to avoid burdensome reporting of unnecessary data.

Page 2-17, last bullet on the page: It is not possible to get a static water level in areas where wells around the monitor well are pumping. Please recognize that the monitored level would be a working level.

Environmental Consequences

SURFACE WATER

Page 4-14, fourth bullet: Alternate discharge points on non-federal lands are a matter between the surface owner and the lessee. Both the Wyoming Department of Environmental Quality NPDES discharge permit and the BLM water management plan (see comments under Appendix D above) address prevention of flooding and erosion. Additionally, NPDES permits are for one specific point of discharge. WDEQ does not allow multiple/optional discharge points in permits. In order to change a discharge point, operators would be required to seek approval for permit modifications. BLM should consult with the WDEQ regarding the possibility of multiple/optional discharge points being contained in a single permit.

Page 4-14 sixth bullet: PAW recommends the following rewording: "operators should observe existing downstream culverts on lease and determine if the need to be replaced with larger sizes to handle total flows. Off lease, it is recommended that the operator attempt to work with other operators and with the surface owners in the same drainage to replace existing undersized culverts in the area downstream that would be affect by their discharge." Our proposed language clarifies that BLM does not have authority on non-federal lands yet it reminds operators of their responsibility to address downstream concerns where reasonable and fair.

PETROLEUM ASSOCIATION of WYOMING

951 Werner Court, Suite 100
Casper, Wyoming 82601

Page 4-14, seventh bullet: PAW is unaware of any authority granted BLM to restrict discharge volumes. This bulleted item arguably could result in denial of rights to develop leases in order to limit the flow of the cumulative discharges. Federal oil and gas leases grant lessees the right to explore, develop and produce oil and gas absent any lease stipulation restricting that right. Limiting volumes of discharge could preclude many leases from being developed. Denial to discharge would definitely eliminate CBM development. Will BLM deny discharges from federal lands because discharges in the same drainage from non-federal lands exceed the mean annual flow for a 2-year 24-hour storm?

Page 4-15, fourth bullet: This item again implies the BLM has authority on non-federal lands. BLM authority is limited to the discharge method and point on lease. PAW recommends the statement be reworded as follows to address this concern: "The operators and landowner or lessee may consider irrigation diversions to increase channel length and in-stream impoundments, as appropriate, as measures to address issues of erosion or flooding."

Page 4-15, seventh bullet: PAW recommends that the last statement of the paragraph be omitted. Neither the BLM nor the USGS have authority for river water quality. BLM can ask that they be notified of plans on federal lands.

Page 4-35 Second to last sentence at the bottom of the page: "For individually impacted water wells, see the "Mitigation Measures" section." PAW cannot find this section relative to groundwater. The only Mitigation Measure section PAW could find relates to surface water.

Sincerely,

Tom

Thomas H. Clayson
Vice President

cc: Parsons
D. True
Porter
George
Mutch
McGee
Doll

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Kennecott Energy

July 12, 1999

BUREAU OF LAND MANAGEMENT
JUL 14 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Mr. Richard Zander
Bureau of Land Management
U.S. Department of the Interior
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

Re: Comments on the Wyodak Coal Bed Methane Project Draft EIS

Dear Mr. Zander:

I. Introduction

Kennecott Energy Company ("KEC") provides management services to Colowyo Coal Co. in Colorado, Antelope Coal Co., Caballo Rojo Inc., Cordero Mining Co., Jacobs Ranch Coal Co., Kennecott Uranium Co., and Wyoming Coal Resources Co. in Wyoming, and Spring Creek Coal Co. in Montana. On behalf of operations in the vicinity of the Wyodak Coal Bed Methane ("CBM") Project, KEC submits the following comments on the draft EIS for that project. KEC supports the development of diversified energy sources in Wyoming, and encourages the continuation of the Environmental Impact Statement ("EIS") process for this project, **contingent upon** the BLM ultimately addressing the concerns outlined below.

KEC does not wish to hinder development of CBM in the project area, but CBM development cannot be allowed to proceed in a relatively unrestricted manner, which will impede coal development in the Powder River Basin. The draft EIS does not assess the severe adverse economic and social impacts that would result from relatively unrestricted CBM development. In addition, CBM development cannot proceed based upon poorly modeled information in the EIS relative to coal related impacts. The treatment for coal mining and coal transportation in the air and water modeling efforts contain several flaws, problematic assumptions, and highly questionable approaches that result in unreliable results. As such, the speculative results and inferences related to these activities cannot be accepted. These issues are discussed in the detailed comments below.

II. Coal/CBM Conflict Issues

The draft EIS document superficially mentions potential conflicts between energy development interests, but does not address fully these conflict issues or disclose the serious economic harm to Powder River Basin coal development which is posed by relatively unrestricted CBM development. Under the applicable regulations of the Council on Environmental Quality ("CEQ"), which implement the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4332, when an EIS "is prepared and economic or social and natural or physical environmental effects are interrelated, then the . . . [EIS] will discuss all of these effects on the human environment." 40 C.F.R. § 1508.14. **See also** 40 C.F.R. § 1508.8(b) ("Effects includes ecological . . . , aesthetic, historic, cultural, **economic, social**, or health, whether direct, indirect or cumulative.") (Emphasis added). The sole discussion of CBM/coal development conflicts in the EIS consists of the following statement at page 4-3:

> Conflicts between CBM drilling and existing or potential surface coal mining may occur. Development of CBM wells should be precluded in areas of active or impending coal mining. Locating wells in areas where future mining may take place would preclude mining during the life of wells located in the proposed mining area. Coal in these areas could be mined after CBM extraction is completed or terminated, or after an agreement is negotiated between the CBM operators and the coal mine operators.
>
> Development of existing mineral rights in the project area would be based on existing claims, lease terms and agreements; future conflicts would be dealt with on a case-by-case basis.

The draft EIS does not specify how broadly or how narrowly an area of "impending coal mining" will be delineated by BLM to protect future mining from CBM development impediments. The draft EIS appears to support a policy that would presumptively place areas where CBM development is occurring off-limits to coal mining until CBM extraction is complete. By stating that CBM/coal development conflicts will be "negotiated" on a "case-by-case" basis, the BLM appears willing to subject coal operators to economic "take-it-or-leave-it" demands by CBM operators that are unrelated to the true value of the affected CBM. Coal mining is a highly competitive business. If the cost to mine Powder River coal is raised significantly by exorbitant "compensation" demands from CBM operators, coal operators will be forced to reduce their level of coal mining or stop mining altogether.

The draft EIS does not undertake a proper social and economic impact analysis as required by NEPA. There should be no doubt that relatively unrestricted CBM development has the potential to greatly impede or block continued coal development in the Powder River Basin. Proposed CBM development is based on an assumed 40-acre well spacing pattern, which is far denser than conventional oil and gas well spacing. **See** DEIS at 2-1. The proposed action involves an estimated 3,000 new CBM wells. **Id.** Each well has an **estimated** life of 12 years, but the well life could be longer. **Id.** at 2-2.

If BLM makes a policy decision to prohibit surface coal mining from proceeding in areas where CBM production may be occurring, there would be enormous disruption to the socio-economic base of the region. Annual production of Powder River Basin coal is projected to generate about $2.6 billion, supporting nearly 15,885 full-time jobs. DEIS at 4-115. By contrast, CBM development in the Powder River Basin is expected to require a long-term workforce of 286 employees. DEIS at 4-116. The draft EIS acknowledges these facts, but does not recognize that the massive economic and social benefits of coal mining are jeopardized by CBM development unless BLM takes affirmative steps to ensure that such development occurs in an orderly and coordinated manner. The draft EIS identifies (DEIS at 4-118) the $98 million in federal royalties projected to be generated **over the entire 20-year life** of the CBM development project, but it fails to note that **annual** federal coal royalties far in excess of that figure are threatened by relatively unrestricted CBM development. Indeed, federal coal royalties from the Powder River Basin – which now exceed $150 million annually – are not even mentioned in the draft EIS.

Based upon the broad geographic scope of this EIS and the projected CBM development, BLM's actions could impede continuation of existing surface coal mine operations within the Powder River Basin, until such time as the CBM has been extracted. Before carrying out this proposed action, BLM must assess the requisite social and economic impacts, and take into consideration the relative economic impacts to federal, state and local economies of the financial gains realized from both surface coal mining and CBM extraction. Further, because of the importance of Powder River Coal to the Nation, BLM's actions here will have far-reaching impacts which this EIS must assess. As the draft EIS notes, the Powder River Basin "contains some of the largest accumulations of low sulfur sub-bituminous coal in the world . . .", and this "coal is valued for its clean-burning properties." DEIS at 3-4. BLM has a responsibility to protect this enormously valuable coal resource which is important to the Nation from relatively unrestricted CBM development.

The draft EIS does not consider reasonable alternatives to relatively unrestricted CBM development. The alternatives section is the heart of an EIS. 40 C.F.R. § 1502.15. This section should "[r]igorously explore and objectively evaluate all reasonable alternatives . . . ." 40 C.F.R. § 1502.14(a). One obvious alternative not discussed in this draft EIS would be to allow CBM development only subject to a "Multiple Mineral Development Plan" which would delineate the procedures and conditions to minimize CBM/coal development conflicts. This Multiple Mineral Development Plan would become a part of the BLM approval of the Application for a Permit to Drill ("APD") for each CBM well. In the draft EIS, BLM proposes a "water management plan" (DEIS, App. B), and recognizes the need for conditions on CBM development to protect virtually every resource interest **except coal, e.g.**, endangered species, cultural resources, and paleontological resources. **See** DEIS at 1-13, and App. B.

BLM's failure to fully address the serious issues raised by CBM development and the conflicts with coal development is particularly inexcusable when the EIS scoping process framed the critical issue: **"will CBM development impede future recovery of the coal?" See** Wyodak EIS, App. C, Scoping Summary, dated Mar. 19, 1998 at 2. The BLM's scoping document also stated: **"Conflicts occur between the CBM operators and the coal operators in development of their separate resources." Id.** The whole purpose of scoping is to identify the key issues to be addressed in detail in the EIS. The draft EIS does not address this critical question raised early in the EIS scoping process. This defect renders the draft EIS fundamentally flawed.

BLM should develop comprehensive guidelines that require CBM development pursuant to an approved "Multiple Mineral Development Plan," and which recognize:

(1) the relative annual economic values (including jobs and royalties) in the production of coal and the production of CBM,

(2) the relative values of the investments heretofore made and hereafter to be made by the coal mining operators and the CBM operators,

(3) BLM's statutory and regulatory obligation regarding multiple mineral development (**see, e.g.**, 43 C.F.R. § 3000.7 (the "granting of a permit or lease for the prospecting, development or production of deposits of any one mineral shall not preclude the issuance of other permits or leases for the same lands for deposits of other minerals with **suitable stipulations for simultaneous operation** . . . .")), and

(4) the common law "Accommodation Doctrine" by which one mineral developer may reasonably and necessarily impact other mineral developments (**see** recent U.S. Supreme Court decision in Amoco v. Southern Ute Indian Tribe, ___ U.S. ___, 1999 WL 358961 (1998), and Letter from Morris Kegley, Esquire, of Kennecott Energy to Peter Schaumberg, Esquire, Office of the Solicitor, U.S. Department of the Interior, dated July 1, 1999 (copy enclosed)).

III. Environmental Impacts From Coal Development Are Grossly Exaggerated in the EIS.

Since this is an EIS for proposed CBM actions, the reduced attention to accuracy and detail for impacts from coal mining and transportation activities is somewhat understandable. **However, the exaggerated projections of coal-related impacts cannot be accepted.** These results are included in the draft EIS as equivalent to those derived from the much more refined treatment of CBM impacts. It is incumbent upon BLM to assure that the published results in the EIS do not provide a basis for misinformation or misinterpretation in the future. Projected coal related impacts must be remodeled with equivalent refinement and accuracy, or these projections must be eliminated or qualified heavily.

To address the parallel needs for expediency in processing this EIS and assuring accuracy in published results, the BLM must, at a minimum, revise the Introduction and Cumulative Impact sections of the EIS to:

(1) Clarify that the modeling projections of potential air quality impacts from future coal development are inconsistent with the observed effects of two decades of expanding coal mining activities;

(2) Clarify the differential modeling treatments between CBM and coal mining and transportation.

(3) Acknowledge the significant issues raised by the coal industry regarding assumptions used and modeling results for projected coal related impacts.

(4) Clearly state that the coal related results of air modeling are only preliminary, that the results remain under review and should not be referenced or interpreted until future resolution through the next coal related EA or EIS action.

(5) Revise the groundwater modeling discussions and results through remodeling efforts addressing the substantial insufficiencies and flaws identified by the Gillette Area Groundwater Monitoring Organization.

(6) Separately address the direct and attributable impacts for the proposed CBM activities.

This approach should allow the EIS process to continue, while also allowing resolution of the coal related issues raised by the document. **If BLM cannot meet those requests, then KEC requests a 90-day extension in the comment period to allow for the comprehensive review necessary to ascertain the validity of several of the modeling assumptions and to determine the accuracy of the modeling results. The comment period allowed for this document is inadequate to address the numerous flaws in the coal-related considerations of air and water issues.**

A. Air Quality Issues

Modeling procedures for non-CBM emissions raise several significant concerns:

a. The Far-Range modeling results conflict with extensive existing data. As such, the modeling results appear highly speculative and inappropriate for an EIS document. For example, in the characterization of the existing environment, the draft EIS states correctly that "[v]isibility of more than 60 miles is common in the project area and has been documented . . . . Significant reductions in visibility are related to weather conditions associated with high relative humidity, such as fog, haze, rain, and snow." DEIS at 3-28. In addition, based on actual extensive monitoring data, the annual average values for PM_{10} are 34% of the applicable annual standard, **i.e.**, more than 66% below the stringent standard. **Id.** Further, the average annual NO_2 levels are more than 80% below the standard. **Id.** These extensive and existing data demonstrate that there are no significant adverse impacts to local and regional air quality, notwithstanding the dramatic increase in Wyoming coal production of more than 300%, from 94 million tons in 1980 to 314.5 million tons in 1998. **See** DEIS at 4-130 (95% of this production comes from the project area). The DEIS projects future Powder River Basin coal production to increase by a relatively modest increment of about 25% over the next 15 years to 386.7 million tons. **See** DEIS at 4-115. Yet, the draft EIS sets

forth improbable modeling results indicating that significant adverse impacts to regional haze are expected by 2015 from NO_x and PM_{10} emissions from coal mining; indeed, these projected air impacts will purportedly cause visibility to be reduced in Class I National Park areas by more than 5% for 116 to 136 days per year. DEIS at 4-149. Publication of such speculative projections does a disservice to Powder River Basin coal operators, BLM, and the public.

b. Coal train emissions comprise 64% of modeled Far-Range NOx emissions, the largest delineated emission source (Table 4-17). Preliminary review of the modeling indicates that train emissions were not modeled realistically, as continuous low-level emissions, but instead in a highly artificial manner as cumulative fixed sources at intervals along the track line. This treatment produces exaggerated emissions at those fixed locations, producing unrealistically high readings at any nearby receptors.

c. Coal locomotive fuel usage rates applied to the Near-Range and Far-Range models appear to be unrealistically high, approximately 23 gallons of diesel per rail mile, rather than the 8 to 9 gallons suggested by the supporting documentation in the draft EIS. Corresponding emission rates are thereby significantly exaggerated, exacerbating the overpredictive modeling effects.

d. Modeled locomotive emissions fail to account for industry and regulatory predictions of decreased locomotive emissions in the near future. The draft EIS acknowledges (at 4-146) that modeling did not account for the 46% decrease in locomotive NOx mandated by EPA to occur by 2007, a point approximately at the mid-point of the modeled period. Ignoring these mandated reductions biases the modeling results of Tables 4-17 and 4-18, and all associated conclusions, toward inflated estimates of locomotive emissions and impacts. This is a substantial flaw in the strategic assumptions and modeling processes used in the draft EIS.

e. There is no evidence that the Far Range modeling results were calibrated using existing data. As such, the results can only be considered as imprecisely estimated trends, not the absolute figures reported in the EIS document.

f. The cumulative analysis for visibility impacts from NO_x, SO_2 and PM_{10}, as described (at 4-140 to 4-152), focuses only upon emissions estimated for CBM activities and coal mining related activities. The only mobile sources considered are road dust from CBM vehicle traffic, mining vehicle exhaust and coal train locomotive emissions.

The modeling exercise does not account for impacts from exhaust emissions from CBM vehicles, and for exhaust emissions from general public vehicles. This latter source particularly needs to be considered relative to the claimed visibility impacts at the Class I and Class II areas in the analysis. Strong vehicle use rates at several of these sites (e.g., Badlands National Park, Mount Rushmore National Monument, Devil's Tower National Monument, etc.) during the higher NOx-ozone seasons must be considered in any impact analysis.

Similarly, the exhaust from traffic patterns along Interstate 90 in the near proximity of several of the Class I and Class II areas in the analysis (e.g., Badlands National Park, Devil's Tower National Monument, Cloud Peak Wilderness, etc.) must be considered in any impact analysis. This analysis does not consider any of these points.

g. The analysis does not consider any impact on visibility from prescribed burns initiated by federal land managers at or near the Class I and Class II areas in the analysis.

B. Water Issues

The Groundwater section of the draft EIS indicates that an "assessment of groundwater impacts for Lighthouse CBM development in the eastern PRB was performed . . . but the results have not yet been published. Information from this work was used in the compilation of this EIS where appropriate." (DEIS at 4-135 and 4-136.) The Lighthouse project was approved 4 years ago; why is the groundwater impact assessment still unavailable? Use of this unpublished information, vague references to use of some of this information in the current draft EIS analysis, and failure to include the specific information from that study in this groundwater analysis is unacceptable. Such an approach denies any reviewer the ability to verify the assumptions and/or results of the contractor analyses and frustrates the purpose of NEPA.

The draft EIS (at 4-1 and 4-2) states as follows:

> CBM development occurring upstream from nearby surface coal mines could affect coal mining operations. CBM generated water discharged upstream from coal mines could increase surface flows in the vicinity of coal operations or decrease the rate of groundwater withdrawals that currently accompany ongoing coal mining operations. There likely will be impacts to sediment structures in the coal mine permit areas. These structures have been designed to accommodate historical flow rates that do not include contributions from CBM generated flows. Some design aspects of mining operations may need to be changed. Any required revisions to approved mine plans would impact operators and agencies involved in reviewing proposed changes.

This discussion implies several disturbing and unrealistic assumptions. First, that coal mine operation sediment control ponds will accept CBM discharge runoff. Second, that coal mine operations will change some structural designs to accommodate CBM discharges. Third, that coal mine operators and related regulatory agencies will conduct coal permit changes to accommodate CBM activities and discharges. These assumptions raise clear questions of trespass, offsite damages and illegally imposed burdens to coal operators. BLM must revise this section by removing these assumptions or by adding clear directions that CBM operators must obtain appropriate landowner consent prior to any discharge, and bear all associated expenses, to address any and all of these projected impacts.

KEC has reviewed comments prepared by the Gillette Area Groundwater Monitoring Organization regarding the draft EIS and concurs with their findings that the EIS groundwater model must be rejected and a new model constructed to address several deficiencies:

a. Inadequate calibration and inaccurate results.

- Only 44 wells used to verify model results over 20,000 square miles.
- The model does not address differences of nearly 300 feet in the predicted and actual hydraulic head data at these wells.
- Model results are accepted that predict drawdown depths substantially in excess of the actual saturated thickness.
- The model does not address significant inconsistencies with long-term approved drawdown modeling by coal mines in the project area.

b. Inaccurate modeling parameters.

- The model characterizes the project area overburden as a single homogenous fine-grained sand unit. This is contrary to the actual heterogeneous condition that is thoroughly described in existing coal mine baseline information for areas within the project area.
- The model unrealistically assumes an impermeable clay layer exists between overburden and coal throughout the project area.
- The model does not apply considerations of existing faults, cleats and other known structural characteristics of the coal bed in the project area. These features have a significant impact on predictions of drawdown and flow.
- The results of the model over-predict coal mining impacts on overburden drawdowns and under-predict similar impacts from CBM activities.

IV. Conclusion

Each of the above points is sufficiently compelling to require substantial modification of the results and discussions in the draft EIS document. Our recommendations should allow BLM to address these issues while expeditiously continuing the process for the proposed CBM actions.

KEC appreciates the opportunity to comment on this draft EIS. Please contact me at the letterhead address (or at 307-687-6061) if further details are needed on any aspect of these comments.

Sincerely,

Bob Green

Bob Green
Environmental Manager

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July 13, 1999

Triton Coal Company

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JUL 14 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Bureau of Land Management
Buffalo Field Office
Richard Zander
1425 Fort Street
Buffalo, WY 82834

RE: Draft EIS Wyodak Coal Bed Methane Project Comments

Dear Mr. Zander:

Thank you for the opportunity to comment on the CBM EIS. Triton Coal Company owns and operates two coal mines and additional grazing lands within the bounds of this project area. We are concerned that there may be some environmental impacts that are not adequately addressed in the draft document. We are also concerned that modeled impacts (specifically air quality and water) have not been modeled correctly. We are not opposed to CBM per se, we have a very good relationship with the CBM operator in our area (Redstone Resources) and hope to continue with the agreements that have allowed us both to operate. However, we are concerned the analysis (or lack thereof) presented in this EIS may jeopardize the future of our mine.

Specific comments/questions follow.

Page 1-1: The predictions continually reported through out Gillette speculate in excess of 12,000 productive CBM wells being developed in the next 10 years. Those of us living in Gillette have seen first hand the level of interest and the rapid development of CBM interest. Companies are actively pursuing CBM in the northern Powder River Basin near Sheridan and up into Montana. Exploratory drilling is occurring near Buffalo and Lake DeSmet. Companies are actively exploring various deep coal seams other than the Wyodak (the Blue and Danner near Buckskin). Perhaps the industry projected number of 3,000 to 5,000 new productive wells, and the project area, was realistic two years ago when this project started, but it now appears low.

We believe that it is in everyone's best interest that this EIS adequately address and evaluate the cumulative impact of all past, present, and reasonably foreseeable future environmental impacts. The BLM has failed to do this in the numerous previous CBM EA's and EIS's. The BLM has received comments in the past that these documents were not accurately predicting reasonably foreseeable future CBM development.

Does the BLM anticipate preparing another CBM NEPA document for the Powder River Basin in the near future? If so, would this be a related action? Is it reasonably foreseeable?

Conflicts are occurring between CBM development, coal development, and surface management. A piecemeal approach may not be the correct way to address these issues.

Page 1-1: With the exception of the Geology section, the EIS continually lumps "oil and gas rights" into the generic term "mineral rights". This is a critical issue which will no doubt be

receiving some additional consideration. Could you please use the exact mineral right which applies through out the text.

Page 1-2: The BLM has expressed the need to reduce the possibility of CBM drainage from the federal estate. Does the BLM have authority under existing oil and gas lease terms to require an oil and gas lease holder to drill and develop the lease if the agency feels that drainage is occurring (Section 4 of Standard Lease Terms)? If so, has the BLM ever made such a request to a CBM operator? If not, why?

Triton Coal Company has a federal coal lease. We have federally mandated diligence requirements to actively mine and sell this coal. The BLM has chosen to issue two competing leases over the same surface. Triton Coal Company and Redstone Resources (CBM operator) have successfully cooperated in the vicinity of the Buckskin Mine to minimize impacts to either operation. We have absolutely no problems with a CBM operator actively developing their oil and gas rights. However, an emphasis must be placed on "actively developing". We would like to see an analysis of the impacts of increasing the well spacing pattern to 20 acres in the vicinity of active coal mines. We understand that the WOGCC has jurisdiction in setting the spacing. However, BLM is mandated to analyze reasonable alternatives even outside their jurisdiction to minimize impacts. Would a 20 acre or even 10 acre spacing expedite the recovery of CBM, thereby reducing coal-CBM conflicts and likewise prevent drainage?

Rumors hold that there are some oil and gas operators attempting to "hold hostage" or "blackmail" coal companies into buying out their federal oil and gas rights or simply compensating them to allow mining to continue. Does the BLM have any knowledge of this occurring? If so, what is the BLM doing about it? Likewise, there needs to be a detailed discussion in this EIS that addresses just this issue. Triton Coal Company raised this issue during scoping. Just how does the BLM plan to address competing mineral rights? The often repeated "first in time – first in right" saying needs clarification. If a federal coal lease holder is executing their valid right to mine coal and a federal oil and gas lease holder is not executing their valid right to recover gas, who is first in time? Again, coal leases come with diligent development requirements, oil and gas leases do not. However, standard oil and gas lease terms do mandate that "operations must be conducted in a manner that minimizes adverse impacts to ...elements of the environment, **as well as other land uses or users**."[emphasis mine]. We believe this EIS is an appropriate place to begin this analysis. Can you place new oil and gas lease stipulations on existing oil and gas leases as a result of significant environmental impacts assessed in this document? Is the BLM now placing special or supplemental stipulations on new oil and gas leases to address this identified conflict? If not, why not? The Record of Decision for the Buffalo Resource Management Plan (page 15) MM-4 states that oil and gas drilling and production will be deferred on active coal leases. Does the BLM still stand by this decision? Also MM-5 in the RMP addresses new coal leases in identified Known Geologic Structures (KGS's), CBM development was not predicted or analyzed in the RMP (or the TBNG Oil and Gas Leasing EIS or the Medicine Bow National Forest Forest Plan [for that matter]), therefore can we assume that the CBM play is not a KGS? Likewise, given the extensive previous analysis and predictions of future coal development – just who is "first in time"? We have also heard a rumor that the BLM is delaying processing of Coal LBA's until this CBM EIS is finalized. If this is the case, is this consistent with the ROD for the RMP?

Page 1-2: We can agree that the "proposed action" analyzed in this EIS is adequately covered by the "project boundary" but, as stated above there are reasonably foreseeable future CBM projects in several other areas under the jurisdiction of the BLM and the Buffalo Field Office. If these other projects are not analyzed in detail as project related impacts in Chapter 4 they must none-the-less be analyzed in the Cumulative Impact section, where they have not been in this DEIS.

Page 1-3: How was the eastern edge of the project boundary delineated? Why are the coal leases south of Gillette mostly outside the project boundary, while the Rawhide and Buckskin leases north of Gillette well inside the boundary? It appears that the north-eastern "project boundary" has been overly exaggerated. You are showing potential for CBM development well beyond the burn line where there is no coal. Could you please refine the "project boundary" in this area.

Page 1-5: What do the Onshore Oil and Gas Orders say in regard to drainage and competing leases? Also see above comments on RMP.

Page 1-6: Has the BLM petitioned the WOGCC to decrease the well spacing of CBM wells near active coal mines to mitigate potential drainage issues? If not, why not?

Page 1-6: It appears that this EIS makes no distinction between "wetlands" and "open water habitat". CBM will produce water, when this water is discharged to the surface it will make the land wet. However, it may likely not produce "wetlands", it may in fact flood and thereby decrease existing "wetlands". Could you please address this from the COE jurisdictional status, the EO Protection of Wetlands status, and the BLM Manual 1737 policy. *We note that I.M. No. 99-19 addresses direct physical disturbance to a "wetland" but CBM impacts would be indirect secondary.*

Page 1-13: "BLM is asking operators to submit a water management plan." Could you be little more specific. Will this condition of approval be applied to all federal CBM APD's? Are downstream landowners provided an opportunity to review and comment on these water management plans? *We note that the DEQ/WQD recently permitted CBM discharge under a General Permit effectively limiting an interested party the opportunity to comment on potential impacts.* Will affected landowners be provided a forum through the BLM on federal APD's? If the BLM (correctly so) feels that this mitigation is a necessity. Does BLM then have the authority to require the same in issuing a ROW over federal surface to develop private or state CBM? Stated another way: BLM has to approve a ROW for access to private or state minerals, but you do have the authority to require mitigation for adverse impacts. As the surface managing agency will BLM require a water management plan prior to granting a ROW on public land? Likewise where does the Forest Service sit with this issue?

Page 2-2: Triton applauds and supports the BLM's decision to utilize existing two-track roads rather than upgrade to typical BLM road standards.

Page 2-2: The estimated project life is 10-20 years yet your own study speculates an average CBM well life of 12 years? Triton does not have a copy of USDI BLM, 1996a could you please give the corresponding statistics with the "average life", what is the population standard deviation? The sample standard deviation? The mode? How can 3,000-5,000 wells be drilled in a time frame that would allow for an average life of 12 years and all project related impacts cease in a 10-20 year time frame?

Page 2-8: (Please number landscape pages for readability) We agree that CBM production is likely to go into far deeper coals than just the Wyodak. But, where is the analysis of those impacts in this EIS?

Page 2-11: We agree that direct burial of electrical cable should be the preferred method. Will this be a requirement for federal APD's? How about ROW's over public land?

Page 2-13: Water production is expected to average 12 gpm - the statistics please - standard deviation, mode, etc. We also have strong reservations about applying a mean value over such a large project area and in such a variable setting. Applying this assumption to the groundwater model casts a large doubt over the validity of the model output.

Page 2-14: Back to the water management plans. BLM is going to ask for a water management plan? This plan must now address how the water will be managed on a "drainage-by-drainage" basis! Are we correct in interpreting this to mean BLM will require a water management plan for and entire drainage basin irregardless of jurisdiction? Back to a previous question – is BLM just asking for this or will it be a requirement for every drainage basin prior to issuance of a federal APD and ROW?

Page 2-15: The project life is now getting narrower (see comment page 2-2 above) 12-20 years. You now predict that it is going to take up to 10 years to drill all the wells, but with an average life of 12 years how can those wells drilled in year 10 be realistically gone in year 20? Does the analysis of the projected rate of development here apply only to federal wells or does it include development of private and state wells (the proposed action and impacts do include the private and state wells[appropriately so]).

Page 2-16: The Water Well Agreement. We specifically asked that this be addressed in the EIS during scoping. What authority does BLM have in requiring this agreement? How does BLM know that this agreement has been offered to all affected surface owners prior to approval of an APD? If the COI is ½ mile around each CBM well or the next nearest water well. Does this requirement predict that every landowner in the project boundary with a water well will now be offered an agreement? Do the Operators have to offer the agreement to the same landowner for each and every well? Does each Operator have to offer the agreement to all affected landowners?

Page 2-17: The BLM has rightfully recognized the ongoing detailed groundwater data collection that GAGMO has compiled for the past 19 years and Triton applauds your requirement(?) that the CBM operators form a similar group. This is a large database containing "real data" however, why was this GAGMO data not utilized in the groundwater model? Has

GAGMO had an opportunity to review this model? What were their comments? Why is the BLM requiring the CBM operators to compile data if you yourself do not then use this data? According to the GAGMO List of Members the BLM is a non-voting government member, which regularly attends GAGMO meetings. Again, why has BLM chosen to ignore this data in preparation of the groundwater model?

Page 2-20: Why is the BLM proposing to provide public (i.e., BLM) labor to monitor CBM monitor wells? BLM does not offer this service to federal coal leasees.

Page 2-22: The Buckskin Mines surface water monitoring station on Rawhide Creek was underwater this entire spring (never happened before). This is a significant impact. Triton has a fine relationship with our adjacent CBM operator and we are confident that we can reach an agreement on this impact. However, other landowners may not enjoy such an amenable relationship with a oil and gas company. What specific mitigation is BLM requiring for downstream surface water impacts? Why is BLM proposing that the public (i.e., BLM) share the cost of this monitoring? Again, coal leasees have to burden this monitoring.

Page 2-23: We don't understand how the reference to Cordero-Rojo operating a surface water monitoring station has any relevance to CBM impacts. Is the BLM suggesting that the mines simply monitor CBM impacts?

Page 2-26: Alternatives considered but not analyzed in detail. Are there no reasonable alternatives that could have been analyzed which would have reduced the conflicts between CBM production and coal mining? Again we specifically asked this question in scoping. Drainage is an issue. Why was it not addressed in detail? Why was a 20 acre spacing (or less) not analyzed in conflicting lease areas? The BLM has put off addressing this critical issue for years. Is this not the appropriate time to address this complicated issue? NEPA mandates that reasonable alternatives be analyzed. NEPA mandates that all identified issues be addressed. Tighter well spacing near coal mines would enhance recovery of both coal and methane.

Page 3-1: We agree with your decision that hazardous wastes and paleontological resources do not need to be analyzed in this EIS. We assume a similar decision will be reached for coal LBA's?

Page 3-4: We agree that the Wyodak coal is currently the primary target zone. But, we believe that deeper coals will receive increased scrutiny. We know that there is active on-going work in the Danner and Blue coal seams. NEPA mandates that reasonably foreseeable future actions also be analyzed.

Page 3-5: Coal mines have hundreds of groundwater monitoring wells completed in coal. CBM activity in close proximity is obviously either sucking gas into this area or liberating existing gas by depressurizing the seam. Common sense dictates that adjacent monitoring wells will thus vent an increased volume of gas. Is this a safety concern? Is CBM development directly adjacent to active coal operations creating a human health hazard? Where is this addressed? Two wells near our property (one directly adjacent to Highway 14/16 on state land) have recently begun "spewing" methane. This well does not belong to a mine. If (or when)

someone leans over one of these wells with a flame there will be an explosion. Likewise, what will happen during the next wildfire that goes through this area? Perhaps BLM should require that the CBM operators purchase all coal monitoring wells and assume this liability. Another reasonable alternative may be to segregate the CBM development from coal mining. It seems reasonable to us that the CBM producers could develop their rights a little farther to the west of current coal operations, thereby cutting off the flow of gas to our wells rather than pulling the gas right to them. Either way there will be drainage.

Page 3-21: "Equivalent coal beds in the vicinity of Sheridan." Why is this not analyzed in the cumulative impact section as a reasonably foreseeable future development? The Big George coal seam, are there any reasonably foreseeable future development scenarios for CBM production here?

Page 3-21: USGS 1975 says wells completed in the Wyodak generally yield 10 to 50 gpm and they recognize the extreme variability in water yield. Why does the CBM groundwater model ignore this pertinent data?

Page 3-24: Interesting – mining related withdrawals account for 77 percent of the groundwater use in the study area in Chapter 3. How will this percentage change following projected CBM development? We can not find the corresponding number in Chapter 4, will CBM related withdrawals approach 100 percent of the groundwater usage in the study area?

Page 3-26: We agree Gillette air quality data is representative of the study area and its use would be appropriate for a generic qualitative description. However, the application of generic Gillette data would not be appropriate to plug into a qualitative air quality model. Much more site specific data exists.

Page 3-29: The annual mean PM-10 concentration has decreased as coal production increased. Does your air modeling input continue this documented downward trend in PM-10? A real monitoring data set of NO_2 concentration is available, Using regression analysis with BLM's coal production assumptions what would be the predicted NO_2 concentration in each year projected out over 20 years? How does this projection compare with your modeled projection?

Page 4-1..2: CBM development occurring upstream from surface coal mines could affect coal mining operations. CBM generated water discharge could increase surface flows. If there is any doubt , let me clarify: CBM development is affecting coal operations. CBM discharges are increasing surface flows.

Page 4-2: There likely will be impacts to sediment structures? There will be impacts to sediment structures. We refer you to Chapters 2 and 3 and page 4-5: Water production, on average, should not exceed 17,280 gallons/day/well and flows will increase from 15.1 MMgpd to 66.1 MMgpd; and this is being discharged from dozens of wells into ephemeral streams located immediately upstream of reservoirs designed to hold less than half this capacity. Where is the mitigation for this significant environmental impact? Who will pay to enlarge these reservoirs? We agree that these impacts could be mitigated through cooperative agreements. But, is BLM subjugating your responsibility and laying this burden on holders of leases that you have issued.

Leases that specifically mandate that "operations must be conducted in a manner that minimizes adverse impacts to ...elements of the environment, **as well as other land uses or users**."

Page 4-3: "Conflicts between CBM drilling and existing or potential surface coal mining may occur. Development of CBM wells would be precluded in areas of active or impending coal mining." This very vague statement needs considerable clarification. The BLM has created this situation by leasing and encouraging the development of two conflicting mineral estates over the same surface. This has created the potential for very significant impacts (both environmental and socioeconomic) this document contains no substantial analysis of this significant impact. What specific mitigation measures will BLM mandate to mitigate this impact?

Simply stating that "future conflicts would be dealt with on a case-by-case basis" is not following the spirit and intent of NEPA. The BLM must take a lead role in resolving this issue. BLM can not expect the coal mines and individual operators to deal with this huge conflict unassisted by BLM.

Page 4-6: If the annual surface water yield is predicted to double at the project boundary in the Belle Fourche River and Upper Cheyenne River is it reasonable to expect the tributaries to these rivers will likewise double? Would it likewise be reasonable to expect that the upstream or immediately downstream segments of these tributaries from the CBM discharges would more than double? What is the mitigation plan?

Page 4-9: "New springs may develop in areas that are recharged by newly saturated alluvial aquifers or Wasatch sands." The State of Wyoming requires very stringent mitigation of springs as well as alluvial valley floors (which are defined much more stringently than the BLM definition). CBM generated groundwater is now being pumped to the surface where a substantial portion is saturating overburden aquifers and creating artificially high alluvial water tables. If the State does not recognize this fact future mine permits may be severely impacted in requirements to restore AVF's that only exist because of the CBM water and if reclamation occurs following cessation of the CBM discharges where will this water for mitigation come from? Likewise, coal companies may stand accused of "impacting" AVF's adjacent to our operations, when the real culprit is CBM. A number of mines have ongoing problems with overburden dewatering. This discharge of CBM water is very likely to exacerbate coal mines overburden dewatering programs. What is the mitigation plan?

Page 4-17..61: We disagree totally with your groundwater model. The assumptions are wrong. Readily available current information was not used in the model. We are well aware that preparing and running an accurate groundwater model of this magnitude is a daunting task. In fact it has been attempted by numerous agencies numerous times, and each effort was resoundingly deemed a failure. Running an accurate and precise cumulative hydrologic impact assessment model is, and will be, very time consuming and costly. This model and the impacts it predicts is simply inadequate. We are well aware of your NEPA responsibilities to evaluate cumulative impacts and we respect the attempt. If we are unsuccessful in convincing you to redo this model or scrap the whole thing in its entirety; We plead with you to not continue to use this flawed model in future coal LBA NEPA documents. Better data does exist. More site specific

data does exist. Please do not let this model set a precedence for all other Powder River Basin NEPA documents to follow.

Page 4-62: Why were coal mines and railroads not invited to participate along with the CBM companies, BLM, NPS, FS, EPA, and WDEQ in developing the assessment protocol that was used to predict cumulative air quality impacts? The Wyoming Mining Association made several early inquires into the development of this protocol and to my knowledge no invitation was ever extended. We am sure that there is no hidden agenda with this apparent oversight and we are equally certain that you will now accept the coal industries input to your assessment protocol and revise it as warranted prior to release of the Final EIS and ROD?

Page 4-65: A map or figure illustrating the long-range modeling domain with the location of each Class We, sensitive Class II area, and modeled pollution sources (including major cities, etc..) would be extremely useful for visualizing this analysis.

Page 4-75: We are not following Table 4-9 and the text. Limits of acceptable change are assessed on an annual basis? Table 4-8 shows your assumed baseline visual range. Now you are modeling extinction coefficients to predict deciview changes? Could you present a table illustrating this.

Page 4-103: We believe there is a large potential for conflicts between CBM development and coal mining (much more so than with grazing and crop production). The BLM must be proactive in resolving issues through innovative leasing or development practices before disputes arise. There must be some detailed discussion in this document concerning what options the BLM has for managing these reasonably foreseeable conflicts.

Page 4-103: The Buckskin Mine has several monitoring wells that have become quite "gassy" with the development of nearby CBM. Are there human health threats associated with these incidental releases? If so, who is responsible for mitigating these impacts? Is there any potential for hydrogen sulfide gas in association with this methane?

Page 4-104: You say "CBM development "is not likely to exclude existing uses anywhere except at production pods and compressor facilities." Are there any existing or reasonably foreseeable facilities that are likely to exclude coal mining? If so, where and how many?

Page 4-115: Socioeconomic's: Are there reasonably foreseeable conflicts between CBM and coal mining? If so, what would the socioeconomic impacts of the various resolutions be? If a coal mine was forced to shut down while CBM was being produced, what would the impacts be? If the BLM decided not to issue a new coal lease until CBM was recovered, what would the socioeconomic impacts be? Please provide a clear discussion of these issues.

Page 4-115: Could use please do a direct comparison of the economic impact of mining coal and producing CBM? The current discussion appears to relate one years worth of coal production to 20 years worth of CBM.

Page 4-126..165: Cumulative Impacts: This entire section on cumulative impacts is flawed. The analysis has not projected or analyzed any reasonably foreseeable future CBM developments. This must be discussed and analyzed. The proposed project as detailed in the preceding sections pretty well covers the Wyodak project. But, where is an analysis of the CBM development occurring in the Sheridan area? How about that occurring on the western side of the Powder River Basin near Lake DeSmet? How about that occurring in the northern Powder River Basin north of Sheridan in Montana? Local CBM operators are expounding in great detail their current plans and projections in these areas. These plans have been reported in the local newspaper, a "CBM Fair" was even held on July 9-10 detailing these plans. As a matter of fact the BLM operated a booth at this fair, surely you are aware of these projections. Why have these reasonably foreseeable actions not been presented?

This document appears to be attempting to justify the potential impacts from CBM development by repeatedly saying that the impacts will be minimal as compared to coal mining impacts. This is simply not true an is unacceptable in an impartial analysis. BLM must conduct a cumulative impact assessment and you must do it correctly.

Another major mistake revolves around the "cumulative impact assessment areas" These areas must be delineated and mapped. These areas must be specific for each specific resource. The BLM has produced a document "Guidelines For Assessing And Documenting Cumulative Impacts" (April 1994). Why were the guidelines in this document not followed in preparation of this EIS?

Page 4-126: The 1995 BLM status check did not analyze CBM impacts or development scenarios.

Page 4-126: Specifically what mines are located within the "project area"? Map 1-2 shows the majority of mines to be located outside the "project boundary". Why is the Buckskin Mine located within the project area? Are there current plans by any producer to develop CBM on the Buckskin federal coal lease? It appears that the north-eastern "project boundary" has been overly exaggerated. You are showing potential for CBM development where there is no coal. Could BLM refine the "project boundary" in this area.

Page 4-127: Again, this table is incorrect most of these mines are not located within the Wyodak project area. They are however, located within the vicinity. Why are reasonably foreseeable future CBM wells and associated facilities (mainly large pipelines) not illustrated and analyzed?

Page 4-127: The Buckskin Mine's currently permitted coal production is 22 MM tons not 24 MM tons. The Rawhide Mine ceased production in 1999, is their projected 20 MM tons still the "best available information"?

Page 4-128..129: What is the reasonably foreseeable future CBM development in the Powder River Basin above and beyond this proposed project? These developments will be cumulative to the proposed action. You cite Table 2-2, yet this table only projects the current action. Throughout this section you are throwing in cumulative impacts from coal development which is

occurring outside the "expanded project area" but, for CBM cumulative impacts you are excluding anything occurring outside the "expanded project area". How about all the new and proposed CBM pipelines and associated facilities, etc.. You state that "since 1992, the BLM has prepared five EA's and one EIS analyzing CBM development projects in this area." Using this trend is it reasonable to assume that BLM will be analyzing six more CBM projects over the next seven years?

Page 4-129: How long would it take to "exhaust the coal in the eastern PRB" with reasonably foreseeable coal production? How much of the coal in the eastern PRB is leased? How long would it take to "exhaust the CBM in the eastern PRB" with reasonably foreseeable CBM production? How much of the CBM in the eastern PRB is leased?

Page 4-130: Again, this is the cumulative impact section. When (is it reasonably foreseeable) that all the methane in the "project area" will be depleted? How about the entire PRB?

Page 4-130: What is the cumulative foreseeable CBM production, not just this proposed project?

Page 4-132: Coal companies typically dewater the overburden in advance of mining not the coal seam. CBM discharges will recharge the overburden creating a negative impact. CBM dewatering of coal may reduce the amount of water mines have to deal with in the pit bottom however, our largest water problem involves overburden benches. We agree that CBM discharges will likely impact existing downstream water management facilities. What specific requirements will BLM mandate to mitigate these impacts? And who will be responsible for this mitigation?

Page 4-133: Speaking of Keyhole Reservoir, What will be the cumulative impact of sedimentation with the reasonably foreseeable future action (RFFA) CBM discharges? Will it require dredging in the foreseeable future?

Page 4-134: Again, what is cumulative reasonably foreseeable CBM impact? The mining related groundwater impacts are of a complete different type and scale. Mining does remove a very small (insignificant?) portion of the upper Wyodak aquifer. Cumulative CBM development may lower the water level in numerous coal aquifers throughout the PRB. Intuitively, the groundwater drawdown from cumulative CBM development will quite simply dwarf the mining related drawdown. What is the groundwater recovery period for the cumulative CBM dewatering. Do some of the deeper coal seams that are and will be dewatered by CBM even have a recharge zone? And if so what is it?

Page 4-135: "CBM development may change the timing of coal extraction but would not affect sustainable development of the resource." Would you please expand on this statement. Does BLM predict that a coal mine or coal mining in general will be slowed down as a result of the proposed action? Alternative A? Does BLM predict that approval of the proposed action will indirectly shut a mine down? If so, which mine? And what will the socioeconomic impacts be?

Page 4-136: The statement that "This EIS describes anticipated impacts using the latest available information." is simply not true and is the major reason this analysis fails to comply with NEPA. This statement occurs in the cumulative groundwater section. Coal mines have an extensive database, which if utilized in the groundwater modeling would have contributed significantly to the analysis and quite probably altered the conclusions. Please see specific comments submitted by GAGMO.

Page 4-136: This is the cumulative impact section, where is the analysis of RFFA of CBM production? What is the recharge mechanism for the deeper coal seams that are and will reasonably be expected to be dewatered by CBM production? What will the drawdown in these deeper coal aquifers be? How long will it take water levels to recover in these deeper seams (Redstone Resources north of Gillette is actively exploring the "Danner" and "Blue" coal seams, in fact they are installing multiple well heads at many drill locations. Have the associated cumulative surface discharges from these multi-well sites been addressed?). Approval of the action analyzed in the EIS will not limit development to the shallow Wyodak seam, where is the analysis of impacts to these deeper seams? CBM producers are not hiding these plans from the public, they are well know. Did BLM use the "latest available information" in preparation of this EIS?.

Page 4-139: The BLM is again diverging from the analysis that must be completed for this project. CBM development will overwhelm and dwarf the groundwater drawdown produced by coal mining. This is not an analysis of coal mining, but CBM. The statement that "additional groundwater impacts that would be expected as a result of the Wyodak CBM development would be additive in nature and would extend the area experiencing a loss in hydraulic head to the west of the coal mining area", can be nothing more than an attempt to downplay the significance of the groundwater impacts that this project will elicit. Rigorous and detailed modeling conducted in association with state mandated requirements at coal mines using "real data" collected over 20 years by very closely spaced wells (in excess of 600), monitored semi-annually, has essentially proven that groundwater impacts from coal mining are relatively insignificant. CBM production is now occurring with virtually [or relatively] no monitoring, very little real data exists at this time to substantiate and refute predictions made. Yet the BLM states additional groundwater impacts would be expected and they would be additive in nature to coal mining? Here is some real data for your analysis: The Buckskin Mine has monitored groundwater levels in the upper coal seams for 20 years and published these results in publicly available Annual Reports. Our surface mining operation has obviously acted like a sump and caused groundwater to flow in the direction of our pit. Water levels in over 30 surrounding coal monitoring wells have shown virtually no drawdown over this monitoring period. This past year (one year) we recorded drawdown in two coal wells in excess of 100 feet, the groundwater flow direction has now changed direction from being centered on our pit to an area with concentrated CBM production. Again, this occurred over one year and the CBM field is not fully developed. The BLM says CBM will be additive to the coal impact?

Figures 4-19 and 4-20 should be in the previous section on project specific impacts. The statement that "the maximum areal extent of drawdown...ranges to the west about 12 to 22 miles from the centers of CBM development" may be accurate for this project. But, the cumulative impact of all reasonably foreseeable future CBM development in the PRB will obviously

exasperate this drawdown. Figure's illustrating the projected groundwater drawdown's in each coal aquifer need to be presented that include RFFA CBM production. What is the recharge mechanism for the deeper coal aquifers and what is the expected recovery period?

Page 4-140: Again, where is the projection for RFFA CBM development in the analyzed air shed? The July 11, 1999 Gillette News Record reported the on the extensive CBM associated pipeline construction and associated compressor stations? The news article says "industry leaders estimate the pipelines will carry 6 trillion to 12 trillion cubic feet of methane gas out of the basin's coal reserves." This compares to the EIS estimate of some 2 trillion cubic feet total. The same article continues to quote industry leaders as stating the life of the play is some "20 to 30 years" not the 10 to 20 years as the cumulative impact section states, why does the BLM not recognize that additional CBM development above and beyond this Wyodak project is and will occur?

The air model used in this analysis appears to be "state of the art". The consultant air modelers appear to be highly qualified to run the model. But, who provided the model input data in regard to cumulative impacts and who interpreted, summarized, and presented the modeled output? Modeled results are only as good as the input and interpreting the modeled results must be done correctly.

Page 4-140: A major flaw with the cumulative air quality analysis revolves around BLM's lack of consideration of incremental reductions in emissions. These reductions are "reasonably foreseeable future actions" in fact they are currently being proposed by the EPA as mandatory. Cumulative impact analysis requires analyzing RFF Actions not just RFF Developments (this is clearly stated in BLM's Guidelines for Analyzing and Documenting Cumulative Impacts 1994). An action by EPA which would reduce emissions must be utilized in this analysis to predict long-term cumulative visibility impacts. The BLM's own internal documents also specify that a cumulative impact analysis is not to be a "worst case" analysis, but rather a "most reasonable" analysis. Through out the cumulative air analysis the tendency appears to revolve around using worst case projections for coal and railroads and best case projections for CBM. This situation must be rectified.

Another major flaw with the air analysis (or more precisely the interpretation of the model output) revolves around the projected emissions and resulting impacts from coal mines and coal trains. The modeled emissions are **not** annual emissions as continually stated in text and tables, they are projected worst case emissions in the year 2015. If the BLM wishes to present a clear and concise document to the public that is not misleading you must present a table illustrating by year the modeled emissions and corresponding visibility degradation. By your own analysis all of the CBM production and resultant emissions will be finished in the year 2015, which is the only year modeled for coal emissions. The basic question a federal land manager needs to know for air quality related values is - if this project is approved, will the visibility be significantly impacted next year? The following year? How about subsequent years? Simply picking one arbitrary point in time some 20 years in to the future and telling the public that this will be the visibility not reasonable. **Does the BLM honestly believe that the results presented by this cumulative model are accurately predicting the visibility at Wind Cave National Park in the year 2015?** If so, please clearly support this contention with conventional logic.

Figure 5-1 Cumulative Modeling Domain in the Air Quality Technical Report was extremely helpful to me to put this analysis in perspective. We believe it should be added to the Final EIS. However, this modeling domain raises some obvious questions: Where are the mines in the northern PRB?, Is the Coal Strip Power Plant not in this domain?, Why was Billings (which appears to be only a few miles away) not included? How about the refinery at Newcastle? Rapid City is located immediately north of these Class We areas – there are no anticipated future emissions from Rapid City over the next 20 years? Does not the proposed DM&E railroad go right through this area? Where are these projected emissions? The point we are trying to make is that any reasonable person could easily see (by looking at Figure 5-1) that the modeled cumulative emission sources are clearly targeted at the Gillette are coal mines and no reasonable person would place much confidence in the 20 year predictions made in this EIS.

The IWAQM Phase 2 Summary Report made a strong recommendation that "Regional Committees be formed to assist in the resolution of the myriad of decisions associated with mesoscale modeling of PSD and AQRV impacts". Do the modelers feel that this recommendation was fulfilled with this modeling effort? To quote the IWAQM report "as in any air quality simulation, the usefulness of the results obtained depends mostly on the expertise brought to the analysis in characterizing the situation, and on the expertise applied in interpreting the results obtained." IWAQM states that "application of the CALPUF modeling system to any situation will require expert judgement, it will likely involve site-specific decisions, and it will require strong interaction and coordination with the applicable reviewing authorities." Again, We would like the modelers (EnviroNet AeroScience, LLC) to address my questions about the interpretation of the results, the characterization of the situation, and the site-specific decisions regarding input parameters.

Quoting another source, The EPA published *Response To Peer Review Comments Of The Interagency Workgroup On Air Quality Modeling Phase 2 Summary Report And Recommendations For Modeling Long Range Transport Impacts* "the reviewers recommended that it be made clear that this technique is applicable for one or several closely spaced sources of emissions, not for multiple sources that are widely spaced around Class We areas." We believe it is imperative that the BLM provide the EIS reviewers and BLM decision makers with similar cautions about the results predicted in this EIS.

The IWAQM report also states that "CALPUF is most easily applied for isolated new emissions, and becomes more problematic as the number of sources increases. This supports limiting application of CALPUF to a relatively few sources of emissions, so that the 'background' levels can be derived using appropriate monitoring data." Does the BLM honestly believe that the results presented by this cumulative model are accurately predicting the visibility at Wind Cave National Park in the year 2015? How about the modelers, do they? BLM must caution the reviewers and decision makers that this sophisticated mesoscale meteorological model uses a very uncertain science and that the further out in time projections are made (We.e., 20 years) the results may be highly suspect.

How long was the model ran in this analysis? A month, a season, annually, or for 20 years? Likewise how many 24-hr averaging periods were analyzed against the background condition?

The deciview change associated with adding a new source's effects onto an existing background haze effect is computed by using the extinction coefficient associated with the background (We.e., visibility is fundamentally a function of the existing background condition). What extinction coefficient was used for the background condition in the year 2015 (which is the year all coal related emissions where tied too)? And again are the modelers comfortable with these values?

Coal mines have documented that PM-10 emissions have and continue to decrease with the corresponding increase in production. Did the model input decreasing PM emissions from coal mines or did it input increasing emissions?

Table 2-1 only predicts Wyodak CBM compressors, how about other foreseeable CBM compressors, pipeline compressors, etc…

Item No. 4 and No. 5 under *Near-Range Cumulative Emission Inventory* says "incremental increase in surface coal mining emissions" and "rain emissions". This increment is not an annual increment but rather a 20 year increment. Why were no incremental decreases in emissions modeled, as is being mandated by EPA?

Page 4-145: Table 4-16 This table is not annual NOx emissions. The coal mine and coal train emissions are not tons/year, but are projected tons in year 2015 and again, in 2015 the Wyodak CBM project is projected to be finished.

Page 4-146: BLM states that "However, the EPA has mandated a 46% reduction in locomotive NOx emissions by the year 2007." The response BLM received from Burlington Northern with model inputs from trains very specifically called out BN's mandate and plans to reduce NOx emissions (Appendix E in the Technical Report). The Technical Report Appendix D Emission Factors for Locomotives also utilizes this predicted lower emission rate. Why was this lower emission rate not deemed reasonably foreseeable and input into the model? Likewise those mines that show a projected decrease in coal production from the baseline year – Why were these decreases not input rather than using a "0" value?

Page 4-147: Far-Range Air Quality Impacts - See above comments.

Page 4-149: The regional haze impacts from coal mining and coal trains are projections based on estimates at the year 2015. These estimates do not include any projections for decreasing emissions, either from the mines, from cleaner burning locomotives, or from any decreasing baseline emissions over the 20 year period (We.e., very worst-case analysis). Why ere no RFFA as far as cleaning up regional haze (ie. PM 2.5, ozone, etc..) projected in the analysis?

Page 4-150: Table 4-19, Title of table is incorrect and misleading. This is the Projected Air Quality Impact Analysis in the Year 2015.

Page 4-150: Table 4-20, Same as above predicted to occur in the year 2015.

Page 4-151: Table 4-21, Same as above predicted to occur in the year 2015. Could you also correlate wind direction with the predicted number of days deciview changes are greater than 5%. Does the wind in Gillette even blow from the west-northwest often enough to account for the 136 days at Wind Cave? Likewise by glancing at Figure 5-1 in the Technical Report you notice that the wind must be blowing from the southwest near the southern group of mines at the same time it is blowing from the northwest at the northern group to produce this predicted cumulative impact. Speaking of wind direction- there have to be some fairly major wind swirls for any cumulative coal mine related impact at Devils Tower. How is this reasonably possible? Please clearly support the rational for the model assumptions.

Page 5-3: NEPA specifies that the experience of each contributor be identified. Please specify the experience each of the air quality contributors have with running sophisticated mesoscale meteorological models and interpreting and evaluating the corresponding results.

Air Quality Technical Report

Page 2-8: Table 2-3, the projected potential coal production increase is not MMT/yr it is MMT in year 2015. For instance Buckskin's projected annual increase would be 0.3 MMT/yr not 5.3 MMT/yr. Mis-application of this table was correspondingly carried over into the EIS.

Page 2-9: Table 2-4, see above.

Page 2-10: What emission factor did you calculate and use for tons of NOx per MM tons coal? And how does these number compare to the "real data" of 16.5 ppm NOx for the base year in Gillette? Why were mines with projected decreases in coal production assigned a value of 0.0 ppm emissions rather than negative emissions?

Page 2-11: Table 2-5 and corresponding text. Again the same mistake was made. These numbers are not annual increases, but rather one increase over a 18 year period.

Page 4-2: Table 4-1 and corresponding text. See above for coal mines and trains. Are the Wyodak Compressor and Other Point Sources tons/yr or some other unit as well?

Page 4-3: Again, the projected emissions for coal mines are not annual emissions but rather projected emissions in the single year 2015. Ditto again for the coal train emissions.

Page 4-5: Could you explain, in greater detail, the rational for adding 16.4 ppm to all receptor grids within 3 km of the track?

Page 5-3: Did the CALMET model assume the wind was always blowing the same direction and speed at each coal mine (mines that spread over some 60 miles)? If so, just how reasonable is this assumption? And what impacts would this have on the modeled visibility?

Page 5-23..35: See previous comments on annual emissions vs 2015 emissions.

One last comment – I am now sitting on my deck at sunset reviewing this rather lengthy letter. Is the BLM going to require that CBM operators spray for mosquitoes?

Triton Coal Company has reviewed this EIS in detail. We have no desire to shut down or even slow down CBM production. In fact, we would rather see it accelerated. However, this EIS as currently presented fails to adequately separate CBM impacts from coal mining impacts and as we feel it is both legally and scientifically deficient. Thank you for the opportunity to provide comment and additional data. We look forward to reviewing the revised FEIS.

Sincerely,

Scott Benson
Environmental Engineer

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Mr. Richard Zander
U.S. Department of the Interior
Bureau of Land Management
Buffalo Field Office
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Re: Comments on the Wyodak Coal Bed Methane Project Draft EIS

Dear Mr. Zander:

The Wyoming Mining Association (WMA) represents bentonite, coal, gold, trona and uranium companies and the mining associates (vendors, suppliers and contractors) in Wyoming. It is on behalf of those members that the following comments are submitted.

The draft EIS contains an unprecedented extent of observations and conclusions about coal activities commingled in the text with those about the actual focus of the EIS- i.e. coal bed methane activities. The results are unacceptable due to the different levels of refinement used to characterize the different activities. These issues are discussed in **Section A** of the comments.

Numerous technical concerns were identified by the WMA review of the draft EIS. These principally dealt with air and water issues, and are discussed in **Section B** of the comments.

Additionally, procedural concerns were noted by WMA regarding the EIS treatment of potential conflicts and availability of documents supporting EIS models and conclusions, possible adverse interactions between coal bed methane development and coal mining activities. These procedural issues are detailed in **Section C** of the comments.

A. DECOUPLING COAL FROM COAL BED METHANE

The treatment for coal mining and coal transportation in the air and water modeling efforts contain several flaws, problematic assumptions, and highly questionable approaches that produce unreliable results. As such, the speculative results and inferences related to these activities can not be accepted. These issues are discussed in the detailed comments of Section B below.

Some of the issues appear related to the lesser levels of accuracy and refinement for coal related sources. Since this is an EIS for proposed coal bed methane actions, the reduced attention to accuracy and detail for coal mining and transportation activities is somewhat understandable. **However, the exaggerated projections of coal-related impacts can not be accepted.** These results are included in the report as equivalent to those derived from the much more refined coal bed methane treatment, establishing a basis for equivalent validity and interpretation. This is completely unacceptable. It is incumbent upon BLM to assure that the published results in the EIS do not provide a basis for misinformation or misinterpretation. Coal related impacts must be remodeled with equivalent refinement and accuracy.

To address the parallel needs for expediency in processing this EIS and assuring accuracy in published results, the BLM must revise the Introduction and Cumulative Impact sections of the EIS to:

(1) Clarify that the modeled air quality impact projections for coal related activities are inconsistent with the actual observed effects of expanding coal activities over the last 20 years.

(2) Clarify the differential modeling treatments between coal bed methane and coal mining and transportation.

(3) Acknowledge the significant issues raised by the coal industry regarding assumptions used and modeling results for projected coal related impacts.

(4) Clearly state that the coal related results of air modeling are only preliminary, that the results remain under review and should not be referenced or interpreted until future resolution through the next coal related EA or EIS action.

(5) Revise the groundwater modeling discussions and results through remodeling efforts addressing the substantial insufficiencies and flaws identified by the Gillette Area Groundwater Monitoring Organization.

For pending and future coal action EAs and EISs in the region, do not incorporate this model, but substitute the approved groundwater model(s) currently included in the mining permit(s) located in the immediate vicinity of the proposed actions. Those models will contain more details and area-specific groundwater projections for the locations of the proposed actions. Extensive cumulative aspects of those existing models and results will address the needs of cumulative impact assessments within the applicable coal action EA/EIS.

(6) Separately address the direct and attributable impacts for the proposed coal bed methane activities.

This approach should allow the EIS process to continue, while also allowing resolution of the technical coal related issues raised by the document.

The significant technical issues, detailed in Section B. below, are sufficiently compelling to require a substantial modification of the results and discussions in the EIS document. The procedures suggested above will allow these issues to be adequately addressed while expeditiously continuing the process for the proposed coal bed methane actions. **If those procedures are not possible, each of the technical issues represents a substantial case for administrative reevaluation and significant revision to the EIS and need to be addressed prior to any further action on the proposed activities.**

In either case, the broader scope issues outlined in Section C below will need to be addressed within the current EIS process.

B. TECHNICAL ISSUES

1. Air Quality Issues

(a) Modeling procedure concerns for train and coal related emissions:

(i) Coal train emissions comprise 64% of modeled Far-Range NOx emissions, the largest delineated emission source (Table 4-17). Preliminary review of the modeling indicates that train emissions were not modeled realistically. Rather than modeling the trains as continuous low-level emissions, the modelers chose to depict the trains as cumulative fixed sources at intervals along the rail line. This treatment produces exaggerated emissions at those fixed locations, producing unrealistically high readings at any nearby

receptors. **This needs to be corrected through revised modeling efforts.**

(ii) Coal locomotive fuel usage rates applied to the Near-Range and Far-Range models appear to be unrealistically high, approximately 23 gallons of diesel per rail mile, rather than the 8 to 9 gallons suggested by the supporting documentation in the draft EIS. Corresponding emission rates are thereby significantly exaggerated, exacerbating the overpredictive modeling effects. **These must be corrected through revised modeling efforts.**

(iii) Modeled locomotive emissions fail to account for mandated reductions in emission rates during the modeling period. In a memorandum dated January 12, 1995, the EPA suggests that modeling of locomotives emissions should include emission reductions resulting from court ordered standards. These reductions range from 7.9% in the year 2000 to 45.3% for year 2010. The draft EIS acknowledges on Page 4-146 that modeling did not account for such decreases in locomotive NOx emissions. However, by not using these EPA Air Quality Guidelines, the emissions associated with coal transportation are significantly exaggerated in the results presented in Tables 4-17 and 4-18, and all associated conclusions. This is a substantial flaw in the strategic assumptions and modeling processes. **To assure the most accurate model results possible, the BLM needs to remodel these emissions, using the mandated standards.**

(iv) The cumulative analysis for visibility impacts from NOx, SO2 and PM10, as described on pages 4-140 to 4-152, focuses only upon emissions estimated for CBM activities and coal mining related activities. The only mobile sources considered are road dust from CBM vehicle traffic, mining vehicle exhaust and coal train locomotive emissions.

The modeling exercise fails to account for impacts from exhaust emissions from CBM vehicles, and for exhaust emissions from general public vehicles. This latter source particularly needs to be considered relative to visibility impacts at the Class I and Class II areas in the analysis. Strong vehicle use rates at several of these sites (e.g., Badlands National Park, Mount Rushmore National Monument, Devil's Tower National Monument, etc.) during the

higher NOx-ozone seasons must be considered in any impact analysis.

(b) Technological advances in reducing emissions from larger mining haul trucks (350-ton capacity and greater) has reached an equivalent level as locomotive engines. Several trucks of this category are in use in the Powder River Basin. **NOx and PM10 emission reductions similar to the EPA guidance mentioned in (a)(iii) above should be used in remodeling diesel emissions from mine haul trucks.** In addition, these larger trucks will facilitate moving the same equivalent tonnage with fewer trucks, resulting in further reduced emissions. The modeling of fugitive PM10 emissions from coal mining truck tires did not account for these factors. **Remodeling efforts need to address this omission.**

(c) The cumulative emissions for far-range air quality analyses (Table 4-17) include estimates of NOx emissions from blasting Ammonium Nitrate and Fuel Oil (ANFO), a generic term used to describe a wide range of high explosives such as those used at coal mines. However, the AP-42 emission factor used for coal mining blasting activity in the air quality model was based on a small number (about 50) of test shots conducted by the Bureau of Mines in 1974 (RI7867) to simulate underground mine conditions. This study used a straight ammonium nitrate and fuel oil mixture, which ranged from 0 to 10% fuel oil. The EPA stated in this AP-42 that "Any estimates of emissions from explosives use must be regarded as approximations that cannot be made more precise". Due to technological advances, combinations of ANFO and emulsion blends are more commonly used in the Powder River Basin because they are more efficient than the straight ANFO used in the 1970s.

The explosives described in the AP-42 for ANFO are not the same explosives used today. Many explosive manufacturers believe this AP-42 is too conservative to be used in this manner. **In lieu of a more accurate emission factor, the EIS needs to directly acknowledge the inaccuracies inherent in the emission factor used.**

2. Water Issues

(a) The EIS outlines utilization of two 1997 Wyoming Water Resources Center groundwater models to assess impacts. One of these is an unpublished document, and is addressed in comment (b) below. The other is a model that the Wyoming Department of Environmental Quality, Land Quality Division evaluated in 1997 and determined to be useful only as a reference work, not as an acceptable modeling tool for groundwater drawdown projections. Based on that evaluation, the model utilized for this EIS is inadequate to predict groundwater impacts. **Modeling through an appropriate and acceptable method must replace the existing assessment within the EIS.**

(b) Pages 4-1 and 4-2 of the draft EIS state that "CBM development occurring upstream from nearby surface coal mines could affect coal mining operations. CBM generated water discharged upstream from coal mines could increase surface flows in the vicinity of coal operations or decrease the rate of groundwater withdrawals that currently accompany ongoing coal mining operations. There likely will be impacts to sediment structures in the coal mine permit areas. These structures have been designed to accommodate historical flow rates that do not include contributions from CBM generated flows. Some design aspects of mining operations may need to be changed. Any required revisions to approved mine plans would impact operators and agencies involved in reviewing proposed changes."

This discussion implies several disturbing and unrealistic assumptions. First, that coal mine operations will accept the burden of CBM discharge runoff. Second, that coal mine operations will change some structural designs for ponds and drainages to accommodate CBM discharges. Third, that coal mine operators and related regulatory agencies will conduct coal permit changes to accommodate CBM activities and discharges. These assumptions raise clear questions of trespass, offsite damages and illegally imposed burdens. **BLM must revise this section by removing these assumptions or by adding clear directions that CBM operators must obtain appropriate landowner consent prior to any discharge, to address any and all of these projected impacts.**

(c) Comments submitted July 6 by the Gillette Area Groundwater Monitoring Organization have identified numerous concerns regarding the insufficient

model calibration, inaccurate modeling parameters, and inappropriate assumptions in the groundwater models and results of the draft EIS. The review by that group resulted in a determination that the EIS groundwater model must be rejected and a new model constructed to address several deficiencies. **WMA concurs with those points of concern, and agrees that BLM must address them through remodeling prior to finalization of this EIS process.**

C. PROCEDURAL ISSUES

1. Conflict Resolution

In addition to the technical issues discussed above, the draft EIS document raises issues regarding potential conflicts between energy development interests. The EIS contains the following statement at page 4-3:

> "Conflicts between CBM drilling and existing or potential surface coal mining may occur. Development of CBM wells should be precluded in areas of active or impending coal mining. Locating wells in areas where future mining may take place would preclude mining during the life of wells located in the proposed mining area. Coal in these areas could be mined after CBM extraction is completed or terminated, or after an agreement is negotiated between the CBM operators and the coal mine operators."

This language fails to consider all alternatives and to complete a social economic impact analysis as required by NEPA on BLM's apparent policy decision to prohibit surface coal mining from expanding into areas where coal bed methane production may be occurring. Based upon the broad geographic application of this EIS and the projected CBM development thereunder, such a prohibition policy could in fact prevent any and all expansion of all existing surface coal mine operations within the Powder River Basin, until such time as the coal bed methane has been extracted. BLM should conduct the requisite social economic impact, which would appropriately take into consideration the relative economic impacts to federal, state and local economies of the financial gains realized from both surface coal mining and coal bed methane extraction.

BLM should not utilize the EIS to adopt an apparent policy regarding surface coal mining and coal bed methane extraction. Independently of the EIS process, BLM should develop comprehensive guidelines that recognize (1) the relative economic values in the production of coal and the production of CBM, (2) the relative values of the investments heretofore made and hereafter to be made by the coal mining operators

and the CBM operators, (3) the BLM obligation concerning the maximum economic recovery of resources from public lands, (4) BLM's statutory and regulatory obligation regarding multiple mineral development and (5) the common law right of one mineral developer to reasonably and necessarily impact other mineral developments (see recent United States Supreme Court decision of Southern Ute Indians v. Amoco). **For these reasons, BLM should delete the quoted language from the EIS.**

2. Unavailable Information as a Basis for Modeling Results

Pages 4-135 and 4-136 of the Groundwater section indicate that "An assessment of groundwater impacts for Lighthouse CBM development in the eastern PRB was performed . . . but the results have not yet been published. Information from this work was used in the compilation of this EIS where appropriate." The Lighthouse project was approved 4 years ago; why is the groundwater impact assessment still unavailable? Use of this unpublished information, vague references to use of some of this information in the current EIS analysis, and failure to include the specific information from that study in this groundwater analysis is unacceptable. That procedure denies any reviewer the right to verify the assumptions and/or results of the contractor analyses. This is not acceptable. **BLM must make this information available for public review and comment prior to completion of the EIS comment process.**

The Wyoming Mining Association appreciates the opportunity to comment upon the draft EIS. We request that these points be taken into consideration during preparation of the final EIS document.

Sincerely,
WYOMING MINING ASSOCIATION

Marion Loomis

Marion Loomis
Executive Director

40

Nancy Hilding
6300 West Elm
Black Hawk, S.D. 57718
July 14,1999

Richard Zander
BLM Buffalo Field Office
1425 Fort St.
Buffalo, Wy 82834
307-684-1100
307-684-1122 fax
richard_zander@blm.gov

Wyodak Coalbed Methane Draft EIS Comments

Improved analysis for endangered, threatened, candidate and sensitive species is needed. Isn't a biological assessment required? The mountain plover has been recently proposed for listing. The final document should reflect its change of status. The USFWS is doing a status review for a 12 month finding on the sturgeon chub. which could become proposed for listing in the near future.

When discussing effects to wildlife species, disturbance issues should include loss of habitat security due to noise and disturbance from humans/vehicles, not just ground breaking disturbance. When discussing prairie dog colonies, the study should identify the area's currently vacant tunnel systems as well as currently inhabited tunnel systems.

I am particularly concerned about the impact of new water flow into waters that support the sturgeon chub and/or other native non-game fish and how this new water input will effect the aquatic habitat. The sturgeon chub is downstream in the Powder River. How far away is the nearest discharge point from the Powder River? Will changes in tributary water quality/quantity be substantial enough to effect the Powder River and the chub? Where the sturgeon chub is present, flow regimes, temperature and turbidity should be appropriate for the long term persistence of this imperiled species. What flow regimes, temperature and turbidity are required by other species in the upstream tributaries? Increased analysis of effects on aquatic habitat is needed.

Increased analysis is needed of the potential risk of cancer to local people from formaldehyde generated by methane powered compressors being used near residences. Baseline testing for levels of methane in potentially effected domestic water wells and homes is needed. Long range risk assessments to the populations from carcinogenic and other air pollutants is needed. An impact analysis and mitigation plan is needed. There is inadequate provision for protection or compensation of landowners who could be adversely affected.

More discussion is needed of aquifer drawdown resulting from dewatering. What beneficial use will the water discharged be put to? There is inadequate protection or compensation to landowner for potential loss of well water.

Specific watershed management plans must be included in this EIS. Improved discussion of compensation to potentially flooded landowners is needed.

There needs to be improved analysis of water pollution potential from TDS and sediments.

The amount of acres of potential disturbance should be accurately reported. Revegetation mixes should use only native plant seed.

Noise impacts needs further study.

This EIS should disclose the indirect impacts to wild areas. Will haze generated effect the Cloud Peak

Wilderness? Will noise and activities on the edge of the Fortification Creek Wilderness Study Area diminish the area?

Will "defacto" wilderness/roadless areas be disturbed: Ie will areas of 5,000 acres or greater of mixed public and private land become roaded or developed? How many roadless areas of 5,000 or greater of mixed public/private land are there in the impacted area? Will wild areas be lost?

More specific information should be in the EIS, not included in subsequent APDs or Sundry Notices. Information should be available to the decision maker and public before the decision is made.

Sincerely,

Nancy Hilding

41

Office of Federal Land Policy

122 West 25th Street ● Herschler Bldg., 3 West ● Cheyenne, WY 82002-0600 ● 307-777-7331 ● 307-777-5400 fax

BUREAU OF LAND MANAGEMENT
JUL
JUN 15 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

July 14, 1999

Richard Zander
BLM, Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834-2436

Re: Wyodak Coal Bed Methane Draft Environmental Impact Statement

Dear Mr. Zander:

Enclosed you will find comments from the Wyoming Department of Environmental Quality's Land Quality Division. Please incorporate these comments into the packet sent to you on June 18, 1999 from the State of Wyoming. Thank you.

Sincerely,

Julie L. Hamilton
Planning Consultant

Enclosure

41a

THE STATE OF WYOMING

JIM GERINGER
GOVERNOR

Department of Environmental Quality

Herschler Building ● 122 West 25th Street ● Cheyenne, Wyoming 82002

ADMINISTRATION	ABANDONED MINES	AIR QUALITY	INDUSTRIAL SITING	LAND QUALITY	SOLID & HAZARDOUS WASTE	WATER QUALITY
(307) 777-7758	(307) 777-6145	(307) 777-7391	(307) 777-7368	(307) 777-7756	(307) 777-7752	(307) 777-7781
FAX 777-7682	FAX 634-0799	FAX 777-5616	FAX 777-6937	FAX 634-0799	FAX 777-5973	FAX 777-5973

MEMORANDUM

TO: Julie Hamilton, State Farm and Loan Office

FROM: Dennis Hemmer, Director, Department of Environmental Quality

DATE: July 12, 1999

Please find attached our comments on the proposed Wyodak Coal Bed Methane Project and Draft Environmental Impact Statement (EIS) and Ground Water Modeling Technical Report.

BUREAU OF LAND MANAGEMENT
JUL
~~JUN~~ 15 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

41b

MEMORANDUM

TO: Dennis Hemmer

FROM: Richard A. Chancellor RAC

SUBJECT: Proposed Wyodak Coal Bed Methane Project
Draft Environmental Impact Statement (EIS) and
Ground Water Modeling Technical Report

DATE: July 12, 1999

The following comments are based on the Land Quality Division's (LQD's) review of the Draft EIS and associated Technical Report (Ground Water Modeling). Due to time and budget constraints, we have focused our comments on those portions of the EIS which relate to hydrology.

1.0 GENERAL COMMENTS

1.1 Coal Mine Permits. The proposed, extensive Coal Bed Methane (CBM) development will have a significant impact on the permitting and bond release activities of the LQD, which regulates coal mining in the State. To meet both federal and state requirements, coal mines must provide comprehensive surface and ground water information as part of their mine permit applications. This information establishes baseline (pre-mine) conditions and is used to determine potential impacts of mining on the hydrologic balance and to evaluate reclamation success. Because CBM development will impact both the surface and ground water hydrology, it will be difficult or impossible to determine true baseline and to evaluate changes over time.

For ground water, the anticipated magnitude and extent of the CBM will result in continual declines in the ground water elevations during that development. In addition, the rate and geographic distribution of the declines will vary because the CBM development will not progress uniformly. As a result, the ground water elevations will be a 'moving target', difficult to measure accurately, particularly considering the limited number of CBM monitoring wells. Therefore, while the mines can predict the drawdown and recovery during and after mining, they will no longer be able to evaluate the accuracy of their predictions. For surface water, the discharge of water into drainages by CBM activities will artificially enhance surface water flow and possibly create artificial wetlands and Alluvial Valley Floors (AVFs). However, both wetlands and AVFs must be addressed by the mines in their Mine and Reclamation Plans. For existing mines, changes in their existing surface water diversions and reclamation plans, that were designed before CBM development, may be necessary. In contrast, new mines would need to 'over design' for increased surface water flows that might not be present throughout the life of the mine.

In summary, the coal mines may no longer be able to fulfill their regulatory requirements for evaluating the impacts of their mining activities and operational data needs, such as surface water quantities which must be diverted. Unless provision is made for more comprehensive collection of data and evaluation of impacts due to CBM development, and for the additional

burden for coordinating the collection and evaluation efforts by the two industries, the mines can only provide a small part of the picture of the hydrologic impacts in the Powder River Basin. Similarly, the burden for determining if mine operations will be impacted by CBM activities appears to be on the mines.

1.2 Impermeable Layers. The evaluations in the Draft EIS and Ground Water Technical Document rely heavily on hydraulically 'isolating' the coal layers of interest from over and underlying aquifers. In the model, the confining layers above and below (Layers 3 and 7, respectively) the coal layers have been assigned very low vertical hydraulic conductivities, apparently uniformly. As noted in LQD's review of Wyoming Water Resource Center's 1997 study, LQD does not consider that field lithologic or hydrologic data supports the presence of a laterally continuous confining unit with such a low hydraulic conductivity throughout the Powder River Basin.

LQD acknowledges that the vertical conductivity between the coal seams of interest and the overlying aquifers in low; however, LQD considers a value of $1x10^{-10}$ meters per second throughout the Powder River Basin unrepresentative of lateral variations in the sedimentary and structural environment. Mention is made on Page 4-41 of monitor well data; however, no vertical conductivity values have apparently been calculated from this data. Mention is also made on the same page that the presence of methane in the coal seam is evidence of the confining layer. As noted above, the lateral continuity of this layer is questionable, considering that upward migration of methane gas has been a problem in some areas of the Powder River Basin, such as at Rawhide Village north of Gillette.

1.3 Discharge of Produced Waters (Draft EIS, Page 4-135; Technical Document, Page 8-1): The text on these pages includes a comparison of the quality of water discharged from CBM to that discharged from coal mines. While it may be true that the discharge from CBM may be of a higher quality than the discharge from the mines, the discussion implies the discharge from the mines is of poor quality and adversely impacts the quality of water in alluvial and shallow Wasatch aquifers. It should be noted that discharge from the mines must meet NPDES standards and there is no evidence of mine discharge negatively impacting alluvial or shallow Wasatch aquifers. The discussion should be modified.

1.4 Ground Water Recovery (Draft EIS, Page 4-43): Water level recovery is given short shrift in this evaluation. It is stated on Page 4-43 (1st full ¶) that the amount of ground water in storage outside of the CBM development area is "enormous", but no quantities are apparently estimated or compared with the quantities of water that will be removed from the aquifers in the CBM development area. (Table 3-2 in the Ground Water Technical Document provides estimates of the quantities of water that will be pumped out by CBM development; however, these quantities are not compared with the quantity of water in storage outside the CBM area, recharge rates, or any other values that could affect recovery.)

Statements about recharge at mine sites also need clarification. The statement on Page 4-43 (2nd full ¶) that diversion of creeks over the backfill areas will provide for recharge ignores the fact that the mines must restore the hydrologic balance of the surface water systems. In other words, if surface water originally *flowed across* a mine site prior to mining, then an equivalent amount of water must *flow across* the mine site after mining and reclamation. Any differences in pre-mine and post-mine conditions must be evaluated to determine impacts to downstream users and to determine if those impacts must be mitigated. Therefore, the EIS is apparently relying on a recharge source that may not exist. Similarly, the text also mentions that the mine backfill areas can serve as recharge areas in the long term. However, considering that the mines predict recovery time frames of several hundreds of years, LQD does not consider it realistic to assume that the backfill areas will act as recharge areas within any reasonably foreseeable time frame.

This comment is not meant to suggest that the ground water withdrawn during CBM development could not be used to enhance recovery of the aquifers in the Powder River Basin. Several innovative possibilities exist, such as storing the pumped water for later use for recharge of the mine backfill areas or reinjecting the water elsewhere in the basin for long-term storage (e.g., water banking). It is suggested that such alternatives be evaluated in more detail as part of the EIS process. See Comment 2.2.3 also.

1.5 Cumulative Assessment (Draft EIS, Pages 4-132 through 136; Technical Document, Section 8.0): Rather than an assessment of the impacts of CBM development, these sections appear to be a comparison of CBM and mining impacts, with the implication that the impacts of CBM development are less than those of mining. Both mining and CBM development should be evaluated 'on their own merits'. However, if this type of comparison remains in the Technical Document, then the *magnitude* and *extent* of the CBM development impacts throughout the Powder River Basin should be compared with those of the coal mining, which has occurred primarily on the eastern margin of the basin.

1.6 Editorial Comments:

a) Review of both the Draft EIS and Ground Water Technical Document was complicated by the lack of legible and/or appropriately labeled figures and maps. For example, on Figure 4-9 on Page 4-40 of the Draft EIS, the 'triangle' data points are not legible. On most of the maps in the Ground Water Technical Document, there are no legends.

b) Draft Page 7-1, Ground Water Technical Document: Technically, there is no Cordero Rojo Mine. There is a Cordero Rojo Mine and a Cordero Mine. Even though they are operated as the Cordero Rojo Complex it would be helpful to distinguish between the two mines of the complex.

c) Comparison of the measured and model results would be easier if the relevant portions of Figure 5-7 had been shown on additional figures at the same scale as Figures 5-5 and

5-6.

2.0 TEXT SPECIFIC COMMENTS

2.1 Draft EIS

2.1.1 Moyer Springs (Page 4-19, 2nd full ¶; Page 4-20, 3rd full ¶; Page 4-42, 3rd full ¶): The Draft EIS discusses a low permeability contact zone between the coal and the clinker supplying water to Moyer Springs. The LQD is not confident that this zone provides the protection to the Spring that the Draft EIS indicates. The LQD has conditioned the Dry Fork Mine Permit to leave a buffer of coal next to the clinker to provide additional protection until the interaction between the coal and the clinker is better understood. The LQD fears the CBM development in the area will severely impact the Spring before this relationship is understood. It is suggested that a large buffer be established around the Spring until further studies are conducted to ensure the Spring is protected.

It is also not clear how the discussion about the low permeability contact zone on Pages 4-19 and 4-42 of the Draft EIS relates to the discussion about the recharge zone on Page 4-20 of the Draft EIS and in Section 4.5.2 on Page 4-8 through 4-10 of the Ground Water Technical Document. The text on Page 4-20 discusses the 'transition' of the coal to the clinker, without mention of the contact zone. Similarly, although Figure 4-5 of the Technical Document is difficult to read due to the lack of a legend, it appears that the extensive clinker aquifer which is the source of Moyer Spring is considered part of the coal recharge zone. The apparent contradiction should be addressed.

2.2 Ground Water Technical Document

2.2.1 Steady-State Calibration (Page 5-1 & Figure 5-1): In the evaluations of the ground water models submitted by the coal mines, LQD has generally considered a water level calibration within +/- 10 feet as an appropriate 'benchmark'. In some areas that are more difficult to model, 'looser' calibrations on the order of +/- 20 feet may be considered adequate. Therefore, LQD was surprised that the model could be considered 'calibrated' when, at the calibration wells, the majority of the modeled heads were more than 100 feet greater than the measured heads (see attached Table I). Also, it is not clear which of these wells are coal wells, overburden wells, or underburden wells.

Although the text acknowledges that the modeled heads are "considerably higher" than the measured heads, no potential reason for the difference is provided. When model results are consistently greater (or less) than measured results to such a degree, it is generally considered an indication that there is a problem with the conceptualization or with the input values. Such

differences could be due to a variety of items or their combination, such as too much model recharge, such as from precipitation, or not enough model discharge, such as through springs.

LQD realizes the difficulty of modeling a large area with sparse data; however, considering the potential magnitude of adverse impacts, the effort to collect the supporting data should proceed at the same level of effort as the evaluation of impacts. Similarly, the level of calibration effort, in particular sensitivity analyses, should be increased. It is not clear from the discussion of the sensitivity analyses on Page 5-6 what parameters were changed in what combination. However, LQD does not believe that the appropriate 'mix' has been achieved considering the exceptional differences in measured and observed heads. Therefore, the model could significantly under (or over) predict the impacts of CBM development on water quantities in the Powder River Basin.

2.2.2 Transient Calibration (Page 5-6 & Figures 5-5, 5-6, & 5-7): LQD's concerns about the transient calibration are similar to those for the steady state calibration. For example, the data evaluation on Figure 5-5 indicates that there have been drawdowns of up to 160 feet in Township 52N, R72W. In contrast, the model results on Figure 5-7 indicate drawdowns of less than 100 feet. Similarly, in Township 51N, R72W, the data evaluation on Figure 5-7 indicates drawdowns of up to 160 feet, while the model results on Figure 5-7 do not indicate drawdowns greater than 125 feet. Farther to the south (Area 2, Figure 5-6), the 'center' of the largest measured drawdowns appear to the west of Highway 59, although the 'center' of the largest model drawdowns are to the east of the highway. Therefore, the measured drawdowns either consistently exceed the predicted drawdowns or are at different locations.

2.2.3 Ground Water Recovery. (Section 6.4, Page 6-9): The same text is reproduced on Page 4-43 of the Draft EIS. Therefore, it is not clear if the model runs were extended beyond the cessation of pumping for CBM production. Reference is made to Figures 5-9 and 5-10, which are graphs of water levels versus time for two wells, and these graphs extend almost 200 years. However, no reference is made to: the model time steps; whether all the methane wells were shut down at once; and similar factors that would indicate whether the model was extended past the actual CBM development. On Page 5-6, the text notes lower permeability to water of the coal if high amounts of "released methane" are present in the coal. It should be clarified if the model was used to simulate recovery after CBM development and whether the effects of permeability changes due to changes in gas pressure and other factors that could display hysteresis, thereby impacting recovery rates, were taken into account.

Table I
LQD Comparison of Actual and Modeled Ground Water Elevations
from Figure 5-1 of the Ground Water Technical Document supporting the Wyodak Draft EIS
July 1999

Well No.	Actual Head (ft)	Modeled Head (ft)	Difference (Modeled Head - Actual Head)
7-11-M (OW-13)	3801.84	3779.31	-22.53
15-6-M (OW-14)	3671.92	3716.10	44.18
USGS OW-1	3694.00	3854.38	160.38
Malli (OW-2)	3702.98	3864.20	161.22
SH-2 (OW-4)	3891.99	3926.61	34.62
WK-12 (OW-5)	4045.00	4004.28	-40.72
Echeta (OW-6)	4024.00	4024.65	0.65
GN-6 (OW-18)	4268.04	4406.87	138.83
Federal 12-2	4265.25	4315.83	50.58
Hwy (OW-10)	4466.00	4637.88	171.88
OW-20	4387.14	4560.92	173.78
WCH-6	4465.88	4649.43	183.55
WRRI-10A (OW-21)	4457.02	4668.05	211.03
Redtop1	4458.00	4684.34	226.34
MC-2-1-P	4491.47	4598.21	106.74
Shogrin Federal #2	4649.44	4622.71	-26.73
USGS OW-9	4611.97	4751.92	139.95
CCR-17	4586.38	4841.58	255.2
CDL TR-12 (OW-24)	4616.14	4855.49	239.35
BTR-28	4608.27	4875.35	267.08
ECH-8	4596.46	4818.85	222.39
TCSE-1 (OW-27)	4655.51	4831.91	176.4
NA-38A	4594.59	4792.93	198.34
SOW-109	4580.67	4784.84	204.17

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BUREAU OF LAND MANAGEMENT
16 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

7-13-99

Barlow Livestock
91 Barlow Road
Gillette WY 82718

Dear Sir;

I would like to comment on the Wyodak Coal Bed Methane EIS. My opinion is the study didn't use realistic estimates for the number of wells to be drilled and the volume of water produced from these wells. Devon Energy has wells staked on our property and I am using their numbers. They have as many as 16 wells per section and they estimate 58 gallons per minute of water being produced. This is way more than the EIS estimates. To make the EIS valid I feel the estimates should be raised.

Sincerely
Glenn J. Barlow

From: Steve Hannan on 07/14/99 08:41 AM
To: Richard Zander/BFO/WY/BLM/DOI@BLM
cc:

While You Were Out

Contact:
Lesslie Cronkite

of:
EPA-Water Quality Tenn.

Phone: **FAX:**

- [x] Telephoned
- [ ] Please Call
- [ ] Will Call Again
- [ ] Returned Call
- [ ] Was In
- [ ] Will Return
- [ ] Left Package
- [ ] Please See Me
- [ ] Urgent

Message:
Ms. Cronkite is wanted to send a comment on the CBM EIS. She said her comment was basicly about monitoring for Nitrate. She said the "fracking"? introduced nitrates to the groundwater & thought BLM should include monitoring for nitrates.
I gave her the office e-mail address (buffalo_wymail@blm.gov) with it going to your attention.

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Biodiversity Associates
PO Box 6032
Laramie, Wy 82073

July 14, 1999

BUREAU OF LAND MANAGEMENT
JUL 16 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

Richard Zander
Buffalo Field Office
Bureau of Land Management, U.S.D.O.I.
1425 Fort St.
Buffalo, WY 82834

Dear Mr. Zander:

These are the comments of Biodiversity Associates on the Wyodak Coal Bed Methane project draft environmental impact statement (DEIS). Biodiversity Associates is a Wyoming nonprofit organization working to protect native species and their habitats. Please include these comments in the public record and respond to them in subsequent environmental documents. Tomorrow I will mail you a hardcopy of this letter along with print-outs from the Wyoming Game and Fish Department database of fish species present in the Powder River and Little Powder River.

Many significant issues, concerns, and impacts are not addressed at all in the DEIS. Others are given only brief conclusory "discussions." There is an almost complete lack of actual analysis of the impacts of this mammoth development. Neither the direct effects; the cumulative effects of this project, previous, and expected future projects; nor the effects of connected actions are adequately disclosed or analyzed in the DEIS. Reasonable alternatives to the proposed action are absent from the DEIS. Alternate development scenarios such as partial or staged development should have been analyzed. Alternatives for disposal of produced water were not presented. Mitigation measures are similarly given short shrift.

On many issues, the DEIS defers analysis to a later date, at the APD stage or some other point in the future. Deferring analysis to a later date is imprudent and contrary to the National Environmental Policy Act (NEPA) given these factors:
-the level of expected development
-the large magnitude of easily foreseeable impacts (e.g., huge amounts of produced water, hundreds or thousands of miles of piping, roads, etc.)
-the numerous closely related (either in space or time) activities associated with the project (see DEIS at Table 2.1 and various pages in Sections 2 and 4)
-the other development taking place in the vicinity
-the incredibly important wildlife (terrestrial and aquatic) and plant values in the project area and downstream from the project area
-the simple fact that such a large development will forever alter the character of the project area.

Thus the DEIS fails in its entire purpose (as mandated by NEPA, as opposed to the position of the "open for extraction regardless of the environmental costs" Wyoming executive branch and the BLM state director's office) and fails to meet the requirements of NEPA and both Council on Environmental Quality and BLM regulations. The citizens of this country, for whom the BLM manages the resources under its jurisdiction, deserve better. The DEIS must be rewritten to meet legal requirements and the public's expectations. After a new DEIS is written, it should be recirculated as a draft document for the public to review.

One of our biggest concerns, and one of the most significant issues relating to the proposed development, is the ultimate disposition of produced water. Impacts from the discharge of the huge volume of water produced should have been analyzed in detail in the DEIS. The location of water discharge points (up to 2,500 points according to the DEIS) should have been disclosed in the DEIS. They were not. Instead, water management plans purportedly will be devised on a drainage by drainage basis as part of the APD process. Again, this turns NEPA on its head. This omission is particularly egregious given that the Powder River harbors one of the most naturally diverse native fish faunas in the state of Wyoming (and perhaps the entire region). Comprehensive water management plans should be presented in the DEIS for public comment. It is not sufficient to defer dealing with these important issues to the APD stage. The water management plans should include such information as the presence of sensitive, rare, or declining fish or other aquatic life; important wetlands; special plant communities or geographic features; valuable or unique terrestrial habitats or populations of wildlife; etc. They should also spell out mandatory and specific measures to protect these features. Such measures might include prohibitions against disposal in certain areas or drainages, mitigation requirements, monitoring requirements, discrete or measurable limits on water quality or quantity, mandatory procedures for halting operations or disposal of water if limits are exceeded or monitoring shows negative impacts to native fish or other important resources.

Native Fish, Wildlife, and Produced Water

Because the water management plans are not presented in the DEIS, and because the ultimate disposition of produced waters is not made clear, we have grave concerns about the native fish and aquatic ecosystems within and downstream from the project area. The cumulative volume of produced water is exceedingly high and has the potential to significantly change the characteristics of the rivers and streams. Populations of several rare or declining fish are present in the Powder River, tributaries of which are to be receiving produced waters. The Sturgeon Chub population in the Powder is globally significant. This is an incredibly rare fish, known from only about 5 places in all of Wyoming. What other rare or declining fish are present--in the Powder and in the other receiving drainages? The EIS is silent on this issue.

Some of the fish in Powder River, including the Sturgeon Chub, are adapted to turbid river habitats. What quantity and quality of water will be produced by the proposed action? How will the flow regime (timing, magnitude, etc.), temperature, and turbidity be changed? What impacts will these changes have on rare or sensitive native fish? Will continuous flows of cool, clear water convert the Powder River into habitat unsuitable for the Sturgeon Chub? Or will more water help these fish? What about the other characteristics of produced waters such as chemical makeup? None of these questions are answered by the DEIS. Instead the entire issue is dismissed with what amounts to a one-liner, "Impacts to the sturgeon chub are not anticipated," or is simply deferred. DEIS at 4-93. This is not analysis of impacts; it is arm waving.

The following species of fish are present in the Powder River or the Little Powder River according to the Game and Fish Streams and Lakes database:
Sturgeon Chub
River Carpsucker,
Goldeye,
Flathead Chub,

Plains Minnow
Sauger,
Shovelnose Sturgeon,
Western Silvery Minnow,
Quillback

All of these species are of conservation concern because of rarity, declining habitat, or declining populations. The DEIS is silent on the impacts to these species and any other species which we may have overlooked. What native fish are present in the other river systems and drainages in the project area? What are the impacts to these species? How will the BLM maintain the Clean Water Act existing uses (as habitat for these fish) without this information? What about other applicable water quality standards? The APD stage is too late to answer these questions. Analysis and mitigation cannot be postponed until the APD stage. Meaningful conservation measures must be devised now. The BLM cannot live up to its mandate otherwise.

For additional information on native fish, we refer you to "Distribution and Status of Fishes in the Missouri River Drainage in Wyoming: Implications for Identifying Conservation Areas," (doctoral dissertation written in 1997 by Timothy Patton at the University of Wyoming Dept. of Zoology and Physiology) and "Using Historical Data to Assess Changes in Wyoming's Fish Fauna," Patton, et al., Conservation Biology Vol. 12, No. 5, p. 1120-1128 for further information.

Instead of answering the questions we pose above, the DEIS merely states that increased water will "improve" fish and wildlife habitats. This is a gross oversimplification and in many cases would be patently untrue. Such sweeping generalizations demonstrate a lack of professional and scientific integrity and have no place in the DEIS. .

We have many other concerns regarding wildlife and plant species (candidate, proposed, Threatened, Endangered, Sensitive, WYGFD NSS1 and NSS2 ranked species, Wyoming Natural Diversity Database species of special concern, etc.) that time does not permit us to raise. Suffice it to say that the DEIS fails to take the required "hard look" at the impacts of the proposed project. Deferring analysis of impacts to such species is also unacceptable and fails to meet BLM's obligations. We again request that the BLM prepare another draft EIS which corrects the numerous deficiencies in the present document. The draft should then be circulated for public comment.

Sincerely,

Jeff Kessler, Conservation Staff

Fish Species in: LITTLE POWDER RIVER

Water ID	Name of Water	Tributary To:
SN837030CL	LITTLE POWDER RIVER	ENTERS MONTANA

RANGE	Township	Section	QuarterSection
71	58	24	SE

spp code	Species Name
BKT	Brook Trout
GSF	Green Sunfish
CCF	Channel Catfish
BLB	Black Bullhead
GDE	Goldeye
RCS	River Carpsucker
WHS	White Sucker
MTS	Mountain Sucker
CRP	Carp
LKC	Lake Chub
FHC	Flathead Chub
LND	Longnose Dace
SDS	Sand Shiner
FHM	Fathead Minnow
STC	Stonecat
PMN	Plains Minnow

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER (MT SL-SCL)

Water ID	Name of Water	Tributary To:
SN834200CL	POWDER RIVER (MT SL-SCL)	ENTERS MONTANA (SEC 1)

RANGE	Township	Section	QuarterSection
75	58	20	NW

spp code	Species Name
CCF	Channel Catfish
BLB	Black Bullhead
SAR	Sauger
SNS	Shovelnose Sturgeon
GDE	Goldeye
CRP	Carp
FHC	Flathead Chub
PMN	Plains Minnow
LND	Longnose Dace
SMN	Western Silvery Minno
RCS	River Carpsucker
STC	Stonecat
RKB	Rock Bass
MTS	Mountain Sucker
NRH	Shorthead Redhorse
WHS	White Sucker
FHM	Fathead Minnow

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER (SCL-CLR CR)

Water ID	Name of Water	Tributary To:
SN834200SN	POWDER RIVER (SCL-CLR CR)	ENTERS MONTANA (SEC 2)

RANGE	Township	Section	QuarterSection
76	57	16	

spp code	Species Name
QBK	Quillback
CCF	Channel Catfish
BLB	Black Bullhead
SAR	Sauger
SNS	Shovelnose Sturgeon
GDE	Goldeye
SGC	Sturgeon Chub
FHC	Flathead Chub
PMN	Plains Minnow
LND	Longnose Dace
SMN	Western Silvery Minno
RCS	River Carpsucker
STC	Stonecat
RKB	Rock Bass
MTS	Mountain Sucker
NRH	Shorthead Redhorse
WHS	White Sucker
FHM	Fathead Minnow

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER (CLR CR-JCL)

Water ID	Name of Water	Tributary To:
SN834205SN	POWDER RIVER (CLR CR-JCL)	ENTERS MONTANA (SEC 3)

RANGE	Township	Section	QuarterSection
76	57	31	NW

spp code	Species Name
CCF	Channel Catfish
BLB	Black Bullhead
SNS	Shovelnose Sturgeon
GDE	Goldeye
SGC	Sturgeon Chub
CRP	Carp
PMN	Plains Minnow
LND	Longnose Dace
SMN	Western Silvery Minno
STC	Stonecat
MTS	Mountain Sucker
NRH	Shorthead Redhorse
WHS	White Sucker
FHM	Fathead Minnow

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER (JCL-FORKS)

Water ID	Name of Water	Tributary To:
SN834208JN	POWDER RIVER (JCL-FORKS)	ENTERS MONTANA (SEC 4)

RANGE	Township	Section	QuarterSection
77	53	23	NW

spp code	Species Name
RCS	River Carpsucker
LNS	Longnose Sucker
QBK	Quillback
PKF	Plains Killifish
SDS	Sand Shiner
CCF	Channel Catfish
FHM	Fathead Minnow
GDE	Goldeye
SGC	Sturgeon Chub
CRP	Carp
FHC	Flathead Chub
PMN	Plains Minnow
LND	Longnose Dace
SMN	Western Silvery Minno
STC	Stonecat
MTS	Mountain Sucker
NRH	Shorthead Redhorse
WHS	White Sucker

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER R, NORTH FK(2MAY0)

Water ID	Name of Water	Tributary To:
SN836390JN	POWDER R, NORTH FK(2MAY0)	POWDER RIVER (SEC 1)

RANGE	Township	Section	QuarterSection
81	43	15	NE

spp code	Species Name
BLB	Black Bullhead
STC	Stonecat
WHS	White Sucker
BNT	Brown Trout
LNS	Longnose Sucker
MTS	Mountain Sucker
LND	Longnose Dace

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER R, NORTH FK(2CANY)

Water ID	Name of Water	Tributary To:
SN836395JN	POWDER R, NORTH FK(2CANY)	POWDER RIVER (SEC 2)

RANGE	Township	Section	QuarterSection
83	45	35	NE

spp code	Species Name
RBT	Rainbow Trout
BNT	Brown Trout
WHS	White Sucker
LNS	Longnose Sucker
MTS	Mountain Sucker
LND	Longnose Dace

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER R, NORTH FK(2DULL)

Water ID	Name of Water	Tributary To:
SN836400JN	POWDER R, NORTH FK(2DULL)	POWDER RIVER (SEC 3)

RANGE	Township	Section	QuarterSection
84	46	36	

spp code	Species Name
RBT	Rainbow Trout
BNT	Brown Trout

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER R, NORTH FK (HEAD)

Water ID	Name of Water	Tributary To:
SN836420JN	POWDER R, NORTH FK (HEAD)	POWDER RIVER (SEC 4)

RANGE	Township	Section	QuarterSection
85	47	21	SE

spp code	Species Name
RBT	Rainbow Trout
BNT	Brown Trout

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, MID FK(2 BEAV CR)

Water ID	Name of Water	Tributary To:
SN836480JN	POWDER, MID FK(2 BEAV CR)	POWDER RIVER (SEC 1)

RANGE	Township	Section	QuarterSection
81	43	15	NE

spp code	Species Name
BNT	Brown Trout
BLB	Black Bullhead
RBT	Rainbow Trout
STC	Stonecat
WHS	White Sucker
LNS	Longnose Sucker
FHC	Flathead Chub
LND	Longnose Dace

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, MID FK(BEAV-CANY)

Water ID	Name of Water	Tributary To:
SN836485JN	POWDER, MID FK(BEAV-CANY)	POWDER RIVER (SEC 2)

RANGE	Township	Section	QuarterSection
83	43	32	SW

spp code	Species Name
RBT	Rainbow Trout
BNT	Brown Trout
WHS	White Sucker
LNS	Longnose Sucker
MTS	Mountain Sucker
LND	Longnose Dace

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, MID FK(2 WASH CL)

Water ID	Name of Water	Tributary To:
SN836490JN	POWDER, MID FK(2 WASH CL)	POWDER RIVER (SEC 3)

RANGE	Township	Section	QuarterSection
84	42	14	SW

spp code	Species Name
RBT	Rainbow Trout
BNT	Brown Trout
BKT	Brook Trout
LND	Longnose Dace

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, MID FK(WASH-H RD)

Water ID	Name of Water	Tributary To:
SN836490WE	POWDER, MID FK(WASH-H RD)	POWDER RIVER (SEC 4)

RANGE	Township	Section	QuarterSection
86	42	25	NE

spp code	Species Name
RBT	Rainbow Trout
BKT	Brook Trout

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, MID FK(HAZEL-TOP)

Water ID	Name of Water	Tributary To:
SN836495WE	POWDER, MID FK(HAZEL-TOP)	POWDER RIVER (SEC 5)

RANGE	Township	Section	QuarterSection
86	42	26	

spp code	Species Name
RBT	Rainbow Trout
BKT	Brook Trout

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, SOUTH FK RED FK

Water ID	Name of Water	Tributary To:
SN836520JN	POWDER, SOUTH FK RED FK	RED FORK POWDER RIVER

RANGE	Township	Section	QuarterSection
84	44	20	SE

spp code	Species Name
RBT	Rainbow Trout
BNT	Brown Trout
BKT	Brook Trout

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER, NORTH FK RED FK

Water ID	Name of Water	Tributary To:
SN836530JN	POWDER, NORTH FK RED FK	RED FORK POWDER RIVER

RANGE	Township	Section	QuarterSection
84	44	20	SE

spp code	Species Name
RBT	Rainbow Trout
BKT	Brook Trout
MTS	Mountain Sucker
LND	Longnose Dace

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER, DRY FORK

Water ID	Name of Water	Tributary To:
SN935640JN	POWDER RIVER, DRY FORK	POWDER RIVER

RANGE	Township	Section	QuarterSection
78	44	16	NW

spp code	Species Name

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER, SOUTH FORK

Water ID	Name of Water	Tributary To:
SN936030JN	POWDER RIVER, SOUTH FORK	POWDER RIVER

RANGE	Township	Section	QuarterSection:
80	43	19	SW

spp code	Species Name
PMN	Plains Minnow
FHM	Fathead Minnow
CKC	Creek Chub
PKF	Plains Killifish
MTS	Mountain Sucker
FHC	Flathead Chub
SDS	Sand Shiner

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

Fish Species in: POWDER RIVER, SOUTH FORK

Water ID	Name of Water	Tributary To:
SN936030NA	POWDER RIVER, SOUTH FORK	POWDER RIVER

RANGE	Township	Section	QuarterSection:
81	41	30	NW

spp code	Species Name

Comments of Biodiversity Associates. Data from Wyoming Game and Fish Dept.

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WYOMING OUTDOOR COUNCIL
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(307) 332-7031 — woc@rmisp.com

BUREAU OF LAND MANAGEMENT
16 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

By FAX to (307) 684-1122 and U.S. Mail

July 14, 1999

Richard Zander
Buffalo Field Office
Bureau of Land Management
1425 Fort Street
Buffalo, WY 82834

Re: Wyodak Coal Bed Methane Project DEIS

Dear Mr. Zander:

The Wyoming Outdoor Council (WOC) has serious concerns about the potential direct, cumulative and long-term environmental affects likely to result from the Wyodak Coal Bed Methane Project, and the absence of meaningful disclosure of environmental effects in the document. It is obvious BLM has failed to take the "hard look" at impacts as required by NEPA.

GENERAL OBSERVATIONS CONCERNING DISCLOSURE OF EFFECTS.

The BLM defers most of the analysis to the subsequent site-specific well-permitting (APD) stage, undermining the usefulness of this project-level analysis. Throughout the document, reference is made to future analyses that may be performed and future unspecified mitigation that may be implemented. The deferral and, in many cases conspicuous absence, of analysis negates the purpose of NEPA, which requires that impact analyses and associated alternatives, as well as mitigation, be presented to the public for review and comment in an EIS.

The EIS fails to identify which impacts may be significant, and fails to establish objective criteria upon which to base "significance" findings.

The EIS fails to identify and evaluate impacts that may be present after the project's completion. (Table 2-2 simply defines "long-term" disturbance as "disturbance continuing during the life of the project.")

The EIS fails to acknowledge that CBM development in the Powder River Basin is likely to continue in areas outside the project area, with the number of wells estimated by industry sources as high as 15,000 to 20,000. NEPA requires an analysis of the cumulative effects of reasonably foreseeable future actions, such as the future expansion of coal bed methane and coal mining in the basin.

The DEIS is severely deficient in its discussion of specific mitigation measures that could be implemented to reduce or avoid environmental impacts.

PROPOSED ACTION

Water Management Plan. The EIS states (at 1-13) that water management plans will be required as part of the APD approval process. According to the EIS (at 2-14), "these plans will address how large volumes of produced water would be managed on a drainage-by-drainage basis." Given that the management of produced water is one of the most significant issues associated with this project, and since these water management plans will describe potential impacts of the proposed action and mitigation options, they should be included in the EIS so they are available for review and comment by agencies and the public. We recommend that detailed and specific water management plans be developed for each of the major drainages in the analysis area. Among other things, the Plan should identify areas off-limits to disposal of produced water such as closed basins and playas; identify suitable disposal sites, including shallow and deep aquifers, and include a mitigation and monitoring plan containing specific elements.

Production Pods (DEIS at 2-12). The EIS should identify suitable locations for the siting of production pods. Since activity will be concentrated at and near these pods, it is important that pods be sited to avoid sensitive surface resources (e.g., wetlands, erosive soils, crucial wildlife habitat) and potential conflicts with other uses.

Well Production Facilities. The EIS claims (at 2-11) that wellhead facilities will be installed on a leveled site measuring "perhaps five or six square feet." Since this area is less that half the size of my small desk at work, I find this statement incredible.

Pipelines. It is obvious that the project area will be heavily criss-crossed with all manner of surface and buried pipelines. Please explain how BLM will mitigate the effects when surface erosion in gullies and drainages exposes pipe crossing these features.

Produced Water Gathering System and Discharge Facilities. The EIS bases the analysis of impacts on an average flow rate of 12 gallons per minute (gpm). DEIS at 2-13. Yet many CBM wells in the project area discharge at much higher rates.

-Table 2-1 indicates that there could be as many 1,667 water discharge points in the project area. The EIS should identify proposed (and alternative) discharge sites, and describe the impacts and mitigation opportunities associated with each location. The EIS reports (at 4-12) that "approximately 2,500 discharge points will be utilized to implement the Proposed Action." Please explain this significant discrepancy.

Gas Delivery System. The EIS states (at 2-14) that existing pipeline capacity is not adequate to accommodate the volume of gas that ultimately will be produced in the project area. This implies that additional capacity will be provided. In fact, the EIS (Table 2-1) shows the total pipeline capacity in the project area increasing to over 1 billion cfd (1,095 MMCFD). This capacity would be achieved by the proposed Thunder Creek Pipeline (TCP), running north-south in the western part of the project area, and the proposed Fort Union Gas Gathering pipeline, also in the western half of the project area. This EIS must analyze the impacts of connected and cumulative actions such as these and other high pressure pipelines that will be constructed to gather and ship CBM gas to market.

Compression. The EIS estimates that the proposed action and the two alternatives displayed in the EIS will require the addition of approximately: 147 booster compressors; 34 field compressor stations; and 5 pipeline compressors. See Table 2-1.

-Table 2-1 shows a total of 160 booster compressors, but the text indicates that "the proposed action will require approximately 220 additional booster compressors." DEIS at 2-14. Please explain the discrepancy between the two the figures.

-Because activity (and impacts) will be concentrated at and near these facilities, it is important that compressors and compressor stations be sited to avoid sensitive surface resources and potential conflicts with other uses.

-Although the number of wells varies considerably between alternatives, the EIS states (table 2-1, footnote) compression demand is not expected to vary. Please explain why.

Power Generation. To reduce impacts to air quality related values in sensitive areas, emissions of atmospheric pollutants (including hazardous air pollutants such as formaldehyde), and environmental impacts from overhead transmission lines, the EIS should consider alternative power options, such as hydrogen fuel cells. We have included for your reference an article from the June 25, 1999 Wall Street Journal describing the use of hydrogen fuel cells in subdivision construction.

Road Access. The EIS should include a transportation plan showing preferred corridors and alternatives that minimize environmental impacts and resource

conflicts. Major access roads and utility corridors serving the project area should be identified and selected to result in the least possible impact.

Well Spacing. The EIS bases its analysis on a 40 acre spacing. How likely is it that well density may have to be increased in the future to ensure maximum ultimate recovery of the CBM resource? Is 20-acres spacing being implemented in any of the PRB's CBM fields?

Hydrologic Monitoring and Mitigation. The EIS states that mitigation would be achieved under state law if private landowners fail to accept the Water Well Agreement. It should be acknowledged that State law provides little in the way of mitigation for the kinds of impacts most likely to occur as a result of aquifer de-watering: reduction/loss of capacity of domestic and stock wells and contamination of wells by methane gas. Since it is likely that a CBM well will be the lowest point of diversion, the loss of a shallower stock well or domestic well would not be compensable under state law. In addition, state water law doesn't address the problem of methane contaminating domestic water supplies.

Powder River Area Groundwater Monitoring Organization. Information and data collected by PRAGMO should be made available in public libraries and DEQ offices in Gillette and Sheridan, and made available on the World Wide Web.

ALTERNATIVES.

This section is the "heart" of the EIS. 40 CFR § 1502.14. Based on the information and analyses in the environmental consequences section and the description of affected environment, the alternatives section "should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis of choice among options by the decisionmaker and the public." Among other things, the agency must in this section "rigorously explore and objectively all reasonable alternatives..." The comparison of alternatives and impacts associated with each should be based on a discussion of "conservation potential of various alternatives and mitigation measures." 40 CFR § 1502.16(e).

Staged Development Alternative. As many other reviewers have observed, the range of alternatives and analysis of impacts described in this EIS are inadequate. To address the concerns raised by the public dealing with the uncertainty of impacts and effectiveness of mitigation, we suggest the development of an alternative that would authorize development in stages, the authorization of which would depend on successful completion of earlier stages. Data and information collected in earlier stages could be applied to subsequent stages to ensure that impacts are acceptable and within projected ranges and mitigation measures are appropriate and effective. Each subsequent stage would include and benefit from mitigation and operational

conditions developed and implemented in earlier stages. By proceeding in discreet stages, it is hoped that BLM would be able to provide answers to some of the significant questions raised during scoping, such as capacity of and impacts to surface drainages used to dispose of produced water, hazards and environmental impacts from coal bed methane venting, water quality impacts, aquifer recharge rates and impacts, effectiveness of mitigation, etc.

Disposal of Produced Water. The management, use, disposal of and impacts from produced water are perhaps the greatest challenges faced by the BLM in connection with this project. Thus we are amazed and shocked that so little consideration is given to examining alternatives to address these issues. The EIS rejects as infeasible the option of disposing of produced water by injection well. The reason this particular alternative is rejected is unclear. The EIS should try to clarify the discussion on "exempt" aquifers. Are you saying regulatory requirements of the underground injection control (UIC) program preclude this activity, or that there are no suitable aquifers available into which the water could be re-injected? Rather than dismissing the disposal well option outright (i.e., on a project-wide basis), the EIS should evaluate whether it would be appropriate in some areas in the project area, for example where impacts from surface discharge would be unacceptable. For example, it is not at all clear why produced water can't be injected into the Wasatch Sand Aquifer, particularly when recharge from surface disposal is anticipated. DEIS at 4-43.

It is clear from reading the supposed rationale for rejected the alternative (DEIS at 2-26), the BLM simply doesn't want to deal with this issue. First, while it may be true that disposal by injection would require additional wells and pipelines (resulting in additional surface disturbance), perhaps the additional surface impact is justified to the extent it would mitigate surface water impacts and other conflicts that undoubtedly will arise from discharging massive amounts of produced water into intermittent and ephemeral drainages. And although the produced water will be available for "subsequent beneficial uses," BLM hasn't identified (and can't know) whether those uses will in fact occur. Most likely, some of the water will be put to beneficial use, but a greater amount will simply wash downstream and out of Wyoming, carrying with it hundreds of thousands of tons of sediments, and causing massive erosion and disturbance in the process.

The EIS must be revised to include a detailed and thoughtful examination of options for the management, use and disposal of produced water, taking into account the relative costs and benefits of each, including environmental as well as economic. Such alternatives include, but are not limited to, re-injecting into aquifers (other than the coal seam, as described), shipping it by pipeline to the North Platte River to mitigate impacts to threatened and endangered species in Nebraska, storing it in or near the project area, or using it to recharge the Ogalala aquifer, which has suffered extensive dewatering.

No Action. The EIS must include a true "no action" alternative. One of the primary purposes of the no action alternative under NEPA is to establish a baseline for analysis, upon which impacts from action alternatives may be measured. This EIS improperly includes in the no action scenario coal bed methane development on private lands/mineral estate.

ENVIRONMENTAL CONSEQUENCES

Air Quality

Section 169A of the Clean Air Act (CAA) establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class 1 federal areas..." Federal land managers have under this section an "affirmative responsibility" to protect Class I areas.

Section 102 of the Federal Land Policy and Management Act (FLPMA), mandates the BLM to manage the public lands "in a manner that will protect ... air and atmospheric ... values." 43 U.S.C. § 1701(a)(8).

FLPMA Section 202(c)(8) requires that BLM's management actions "provide for compliance with applicable pollution control laws, including state and federal air, water, noise, or other pollution standards or implementation plans." 43 USC 1712.

Despite these clear statutory directives, the DEIS (at 4-149) projects significant cumulative impacts to air quality related values in sensitive Class I and II receptors in Wyoming, Montana and South Dakota. As required by the regulations implementing NEPA, 40 CFR § 1502.16(c), please explain how the proposed actions are consistent with each of these statutory requirements.

At Wind Cave National Park, the DEIS estimates that visibility impairment (>0.5 deciview, a 5% reduction) will occur 136 days per year; at Badlands National Park the DEIS estimates that visibility impairment will be perceptible 116 days per year. In the Big Horn National Forest's Cloud Peak Wilderness, visibility will be reduced by 5 % or more 53 days per year, while impairment at Devils Tower National Monument is estimated 121 days per year. Visibility impairment in excess of 0.5 deciview will occur an estimated 134 days on the Northern Cheyenne Reservation, a Class I area.

This level of significant impairment is unacceptable and contrary to the requirements of the CAA, as well as Wyoming's plan for the protection of visibility in Class I areas (visibility SIP), set out in the state's and Tribe's air quality regulations. The proposed action is likely also contrary to the requirements of visibility SIPs for South Dakota, Montana, and the Northern Cheyenne Reservation. BLM should consult with the

appropriate air quality divisions to learn precisely what the requirements are in this regard, and report the findings from that consultation in the EIS.

Wyoming's visibility SIP requires the state to achieve reasonable progress toward achieving the national visibility goal. The BLM is prohibited under the authorities cited above from issuing any decision that would result in impairment to these sensitive areas and thwart reasonable progress toward the goals. Please explain how BLM intends to comply with Wyoming's visibility SIP, and the SIPs of Montana, South Dakota and the Northern Cheyenne Reservation.

Cultural Resources. We don't see any evidence that proper consultation with Native Americans took place. Providing a copy of the EIS to Tribal representatives (DEIS at 3-48) hardly begins to fulfill your statutory responsibilities. Please list in the EIS the specific steps that were taken to solicit the input of the Tribes.

Methane Venting, Fire Hazard and Spontaneous Combustion.

Venting. The EIS states (at 3-6) that "[m]ethane migration potentially could occur at widespread locations within the Powder River Basin, as methane can migrate long distances along naturally-occurring joints or fractures in rocks." It is axiomatic that de-watering the coal bed will only increase the likelihood that venting will occur. That is, after all, the purpose of de-watering. As the EIS notes, "Reducing the hydrostatic pressure on the coal seam by pumping off the water enhances the release and production of methane previously trapped in the coal matrix as well as dissolved in the water." DEIS at 3-4.

In Chapter 4, the environmental consequences section of the EIS, it is noted that:

> "Methane migration potentially could occur over short or long distances within the PRB, along naturally-occurring joints and fractures. Methane could emerge from water wells near CBM production areas, affecting water wells, residences or coal mine facilities. * * * If methane seeps occurred, vegetation surrounding a seep likely would be killed or stressed, unless resistant to the local conditions near the seep. Soil productivity likely would be decreased."

DEIS at 4-2. Despite acknowledging this serious threat, the EIS provides no analysis or discussion of ways to control or mitigate the effects of CBM migration and venting, other than by placing conditions of approval on individual APDs. And although the EIS suggests that methane venting could be controlled through conditions of approval placed on APDs – this method will not address venting or seepage through water wells or natural pathways (fissures, joints, fractures or indeed, springs) present in the rock.

Fires and Spontaneous Combustion.

The EIS provides that "when water levels drop in unconfined coal aquifers, oxidation increases and the self-heating or coal accelerates until combustion occurs." DEIS at 3-5. It goes on to say that range fires and spontaneous combustion have in fact ignited areas of exposed coal. DEIS 4-18. We are concerned that *underground* coal may, through de-watering, become oxidized and susceptible to spontaneous combustion. This issue is not discussed in the EIS. For example, besides the obvious question of how to extinguish the fire, what would the long-term effect be on the coal seam aquifer's ability to continue to function as an aquifer after being burned? Wouldn't the damage to the aquifer be irreparable?

The EIS should discuss mitigation measures that may be available to reduce or eliminate this very serious threat, and opportunities and procedures available to compensate landowners and others for losses caused by fire (including the potential loss of the coal aquifer). Moreover, because of its importance, the EIS should endeavor to answer the question BLM acknowledges remains unresolved: "Whether methane seepage could accelerate the natural process of coal combustion at the outcrop ..." DEIS at 3-6. The EIS should also evaluate, as mentioned above, the potential for oxidation and combustion of underground coal seams.

Impacts to Wells. As described in the EIS, impacts from the venting or seepage of methane include increased fire danger and risk of explosion, and contamination of well water. The EIS (at 4-103) states:

> "Impacts to water wells in the vicinity of CBM develop-ment may occur. These wells may experience lowered yields, a loss of productivity, or seepage of methane, creating potentially explosive conditions. Adequate ventilation of well coverings would reduce the risk of methane becoming concentrated in these enclosed areas."

Because residences and ranch dwellings are scattered throughout the project area and could be affected by methane venting, the EIS should identify specific mitigation to minimize the kinds of impact described above. It is unacceptable for BLM to wait until subdivisions near Gillette are threatened (DEIS at 4-103) before developing appropriate mitigation. It is also inappropriate for BLM to rely on the water well agreement, a private arrangement between a CBM operator and owner of an affected water well, to satisfy the agency's mitigation responsibilities. Because it leased the mineral properties and because it authorizes the drilling on federal land and minerals, the BLM shares a significant responsibility for the consequences of this CBM development project. The BLM should consider what *it* can do to minimize the adverse effects from CBM development, rather than assigning this responsibility to the operator.

Industrial Conversion. The EIS fails to describe how the project –including roads, pipelines, production facilities, compressors, overhead utility lines, utility poles, etc., - will significantly alter the existing landscape, and the "sense of place" that long-time residents of the PRB have developed. Having witnessed first hand this type of industrial conversion take place in southwest Wyoming, it is essential that the EIS document this effect.

Geology and Mineral Resources. The EIS (at 4-131) concludes that "CBM development would have little effect on topography." This conclusion is not supported by the analysis of impacts which suggests that many drainages and draws used for the disposal of produced water could become deeply incised; ravines and gullies are likely to develop. DEIS at 4-9. The EIS also indicates that stream morphology could change significantly as a result of significantly increased flows in ephemeral, intermittent and perennial streams. See, e. g., DEIS at 3-16, 4-6.

Land Use, Social and Economic Impacts. The EIS fails to explain how disruptions to ranching operations and disruptive changes in land use are to be mitigated. For example, will the BLM or operators compensate private individuals for the loss of a second hay cutting, dealing with hazards such as CBM venting, range fires and flooding, necessary fence construction, removal of sediments from reservoirs, or post-project erosion control (DEIS at 4-13)? The list goes on and on. Who pays? BLM or the operators?

Liability for negligent action. The EIS acknowledges that the project may cause flooding, disruption of land uses, fire hazards, CBM venting, erosion of stream channels, and a host of other impacts. Has the BLM considered *its* potential liability under the civil law for causing or contributing to the loss of property and diminution of property values that may occur as a result of this project, such as flooding, fire, explosions, etc?

Noise impacts. Compressors should be located at least 1/2 mile from sage grouse leks. And sage grouse leks should be identified as a "sensitive receptor" (DEIS at 4-114).

-Compressors and other sources of noise and human disturbance (e.g., production pods) should be placed away from the Fortification Creek WSA.

Produced Water. Without offering any specifics, the EIS (at 4-11, 4-88) suggests that the water produced from the project will be put to beneficial use, for irrigation, stock watering, ponds and reservoirs, and other uses. We have serious doubts about these claims. Wyoming statutes require that the producer of water put it to beneficial use; references to and reliance on unknown third parties and statements about speculative beneficial uses that *may* be made of the water fails to comply with Wyoming's water law. The EIS should explain how the discharge of produced water

by an operator of a CBM well constitutes "beneficial use" under Wyoming's water law. NEPA regulations (40 CFR § 1502.16(c)) require you to address this potential conflict.

Reclamation, Soils and Vegetation.

Soils. The EIS (at 4-80) anticipates that soil loss in the short term "would exceed acceptable levels for 9 of the 15 dominant soil series." This level of disturbance should be identified as a significant impact.

Soils. The EIS goes on (4-80) to identify the need for best management practices, but fails to identify or discuss what measures may be effective at controlling short-term soil loss.

Reclamation, 4-80. The EIS should explain and describe the "effective reclamation practices" it asserts will effectively mitigate impacts to soils and vegetation.

Reclamation, 4-80. The EIS should require the use of native seed mixes, and set out clear reclamation requirements and objectives, for the short as well as long term (beyond simply stating that a "natural appearance" is desired). These requirements should include" 1) contemporaneous reclamation; 2) returning the topography to approximate original contour –including, especially, drainages and roads that have been altered or damaged by erosion; 3) establishing the natural vegetative diversity that existed pre-disturbance; 4) continuous reclamation responsibilities until reclamation is achieved; 5) measurable reclamation requirements, such as soil stabilization within 3 months and natural vegetative diversity within 5 years.

Reclamation. Does BLM intend to keep livestock off reclaimed areas until plants and grasses have had an opportunity to re-establish?

Soils, 4-81. The Record of Decision should prohibit the discharge of produced water in playas, closed basins and soils with low reclamation potential to prevent the accumulation of salts in soils. Doing so would lessen the likelihood for invasion of weedy species, and erosion of bare soils.

Soils and Vegetation, 4-79 to 4-84. The EIS fails to identify and evaluate the impact of wind erosion on bare soils, particularly those with high concentrations of salt which make re-vegetation difficult.

Soils and Vegetation, 4-83. The EIS should identify the reduction of "long-term vegetation productivity of disturbed areas and areas adjacent" as a significant impact.

Soils. DEIS at 4-80, 81. The EIS should identify and discuss the effective reclamation practices, mitigation

Soils. DEIS at 4-153. The EIS must describe the best management practices (BMP) it proposes to implement, and evaluate, as part of this analysis, the effectiveness at achieving the stated goals, such as "control erosion" and "limit soil loss."

Water Quality

The EIS should indicate existing and proposed water quality standards for each surface water proposed as a receiver for produced water. The EIS should note that 1) Wyoming is in the process of revising its water quality standards (Water Quality Rules Chapter 1), and 2) that many existing classifications are incorrect and illegal because they fail to protect existing and attainable uses and provide basic aquatic life protections. For example, all waters in the PRB presently designated Class 4 do not contain the appropriate and legally required aquatic life criteria. All such waters must be protected at a minimum for aquatic life unless/until a use attainability analysis (approved by DEQ and EPA after a public hearing) demonstrates the use is not attainable.

The EIS should be revised to note that under EPA water quality regulations at 40 CFR Parts 130 and 131, point source discharges are not authorized into "water quality limited segments" identified on the state's section 303(d) list.

The EIS should no that Wyoming DEQ has issued a general section 402 permit for the discharge of produced water.

Increased surface waters, surface flows, and availability of water year-round will NOT "improve the health of the biological components of ecosystems within the project area during the life of the project." DEIS at 4-11. Increased surface flows, etc., will ALTER the health of the biological components of ecosystems. Given the significant impacts to water quality and stream morphology expected from this project (flooding, erosion, sediments, etc) how can you possibly support this assertion? Please make the appropriate changes in the EIS.

Similarly, riverine habitats will NOT be "improved" by increased surface waters and flows, nor will wildlife habitats. They will simply be altered. DEIS at 4-12.

Seeps and Springs. The EIS (at 3-2) states that "[u]nderground coal seems are important aquifers in many parts of the study area, feeding springs and seeps." How is the EIS able to conclude that impacts to springs will be insignificant or unknown when the aquifers that supplies water to these features will be directly and adversely affected?

Surface flows. Referencing flows solely at the project boundary (Table 4-1) suggest that flows *inside* the project area are unimportant. The EIS should indicate projected flows (average and maximum) at the point of discharge in all surface waters.

Water Quality Standards. In certain instances, flow alteration caused by the discharge of large volumes of produced water may violate Wyoming surface water criteria for the protection of aquatic life. A violation will occur even where chemical analysis of the discharged water show no exceedences of applicable parameters.

-The discharge of produced water and consequent sedimentation and turbidity caused by erosion (see DEIS at 3-16, 4-4 to 4-11, 4-132 to 4-134) will likely violate Wyoming's water quality criteria for turbidity.

Groundwater. The EIS must evaluate whether the de-watering (and potential spontaneous combustion) of the Wyodak/Fort Union Formations will cause irreversible damage to the formations' ability to act as an aquifer after the cessation of project activities.

Wilderness Study Areas

The 13,059 acre Fortification Creek Wilderness Study Area (FCWSA) is situated in the northwest portion of the analysis area. According to the BLM's Statewide Wilderness Study Report, the FCWSA "appears to have been primarily affected by the forces of nature, with little evidence of human imprints. "The natural character of the land has been maintained and preserved because of the area's ruggedness." Wilderness Report at 369. The WSA "offers outstanding opportunities for solitude."

The EIS contains virtually no analysis of the effects of the proposed action and reasonably foreseeable future actions on the Fortification Creek WSA and therefore should be revised to address the potential direct, indirect and cumulative impacts to this area for all parameters: air, water, recreation, wildlife, soils, visual. etc.

Discharges of produced water into drainages that flow into the WSA should be prohibited because of the potential for significant alternation of natural functions and conditions within the area.

Wildlife

General. The EIS (at 4-87) states that the project "could affect up to 16,751 acres of terrestrial wildlife habitat during the life of the project." In fact, the project will affect a much larger area, since this figure is referencing only *direct* disturbance resulting from excavation. This approach to assessing wildlife habitat is inadequate because it discounts indirect and secondary effects caused by human activity in the area. In particular, the statement (at 4-89) that elk are likely to be habituated strains credulity.

Threatened, Endangered and Sensitive Species.

A number of "special status" terrestrial, aquatic and avian species inhabit the project area, including the swift fox, black-tailed prairie dog, mountain plover, sturgeon chub, bald eagle, black-footed ferret, Ute-ladies tresses, and 27 Forest Service "sensitive species." DEIS at 4-91 to 4-93. Grouse (sage?) also inhabit the project area. DEIS at 4-89. Burrowing owls may inhabit the area, but the EIS gives no consideration to the potential impacts to this species.

The BLM has an obligation to provide for the continued survival of these species, and to understand and disclose the effects of its actions on these species yet proposes to defer the analysis of impacts to the site-specific APD stage: "Potential impacts to these species will be analyzed site-specifically, as needed, during review of APDs or Sundry Notices, and impacts eliminated or minimized through the application of special conditions of approval for drilling or production operations." DEIS at 4-92. NEPA, however, requires the EIS to evaluate the direct, indirect and cumulative impacts of the proposed action and discuss reasonable and specific mitigation measures to minimize any potential effects that cannot be avoided. See 40 CFR § 1502.14(f) and 1502.16(h).

The BLM's decision to defer analysis of the "remaining seventeen FS sensitive species" is totally deficient, failing to meet even the most basic requirements of NEPA as well as the Forest Service's procedures for the assessment of sensitive species.

NEPA regulations at 40 CFR § 1502.25 require BLM to integrate this EIS with other studies and reports required by law, including those required pursuant to the Endangered Species Act. We recommend that the BLM confer and/or consult with the United States Fish and Wildlife Service concerning the potential effects to candidate, proposed and listed species, and make the record of the consultation available in the EIS for public review and comment. Consultation done earlier for other CBM projects (DEIS at 4-159) doesn't satisfy applicable requirements.

Fishes. The EIS (at 4-90, 91) indicates that mitigation for unspecified potentially adverse impacts may be included in site-specific conditions of approval for APDs. As previously stated, examination of impacts and possible mitigation alternatives must be discussed in this EIS, not deferred to the APD stage. Potential causes of harm include but are not limited to increased concentrations of TDS and suspended sediments, destruction of spawning areas and food sources.

The EIS should re-evaluate the potential impacts to all aquatic species (listed on page 3-40) in the project area. Specifically, for all fishes potentially affected by the

project, the EIS should document how significantly enhanced flows and water quality degradation (sediments, turbidity, toxics) caused by the project may affect them.

The EIS's conclusion (at 4-90) that "CBM development is not likely to degrade water quality in local streams by increasing sediment loads" is incredible. Soil loss, flooding and erosion are identified as potentially serious problems throughout the project area. Please explain this statement, with reference to supporting materials.

The sturgeon chub is a candidate for listing that inhabits several drainages in (and downstream from) the project area. The EIS's description of the project area (at 3-44) indicates that the "Powder River in Wyoming supports the largest known reproducing population of sturgeon chub[]" but on page 4-93 concludes that "no habitat for the chub occurs within the project area." Please reconcile this apparent contradiction.

The EIS observes (at 3-44) that "spawning occurs within shallow rapids over gravel and rock" but concludes (at 4-93) that "impacts to the sturgeon chub are not anticipated." This no-impact conclusion is apparently based on the belief that flows in the Powder River would not "significantly increase." Id. How is it, given the absence of water management plans, that BLM is able to conclude that flows in the Powder River would not significantly increase? Where is the data showing this?

MISCELLANEOUS

Bonding. Because of the unique concerns surrounding CBM development, BLM should consider requiring individual (as opposed to nationwide) bonds from each of the operators sufficient to redress any foreseeable harm caused by CBM development and operation authorized by BLM in the Powder River Basin. Bonds should be retained by BLM until reclamation is deemed successful and complete and until the agency is assured potential long-term liabilities have been addressed.

Cumulative effects. Industry sources project that as many as 20,000 CBM wells could be developed in the PRB in the next decade. In addition, coal mining and leasing is expected to continue at present or even accelerated levels. The DEIS should consider the cumulative effects from this expanded level of development, which is not only reasonably foreseeable, but highly likely. See 40 CFR § 1508.7.

Water Well Agreement. The Water Well Agreement should be revised to make clear that CBM operators have an ongoing obligation to compensate well owners for damage or loss to wells for as long as the condition persists, indefinitely if necessary. The proposed agreement (¶ 12) terminates upon the expiration of the last lease or the plugging and abandonment of the last coal bed methane well, whichever is later.

-The BLM should request an opinion from the DOI's Solicitor on whether the contract is enforceable. WOC is concerned that if push comes to shove, companies could argue that BLM exceeded its authority in requiring operators to enter into such an agreement. Has any court upheld this or similar agreements?

-Assuming the agreement is enforceable, it should be revised to include and extend to individuals who serve as directors, officers and executives in the CBM companies. We are concerned that many of the smaller CBM companies created to exploit the CBM reserves in the PRB could, if they chose, terminate their corporate existence (dissolution) and in so doing escape all liability under the water well agreement.

CONCLUSION

The EIS is woefully deficient in analyzing the environmental consequences of the proposed action. It evades or deals inadequately with most of the significant issues raised during public scoping. Areas where the analysis is deficient include, but are not limited to: examining alternatives for the management and disposal of produced water; recognizing and mitigating environmental and public health and safety hazards from coal bed methane venting; long term impacts to the coal aquifer and loss of potential to provide this function following cessation of activities; controlling and mitigating range lands fires caused by spontaneous combustion of the coal seam and/or ignition of methane gas; issues associated with aquifer recharge (or lack thereof); and loss of well water and mitigation options. The EIS should be corrected to address in a meaningful way these issues and re-released as a supplemental Draft EIS.

WOC appreciates the opportunity to comment. Please advise us immediately of any additional comment opportunities and the availability of environmental documents related to the development of CBM resources in the Powder River Basin. Thank you.

Sincerely,

Dan Heilig
Executive Director

A8 THE WALL STREET JOURNAL FRIDAY, JUNE 25, 1999

Fuel Cells May Have a Future in Lighting Homes

By MARK GOLDEN
Dow Jones Newswires

The future may or may not be any brighter for the future residents of Sharyland Plantation in Texas, but if developers have their way at least, they will have fewer transmission lines to contend with.

Texas's Hunt family expects to break ground this summer at their Sharyland Plantation, which now is a 6,000-acre onion farm along the Rio Grande straddling the towns of Mission and McAllen.

Pending regulatory accreditation next week, the community's newly created Sharyland Utilities Inc. expects to offer the 35,000 expected residents of the development the option to power their homes with fuel cells, rather than rely on electricity from traditional utilities in the area. That could be the broadest application of fuel cells so far, and, depending on the success of the venture, could have major implications for electric utilities and real-estate developers.

"We'll feel much more comfortable talking about this after the [Texas Public Utilities Commission] announces its decision on accreditation July 1, but fuel cells are a piece of the overall package we'd like to be giving folks," said Hunter L. Hunt, president of Sharyland Utilities.

The only residential fuel cells currently in operation are at the homes of executives of two fuel cell makers, Plug Power and Northwest Power Systems, according to Jack Phipps, senior market analyst for Oklahoma Gas & Electric.

"Our studies show that if you can get to a thousand units manufactured, you'll get your costs down to where they can compete with local electricity prices in areas where gas is relatively cheap and power is relatively expensive," he said.

Sharyland Utilities has reached an agreement with the two local utilities, **Central Power & Light** and **Magic Valley Electric Cooperative**, under which the utilities will compete to sell power to future residents. That agreement has been forwarded for final approval to the commission. Under terms of the agreement, Sharyland will build its utility infrastructure, including electric, gas, telephone and water services.

One of the potential economic advantages of fuel cells is that they could cut the high costs of extending electric transmission and distribution grids. The Sharyland electric system alone is expected to cost about $100 million over 15 years, although that number could decline if the fuel-cell option is popular with homeowners. The Hunt family and its partners plan to build 500 homes each year from 1999 through 2013.

The idea behind residential fuel cells is that for about $6,000 homeowners could buy their own generator, which would produce electricity for less than what the local utility charges, while creating almost no pollution. Such on-site generation would be immune to area blackouts, although fuel cells must have either a natural-gas supply or a propane tank nearby.

Fuel cells, which are similar to batteries, have been around for about 150 years. The National Aeronautics and Space Administration has used them to power the interiors of spacecraft since the 1960s. The challenge for residential use has been to get the cost of production down to where homeowners will buy them. Electric-utility deregulation has supplied the latest push in those efforts.

Fuel cells are much closer to commercial production for use in homes and offices than they are for use in cars. Assuming the commission approves Sharyland Utilities, its office will be powered by them, and a few of the first homes will be used as test sites. Several developers of residential fuel cells are optimistic that they will begin full commercial production next year.

Avista Corp. President and Chief Executive T.M. Matthews said his company "will begin installing fuel cells in 5,000 homes in a Texas town this year." Mr. Matthews didn't name the town because an agreement hasn't been signed yet.

But Sharyland Utilities has hired **Puget Sound Energy** to build the town's electric distribution system and Puget spokeswoman Dorothy Bracken confirmed that Avista is in the running to be the fuel-cell maker for Sharyland.

"Avista and [its partner] **Black & Veatch** are two of dozens of entities involved. Competitors of theirs are also in the discussions," Mr. Bracken said.

Other North American companies developing residential fuel cells include **H Power Enterprises** of Canada and Plug Power, which was founded two years ago by **DTE Energy** Co. and **Mechanical Technology** Inc. Plug Power broke ground on its new manufacturing site two weeks ago, and it has contracted General Electric Power System, a unit of **General Electric** Co., to sell the units.

"I think the fully installed cost hurdle is somewhere in the $5,000-$6,000 range for an average home, including fuel cells, fuel processor, licenses, everything. The competition is saying they can be at that point in 2000. Avista can absolutely get there, too, but we don't say next year," said Kim Zentz, president of Avista's fuel-cell unit, Avista Labs.

For Avista, the biggest technological hurdle isn't the fuel cell itself, but the adjacent processor, which extracts hydrogen from either natural gas or propane. Northwest Power Systems, a unit of **IdaCorp**, has a fuel processor well along the way, but no fuel cell. The companies are experimenting with how their components work together.

"If Avista partners with Northwest Power Systems, that's a very viable system," said OG&E's Mr. Phipps.

Ms. Zentz sees fuel cells as complementing the grid by adding on to it in new developments, but others expect residential fuel cells to compete with utilities for their existing customers.

"New construction is where they'll go first, but eventually you'll be able to replace existing infrastructure. I think we'll always keep our larger customers and supply them with power from our coal plants," Mr. Phipps said.

"But for residential customers, getting power out to the home is our biggest expense. Fuel cells eliminate that," he said.

For the next few years at least, homeowners with fuel cells will still want their homes connected to the grid because use of the technology is new. To compensate for the lack of electricity sales, utilities will want to get paid for standby service to cover the cost of putting in distribution lines.

"At first, it might be that the homeowner opts for fuel cells, the utility installs it and you still just pay the regular rates. Utilities may be significant distributors at first, but not in the long term," Ms. Zentz said. Whether or not Avista gets the Sharyland contract, it will soon announce a number of commercial and industrial test sites, some of which will be installed this summer. With partner Black & Veatch, Avista is negotiating with developers in Alaska and Hawaii, as well as Sharyland.

"Over the next couple of years, they will still be grid-connected as a backup, but I think five years out from now there won't be a grid connection," said Jim Wardin, Black & Veatch vice president for power delivery. Infrastructure planning and construction for new developments is one of Black & Veatch's major lines of business, and it has partnered with Avista for fuel-cell installations.

Mr. Wardin estimated fuel-cell makers will likely get their costs down to marketable levels in two years, not one.

QUIZNO'S CORP.

Schaden Acquisition Revises Purchase Offer to $8 a Share

Schaden Acquisition Co. revised its offer to acquire **Quizno's** Corp., proposing to pay $8 a share for the Denver restaurant concern. In December Schaden, which is owned by Quizno's President and Chief Executive Richard E. Schaden and Vice President and Secretary Richard F. Schaden, proposed to buy out Quizno's for between $7.84 and $8.20 a share. Quizno's had 3,756,414 diluted shares outstanding in the first quarter; the Schadens own 51% of the shares. Quizno's said a special committee previously appointed by the board hired U.S. Bancorp Piper Jaffray Inc. as financial adviser and Hogan & Hartson LLP as legal counsel to help evaluate the offer. The final price will be based on negotiations with the panel, and will be payable in cash. The proposal is subject to financing and shareholder approval, among other things.

Illinois Superconductor Corp.

MOUNT PROSPECT, Ill.—**Illinois Superconductor** Corp.'s shares were delisted from the Nasdaq National Market, after the maker of telecommunications-related products fell below the market's requirements for tangible assets.

Illinois Superconductor shares will trade on the OTC Bulletin Board under the same symbol ISCO.

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BUREAU OF LAND MANAGEMENT
JUL 16 1999
BUFFALO FIELD OFFICE
BUFFALO WY

July 12, 1999

Bureau of Land Management
Mr. Richard Zander
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

RE: Comments on the Wyodak Coal Bed Methane Project Draft Environmental Impact Statement

Dear Mr. Zander,

Lance Oil & Gas Company, Inc. is pleased to submit the following comments regarding the referenced Wyodak Coal Bed Methane Project Draft Environmental Impact Statement.

Comment 1, Page 1-13
The statement is made that "All operations would be required to comply with WDEQ rules regarding noise limits." At the present time, the WDEQ does not regulate noise limits. Noise abatement measures have been installed by operators in response to land owners, BLM or FERC requests or requirements. The CBM operators have and will comply with rules regarding noise limits.

Comment 2, Table 2-1
Under item 2, Depth: 350 to 1,200' is cited. Most of the wells drilled to date are in this range. However, there are producing wells at depths of less than 350' and wells are currently planned for 1999 that will be 1,300' to 1,600' completed depth.

Comment 3, Page 2-8
Under Road Access for Drilling Operations the statement is made "In more rugged terrain, BLM experience to date has shown that construction of a rough well access road to the drill location using cut and fill construction techniques may be necessary an estimated ten percent of the time." Because of the portability of the drilling rigs used on this project and their ability to negotiate rough terrain and operate on side slopes, it is Lance's opinion that cut and fill construction will be utilized less than five percent of the time. Cut and fill construction will only be utilized when needed so that damage can be minimized.

Comment 4, Page 2-11
The statement is made "Well site production facilities typically will not be fenced or otherwise removed from existing uses." If livestock will routinely be in and around the facilities, the facilities will be fenced in order to avoid injury to livestock and to eliminate damage to equipment by the livestock.

Comment 5, Page 2-12
The Powder River Area Groundwater Monitoring Organization, PRAGMO, is defined as part of the discussion on groundwater monitoring. How will the CBM operators be required to join this group and what means of enforcement is available to the BLM to ensure that the required data is provided to PRAGMO so that drawdown curves and maps can be generated and provided to the BLM and other participating agencies?

Comment 6, Page 3-13
The paragraph that begins "Over 50 percent...." indicates the concentration of dissolved solids in existing streams and drainages in the Powder River Basin. It should be pointed out that the TDS of the average CBM well is approx. 764 which in most cases is below the existing TDS in the streams and drainages.

Comment 7, Table 3-6
This table details chemical analyses of stream water in the Belle Fourche River. Please observe that the iron and manganese content of existing surface water and ground water cannot meet the WDEQ/WQD's proposed maximum limits on CBM discharges and this existing water source is far greater in quantity than the coalseam discharge volumes. Is the BLM planning to ensure that all discharges from Federal lands will be in compliance with state regulations?

Comment 8, Page 3-22
In the paragraph beginning "Solute concentrations..." A statement is made that average concentrations of TDS are 1,000 to 2,000 mg/l from the Fort Union Formation. In the following paragraph the statement is made that "Produced water contains an average (mean value) of 764 mg/l Total Dissolved Solids". Why is their such a large discrepancy between the published USGS, 1974 data and actual data from 577 CBM discharge samples?

Comment 9, Table 3-9
The median values of metal concentration in the existing groundwater are higher than the upper limits being proposed for CBM discharge. This is the same comment as for Comment 7.

Comment 10, Page 4-1
The statement on Peak gas production may be misleading. The Peak gas production from 3,000 proposed wells will be in excess of 375 million cubic feet per day. The average production from 3,000 wells utilizing 125 thousand cubic feet per day per well will be 375 million cubic feet per day.

Comment 11, Page 4-2
The statement is made that "CBM wells in the PRB are projected to be a minimum of 350 feet deep." Please note, that there are some wells on the East side of the development that are completed at depths less than 350'. However, most of the wells planned in the EIS area are

proposed to depths greater than 350'.

Comment 12, Page 4-5
The statement is made that "A CBM generated flow of 0.22 cfs would substantially exceed the typical 2-year, 24-hour storm flow from one square mile, due to the aridity of the region." No data is presented in the EIS as to the amount of run-off generated in a typical 2-year, 24 hour storm. However, observations of drainages during and following the spring storm in April of this year indicated at least a ten fold increase in water volumes. The rain volume runoff far surpassed the CBM volume. Also, in Table 3-2 Maximum Flow in cfs is presented. The per square mile run-off generated at the maximum given in the table ranges from 2.14 cfs for Belle Fourche just below Rattlesnake to 10.3 cfs for Donkey Creek near Moorcroft. The maximum run-off generated historically is much higher than the calculated 0.22 cfs from the CBM operation.

Comment 13, Page 4-5
Under Water Flow the statement is made that "CBM generated flows within the project area are expected to increase from 15.1 million gallons per day to a maximum of 66.1 million gallons per day." To put this in perspective, 66.1 million gallons per day, 102 cfs from all wells, represents a volume that is less than 2% of the annual precipitation of 14" across the EIS area.

Comment 14, Page 4-14
The bullet point beginning "Discharges will be limited..." needs to be clarified. As written it is open for at least two interpretations.

Comment 15, Page 4-36
In the paragraph beginning "Over most of the..." the statement is made "This clay unit has the effect of partially isolating the coal from the overlying Wasatch sands." This clay unit was previously characterized as being 11'-363' thick and normally at least 30' thick. It can be stated that a clay member of 30' thick is more than a partial barrier to water flow or migration. A clay or shale formation 30' thick does not allow any water to pass. It is a total barrier, not a partial barrier. This clay or shale formation serves as the trapping mechanism for the natural gas. If gas is unable to pass through this barrier, water will not be able to pass through it either.

Comment 16, Page 4-41
In the paragraph beginning "Drawdown impacts in the overlying Wasatch..." the statement is made that "drawdown is predicted to continue after the cessation of the project, averaging 125 feet long-term." It is important to note that this prediction is for water sands immediately above the producing coal interval. Shallow Wasatch sand aquifers have actually been increasing in head. Two monitor wells of very shallow sand aquifers in SE/NE Sec. 22-T48N-R72W, indicate increasing static water levels. Similar trends can be observed in a sand aquifer monitor well in SW/SW Sec. 7-T47N-R72W, and a sand aquifer monitor well in SW/SW Sec. 25-T46N-R72W. It can be presumed that at least part of the increase in static water level of the shallow Wasatch sand aquifers can be attributed to recharge due to CBM water being discharged at the surface.

Comment 17, Page 4-68
Regarding the paragraph beginning "Emission rates that were analyzed...", emission rates are cited that are the upper limit or maximum allowed under Air Quality Permits. If these limits are exceeded, the permit can be canceled. This requires the operators of this equipment to maintain and operate the compressors such that the actual emissions are below this maximum. By using this upper limit as the emission rate in the air quality model, the model becomes inherently conservative and will predict a greater impact on air quality than what will actually be observed.

Comment 18, Page 4-75 (Table 4-9) and Page 4-151 (Table 4-20)
Regarding Visibility impairment in the EIS and surrounding area. The cited tables indicate the visibility effects of the CBM development compared to the coal mining operations contribution. It should be noted that the CBM contributions were modeled using permitted maximum emission numbers while coal mines were modeled based on the projected production (expected actual, not permitted maximum). Based upon this, the CBM contribution to the air quality is conservative and consequently the impact is overstated. Even with this excessive estimation of CBM contribution to air quality impact, there is only one day with a deciview change greater than 1.0. Page 6-6 of the Air Quality Impact Analysis indicates that a "one to two deciview increment change in visibility **may** be noticeable." (emphasis added) The highest change for days over 0.5 and less than 1.0 was 0.86 deciview while most were closer to 0.6, slightly above the threshold which is set at approx. a quarter of the perceptibility level by the Forest Service. Levels generated by coal mine activities above 1.0 range from 5 to 9 deciview change. By comparison, CBM impacts are relatively small. The model shows that coal mining is the single largest contributor to visibility impairment in the PRB.

The air quality study utilized a CALMET/CALPUF model. This model is the best in use at this time. Considerations take into account meteorology including changing wind directions, temperatures, etc. as well as chemical reactions taking place in the "puff". The next best model is the EPA's Industrial Source Complex Short Term 3 (ISCST3) model which is a plume dispersing model. The CALMET/CALPUF model uses discrete "puffs" of pollutants and more closely models the atmospheric effects in the area. This model is consistent with the recommendations of the Interagency Workgroup on Air Quality Modeling (IWAQM) coordinated by the EPA. The CALMET/CALPUF model is the best model currently approved by the EPA.

Comment 19, Appendix B-3
Permitting of reservoirs is normally accomplished by the land owner. Operators can assist the land owner in preparing and obtaining the necessary design work and permits. However, the land owner usually prefers to have the reservoir(s) permitted in their name.

Lance Oil & Gas Company, Inc. appreciates the opportunity to comment on the draft EIS for the proposed project. The quality of this document is an indication of the BLM's and cooperating agencies committment to protecting the natural resources of this nation while allowing responsible development to continue. The thoroughness and level of detail of this study will be a valuable resource in future studies in this general area in addition to the current project.

Sincerely yours,

David Gomendi
Engineering Supervisor

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Rio Algom Mining Corp.

Dennis E. Stover, Ph.D.
Vice President
Engineering & Project Development

BUREAU OF LAND MANAGEMENT
JUL 19 1999
BUFFALO FIELD OFFICE
BUFFALO WY

July 14, 1999

Mr. Richard Zander
U.S. Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, WY 82834

Re: Wyodak Coal Bed Methane Project Draft Environmental Impact Statement

Dear Mr. Zander:

Rio Algom Mining Corp. (RAMC) and its wholly owned subsidiary control over 50,000 acres of uranium mineral rights containing in excess of 60 million pounds of uranium resources within the state of Wyoming. RAMC is a U.S. corporation with headquarters in Oklahoma City, Oklahoma. It is a wholly owned subsidiary of Rio Algom Limited (RAL) which is an international mining company based in Toronto, Canada. RAL is a public traded company with listings on American, Toronto, and Montreal exchanges.

RAMC has reviewed the subject EIS and has significant concerns regarding the potential impact of the proposed actions on (1) RAMC and the Wyoming uranium mineral owners within the Powder River Basin, and (2) the future quantity and quality of groundwater resources withing the State of Wyoming. The draft EIS contains a number of observations and conclusions regarding the interaction of proposed coal bed methane operations with the subsurface fresh water resources. These evaluations and findings, RAMC believes, are incomplete.

Rio Algom Mining Corp. (RAMC) is actively mining uranium in Converse County, Wyoming by means of In Situ Leaching (ISL) technology at its Smith Ranch Uranium Project (SRP). During the past eleven (11) years, RAMC has invested over $100 million (US) in the acquisition and development of uranium rights and properties in Wyoming. Included within this total is $42 million (US) which has been expended since early 1996 in the commercial development of Smith Ranch. In addition, over $5 million has been spent since mid-1997 for the development of a second ISL commercial mine at Reynolds Ranch which lies immediately north of the SRP.

At present, on-site employment at the SRP is 80 RAMC employees. In addition, 60 drilling contractor employees are active at the site. RAMC also operates a Wyoming exploration program with offices in Casper, Wyoming. Commercial scale operations at SRP began in late 1997, were ramped up to full production during 1998 and early 1999. Production during 1999 will exceed 1.5 million pounds as U3O8 per year which will result in SRP being the single largest domestic uranium mining operation for calendar 1999. During 1999, SRP will expend

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JUL 19 1999
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BUFFALO WY

$16.7 million on direct payroll and local purchases within Natrona and Converse Counties. Utilizing a 4:1 multiplier, the SRP provides a local economic impact in the neighborhood of $67 million annually. In addition, state and local tax contributions will exceed $700,000.

The ISL technology has been described as a benign mining method which is accompanied by minimal short-term environmental disturbance and no long-term impact. As such, it has become a preferred mining method wherever the natural geologic and hydrologic setting is conducive to its application. Key to this is the natural hydrostatic pressure associated with the permeable host sandstones which contain the uranium deposits. It is the natural hydrostatic pressure which holds oxygen and carbon dioxide in solution. These are the reactants which dissolve and stabilize the uranium in the water during mining. Any reduction or loss of the natural water table (hydrostatic pressure) reduces the solubility of dissolved oxygen and causes a geometric reduction in uranium production. If the water table drops to or below the depth of the uranium deposit it becomes physically and chemically impractical to recover the uranium by ISL methods. This effectively destroys the economic value of the mineral resource. It is unlikely that potential ISL extractable uranium deposits can be exploitable by traditional higher cost methods such as open pit or underground mining. Hence, initiation of any coal bed methane program which removes substantial quantities of natural groundwater from the immediate proximity of RAMC controlled uranium deposits raises concerns because such actions could cause irreparable economic harm to RAMC and to mineral owners who may be denied royalty income which otherwise would have accrued from RAMC's exploitation of the uranium minerals.

Within the area of the Wyodak Coal Bed Methane Project, RAMC controls approximately 10,500 acres of uranium mineral rights in combination with about 8,400 surface acres. These holdings are known to contain 9 million pounds as U3O8 of uranium resources and reserves. These holdings are in various stages of development ranging from exploration tracts to pre-development mining projects.

As noted on page 3-7 of the EIS, the southwestern portion of the Coal Bed Methane study area lies within the Pumpkin Buttes uranium mining district. The statement that "there are currently no active mines or plans for new operations within the study area" is not accurate.

RAMC is presently evaluating its uranium holding in T42N R75W (within the CBM study area) as part of its intermediate term planning (5-10 year horizon) for new, additional ISL production. Other ISL uranium mining companies with holdings within the study area may be conducting similar studies. These uranium resources all reside in the Wasatch/Fort Union aquifer group. The Wasatch is underlain by the Wyodak coal; the source of coal bed methane for the proposed project. The close vertical proximity of these uranium resources to the Wyodak coal points to high probability that groundwater within the uranium resources will be diminished by the proposed pump and discharge method of coal bed methane recovery.

RAMC believes that it is essential to the welfare of Wyoming owners of uranium and other mineral rights that additional baseline hydrology tests and studies must be conducted prior to the installation of any new Coal Bed Methane wells in areas with known uranium resources.

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JUL 19 1999
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The focus of such hydrology tests should be to directly demonstrate the degree of vertical communication between the target coal seam (aquifer) and both the overlying and underlying sandstone aquifers. Test results can then be utilized to calibrate ground water simulators such as MODFLOW which can be used to provide a better estimate of the impact of the proposed action on the groundwaters from the State of Wyoming and the mineral rights of private individuals, the State of Wyoming, and the United States Government.

Given adequate market conditions, the Pumpkin Buttes mining district will be the location of new commercial ISL uranium operations. However, excess withdrawal of fresh groundwaters from coal and sandstone aquifers without a maximum effort to protect the uranium resources in these areas will greatly diminish these prospects along with the associated potential for local job creation and economic growth. On page 4-3 of the EIS, the statement is made that "Developing the project would not be likely to impact the recovery of other mineral resources in the area....Subsurface uranium deposits located near the southwestern portion of the project are associated with Wasatch Fm. sandstones.....Withdrawal of CBM and water from the stratigraphically lower Ft. Union Fm. would not be likely to impact the potential recovery of uranium resources within or near the project area....future conflicts would be dealt with on a case-by-case basis." As noted and explained previously, the statement that CBM would not be likely to impact uranium recovery by ISL can not be accepted by RAMC without supporting documentation and additional baseline hydrology studies on potential CBM project areas are strongly recommended to test this statement.

It is certain that conflicts will arise between CBM projects and other producers of mineral and energy resources. The resolution of such conflicts will be enhanced if a common state regulatory structure governs the activities of all affected resource recovery operations occurring within the groundwater resources of the State of Wyoming. It is therefore recommended that the Wyoming Department of Environmental Quality have primary state jurisdiction over all CBM operations within the State of Wyoming. This should result in a level playing field wherein all resource recovery operations are given equal consideration and are subject to similar regulations with respect to air, land, and water quality protection issues.

RAMC appreciates the opportunity to review the draft document and to submit comments.

Respectfully submitted,

Dennis E. Stover, Ph.D.
V. P., Engineering & Project Development

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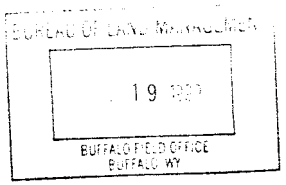

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
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July 14, 1999

Richard Zander, Assistant Field Manager
U.S Department of Interior
Bureau of Land Management - Buffalo Resource Area
1425 Fort Street
Buffalo, WY 82834

Re: Comments on Wyodak Coal Bed Methane Project

Dear Mr. Zander:

Thank you for providing the opportunity to review and comment on the draft environmental impact statement (EIS) for the Wyodak Coal Bed Methane Project. This letter outlines the department's concern with the air quality impacts to South Dakota.

With the information provided in the draft EIS, it appears the Wyodak Coal Bed Methane Project will not adversely impact the visibility of Class I or Class II areas in South Dakota. The department is concerned, however, with the modeling analysis that addresses visibility issues in Class I areas. It appears the analysis only included sources constructed after 1997, the Coal Bed Methane Project and projected coal mining activity.

We understand the background visibility monitoring was inputted in the model to account for existing sources. To get a true picture of environmental impacts to Class I areas and to verify existing visibility monitoring data collected at the Badlands National Park and the other location used in Wyoming, we suggest that all existing major sources within the 250 miles radius of the project be modeled. This should include major prescribed fire burns conducted by the Federal Land Managers. The results of the model should be compared to the visibility modeling data to verify the accuracy of the model. Once the visibility model has been verified with actual visibility monitoring, then the Coal Bed Methane Project and projected coal mining activities should be added to the model to determine visibility impacts to South Dakota's Class I areas.

This comparison is important for regional haze modeling efforts that will be conducted by South Dakota and other states. Therefore, it is imperative the Bureau of Land Management results be based on reasonable modeling inputs in comparison to existing real data.

Again, thank you for the opportunity to review and comment on the EIS. We hope our comments assist in the development of the EIS and look forward to hearing from you.

Sincerely,

Nettie H. Myers
Secretary

cy: Dennis Hemmer, Wyoming DEQ
Jon Notar, National Park Service

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4000 Airport Parkway
Cheyenne, Wyoming 82001

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19 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

ES-61411
kd/W.02/WY2582a.kd/cbmgill2.ltr

July 15, 1999

Memorandum

To: Richard Zander, Bureau of Land Management, Buffalo Field Office, Buffalo, Wyoming

From: Field Supervisor, Ecological Services, Cheyenne, Wyoming (ES-61411)

Subject: Wyodak Coal Bed Methane Project Draft Environmental Impact Statement

We would like to bring to your attention some new information that our office has recently received regarding the sturgeon chub (*Macrhybopsis gelida*). This information is important for your consideration in the evaluation of the Wyodak Coal Bed Methane Project in Converse and Campbell Counties, Wyoming. These comments supplement our previous comments on the Draft Environmental Impact Statement for the project.

The sturgeon chub is a candidate for listing under the Endangered Species Act of 1973 (Act), as amended. The Service announced a positive 90-day finding on December 29, 1994, (Federal Register, Vol. 60, No. 11, 3613-3615) that substantial information existed to indicate that listing the sturgeon chub as endangered may be warranted. However, due to a Congressional action that placed a moratorium in 1996 on all listing actions, the processing of the listing package for the chub was not authorized until 1997. It is likely this species will be proposed for listing under the Act in the relatively near future.

Historically, the sturgeon chub occurred throughout the main stem of the Mississippi and Missouri Rivers. The species was also found in the Yellowstone River in Montana and a total of 34 tributaries to the Yellowstone or the main stem Missouri River throughout the Missouri River basin. In Wyoming, the sturgeon chub occurred in four tributaries including the Powder, Big Horn, Tongue and North Platte Rivers. Populations of the sturgeon chub in Wyoming still occur in the Powder River, and may exist in the Big Horn River. When considering the loss of tributary habitats, we estimate the sturgeon chub now occupies about 20 percent of its historical range.

Any actions that may affect the sturgeon chub, including the discharge of coal bed methane wastewater that may increase flows or carry selenium concentrations to the Powder River or its

tributaries, should be evaluated. If sturgeon chub are listed prior to completion of this project, consultation under section 7 of the Act may be necessary.

These comments are made pursuant to the National Environmental Policy Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act. Please keep this office informed of any developments or decisions concerning this project.

If you have any questions please contact Kim Dickerson of my staff at the letterhead address or phone (307) 772-2374, extension 30.

cc: Director, WGFD, Cheyenne, WY
Nongame Coordinator, WGFD, Lander, WY
Wyoming Outdoor Council, Lander, WY

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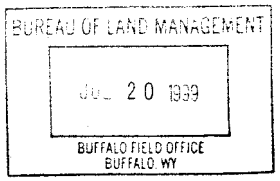
BARRETT RESOURCES CORPORATION



July 14, 1999

United States Department of the Interior
Bureau of Land Management
Buffalo Resource Area
1425 Fort Street
Buffalo, WY 82834
Attention: Richard Zander

RE: Wyodak CBM DEIS Public Comments

Dear Mr. Zander:

Barrett Resources Corporation, a MOU participant company, supports the Wyodak CBM DEIS and encourages a timely issuance of the ROD by the Bureau of Land Management.

In support of the modeling effort, Barrett presents the following comments:

- Modeling efforts for Air Quality and Ground Water were based on the best available data as provided by governmental agencies such as BLM, WDEQ, NPS, USFS, USEPA, USGS and NRCS. Industry also provided appropriate data.
- The results and conclusions to be drawn from the modeling effort are to be accepted in light of the data input, the model's technological competence, and the point in time that the data was collected and input into the models.
- The models, particularly the Air Quality Model, could have a multitude of input changes with infinite reruns to the point of the investigating the minutiae ad nausea; the result would still remain the same.
  - Cumulative impacts from the existing mines and mobile sources currently exceed regional haze visibility limits.
  - Wyodak CBM EIS cumulative impacts are negligible as compared to existing impacts and amount to "a drop in a bucket" that is already overflowing.
- The models are "computer models" not irrefutable fact and as such may require periodic update with actual data. The timing and format for upgraded model runs and comparison with these runs may be determined and funded by the appropriate governmental agency.
- CBM MOU participants have been financially burdened to provide the analysis to this point. The current evaluation is far and above the original scope of the EIS, reflecting additional modeling requirements for mobile sources, expanded EIS area, new pipelines and resulting additional compressors and pod sites, expanded air quality modeling area, and increased detail demanded by WDEQ, NPS and USFS.

724 Commercial Drive • Suite 100 • Gillette, Wyoming 82716 • phone: 307.686.1636 • facsimile: 307.686.7574

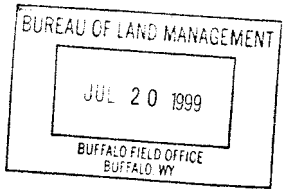
In addition, Barrett Resources provides the following attachment as our comments for the Draft EIS.

Barrett congratulates BLM, Greystone and participating agencies as well as the other MOU participants for the thorough and technically sound document.

Sincerely,

Thomas E. Doll, PE
Senior Petroleum Engineer

Xc: Duane Zavadil
Joe Barrett



BUREAU OF LAND MANAGEMENT
20 1349
BUFFALO FIELD OFFICE
BUFFALO, WY

ATTACHMENT

The following comments are provided by Barrett Resources regarding corrections and clarifications of the Wyodak CBM Draft EIS document.

Page 1-5, First three paragraphs under Authorizing Actions. The language at the end of the first paragraph and in the subsequent two paragraphs must be modified to reflect the recent Supreme Court ruling.

Page 2-1, Second paragraph under Summary, second sentence. Some mention should be made of the fact that some operators have sought 80 acre spacing for their CBM acreage.

Page 2-1, paragraph under Anticipated Level of Activity…. This sections mentions that there may be up to 400 federal APDs approved per year and goes on to estimate the number of rigs required to drill those wells. The number of rigs required would be better related to the total number of wells to be drilled, inclusive of those on fee lands.

Page 2-1, paragraph under Hydrologic Monitoring and Mitigation, last sentence. Reword as follows "…timeframes; and data management for both groundwater and surface water".

Page 2-16, Section on Hydrologic Monitoring and Mitigation. A paragraph or two on the legal framework would be useful. Specifically, this section should explain that groundwater is a resource of the state, rather that real property and that the state grants a right to use the water based on the benefit that the water provides. In the case of CBM, the benefit is the gas production.

Page 2-17, Paragraph under Groundwater. The second reference to BLM is redundant.

Page 2-17, Second bulleted item under Groundwater. Insert "in" after the word "concentrations".

Page 2-17, Last sentence in the third paragraph. We appreciate the fact that the efforts will be put towards coordinating the monitoring effort. We suggest that the data objectives also be considered in this effort. That is, describe how data is to be used and what decisions are to be made on the basis of this data. It is our experience that data collected without close consideration of well-defined objectives is of little value.

Page 3-8, Last paragraph, third sentence. Reword as follows: "…produced water are typically expressed …".

Page 3-10, Second paragraph under table, first sentence. Strike "above that observed under natural flow conditions". Reference should not be made to "natural flow conditions" without the explanation of evaporation and transpiration.

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BUFFALO FIELD OFFICE
BUFFALO, WY

Last sentence. Add "current" before "CBM generated flows".

Page 3-13, first paragraph, first sentence. Add "actual" before "outflow".

Page 3-13, First paragraph. The amount of additional flow contributed to the major surface water bodies by CBM is a major issue. The assumptions on conveyance provided by the WSEO are reasonable for perennial creeks, rivers and canals but should not be applied in this analysis without caveats. It is very difficult to predict what the actual yield will be in situations where a small discharge occurs is a small upland drainage. It is not hard to imagine a small discharge, say 20 to 30 gallons per minute, that may never flow a mile, let alone suffer a loss of only one percent as suggested by the assumption. The assumption and analysis should stand as is but a statement should be made that the project flows are conservation for the reason described above.

This provides estimated flows, based on the assumptions, under current conditions. It would be useful to perform a check on the assumptions by comparing the estimated increase in flows to actual observed flow rates. In effect, lets use the knowledge of what has occurred in the past to predict future effects.

Page 3-13, Third paragraph, last sentence. This sentence implies that the mines are in fact discharging pyrite that would cause acid mine drainage if pH conditions were not limiting. If true this should be more clearly stated and significance to CBM described.

Page 3-21 Sentence carried from previous page and completed here is unclear.

Page 3-25, First complete paragraph. Based on the data in Table 3-7, Gillette's municipal water usage is much greater than 2 millions gallons per year.

Page 3-26, Last paragraph. The first sentence in this paragraph is prejudicial. There is an implication that oil and gas and mining normally foul the air. However, if restated in another way, this could be complimentary.

Page 3-40, Last part of first paragraph. This paragraph is drawing the conclusion that human activity and disturbance are the cause of the sage grouse population decline. Population declines could be the result of many other factors such as predators, weather, disease, etc. Unless substantiated, this section should state facts only.

Page 4-5 Second paragraph under "Water Flow". The same comment made regarding losses in small, upland discharges applies here.

Page 4-10, Fourth paragraph. Restate first sentence as follows: "Daily sediment concentrations will increase if…".

Page 4-11, First paragraph under "Water Use". The third sentence states as if it is a fact that diversions increased by 41 percent. Based on estimation approaches used earlier in the EIS, water yield is based on broad assumptions that may result in an overestimate for

small, upland discharges. If diversions in fact did increase by the amount stated, a reference should be provided. If not, the estimate should be conditional and the assumptions referenced.

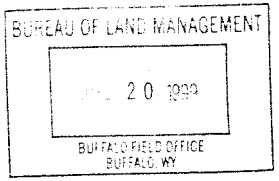
Page 4-14, First Paragraph under "Mitigating Measures". Insert "by the operators" after "developed" in the first sentence.

Page 4-36, Second full paragraph. I'm left wondering how many wells are actually completed in the coal and what their current uses are.

Page 4-71, Fourth paragraph. Insert in first sentence: "...would address monitoring and if necessary mitigation to...".

Page 4-149, Regional Haze Impacts section. Although the project duration is frequently considered with regard to other resources considered by the EIS, little mention of it is made in the air quality analysis. When considering impacts, the BLM must consider that CBM emissions are temporal. Emissions that associated with development initiated in the late 1980s will be essentially eliminated by 2009. Emissions from current CBM development will be eliminated by 2020 or sooner. Emissions from existing conventional oil and gas development will also be essentially eliminated by 2020. Although it would unnecessarily complicate the modeling process to include this factor, it should be a very important factor to the decision-maker within the BLM. This subject requires an analysis and elaboration within the EIS.

Duane Zavadil



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FAX TRANSMITTAL # of pages ▸ 2

To Dennis Stenger	From Al Pierson
Dept./Agency	Phone #
Fax #	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

File Code: 2580

Date: JUL 14 1999

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OEA		DBS	
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LAW		LEAD Resp.	✓

Alan Pierson, State Director
Bureau of Land Management
P.O. Box 1828
Cheyenne, WY 82003-1828

Dear Mr. Pierson:

We have reviewed the Air Quality Impact Analysis prepared for the Wyodak Coal Bed Methane Project Environmental Impact Statement and offer the following comments and observations. First, we greatly appreciate the outstanding job that the BLM did in forming a stakeholders group to review and provide input into the development of the air quality impact modeling protocols. The multiple opportunities for feedback, input and suggestions that the stakeholders had during the preparation of this Air Quality analysis exemplifies the interagency cooperation and communication that Federal Agencies in the Rocky Mountain States have been working towards in NEPA air quality issues.

The Air Quality Impact Analysis estimates that NOx (nitrogen oxide) emissions from the Proposed Action's gas compressors would be 2,806 TPY (tons per year) of NOx. Other cumulative source increases (point sources such as recently permitted power plants, coal mines , and coal trains) are estimated to total an additional 18,486 TPY of NOx. While the exact amounts of future cumulative emissions of NOx are difficult to estimate accurately, we commend the BLM for making the effort to assess and disclose their best estimate of what these emissions might be in the future.

We do have some questions about the information on alternatives presented in Table 1-1. The table shows 3000 wells under the Proposed Action and 5000 wells under Alternative 1, but the same number and capacity of compressor stations for both alternatives. We understand that production and compression is limited by pipeline capacity, but have been unable to find specific discussion of this situation in the DEIS. We are concerned about the pollutant emissions ramifications of Alternative 1, should the BLM choose that alternative, especially with the lack of clear discussion of pipeline capacity issues and what could happen under the 5,000 well scenario with potential additional future pipelines and compression. The document states on pg 1-14: "The companies' field-wide compression plans, currently under development, are not constrained by the scope of this EIS analysis and the number or production wells under consideration here." We recommend that the BLM not consider Alternative 1 for selection unless additional information relevant to pipelines and compression is disclosed, specifically that additional compression emissions associated with the additional 2000 wells are modeled and their impacts on sensitive wilderness areas are analyzed.

7-23-99 7:08AM BLM STATE DIRECTOR :307 775 6003 # 2

We would also like to offer a correction in the interpretation of FS policy given on pg 6.6. The text states that ". . .more than one day with a computed deciview change exceeding 0.5 deciview is considered an adverse impact." The correct statement should instead read, "a computed deciview change on or greater than one day that exceeds 0.5 deciview is above the threshold of concern ("limit of acceptable change") for visibility impairment, and may, under some circumstances, be considered an adverse impact."

The visibility modeling estimates that the impacts from the proposed action by itself could result in an increase in visibility impairment (modeled deciview change above .5 deciview) by one day at each of the nearest Forest Service managed wilderness areas (Black Elk Wilderness and Cloud Peak Wilderness). Taking into consideration the large project area over which emissions would be dispersed and the conservatism of the visibility background data that was used in the analysis, we do not believe that these would be likely to constitute an adverse impact at either of the two wilderness areas. To ensure that adverse impacts do not occur at these wilderness areas we would encourage the BLM to consider mitigation measures such as electric compression for compressor on station engines on BLM lands, so that NOx emissions are further reduced.

We do have significant concerns regarding the magnitude of the visibility impacts projected to these two wilderness areas from cumulative sources. The analysis projects 98 days where visibility would be above the Forest Service Limit of Acceptable Change in the Black Elk Wilderness and 53 days for the Cloud Peak Wilderness. This means that a perceptible decrease in the clean clear views that the public expects to see in wilderness could occur on each of these days. If these decreases in visibility were to occur, we believe that it would be counter to the Wilderness Act direction to care for wilderness such that it is "protected and managed so as to preserve its natural conditions" and to "promote, perpetuate and where necessary restore the wilderness character of the land." We realize that the BLM does not have direct control over many of these projected future emissions that are discussed in the cumulative impacts analysis, so we will strive to address some of these concerns for future air quality impacts in north east Wyoming and western South Dakota in other forums. We will request that the state regulatory agencies (Wyoming, Montana, and South Dakota), along with EPA create a group similar to SWYTAF (Southwest Wyoming Technical Air Forum) or GCVTC (Grand Canyon Visibility Transport Commission) to address cumulative air quality impacts to sensitive FS, NPS and Tribal wildernesses in northeast Wyoming and western South Dakota within the next year.

We appreciate the opportunity to provide input on air quality issues for this technical reference document and through the stakeholder process. If you have any questions or comments, please feel free to contact Tamara Blett (303-275-5744 or TBlett/r2 or TBlett/r2@fs.fed.us).

Sincerely,

Helen L. Wilson

/s/ LYLE LAVERTY
Regional Forester

cc: Dan Olsen, Wyoming DEQ
Cindy Cody, EPA
Larry Svoboda, EPA

7-23-99 7:08AM BLM STATE DIRECTOR :307 775 6003 # 2

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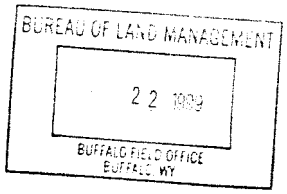
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 500
DENVER, CO 80202-2466
http://www.epa.gov/region08

JUL 15 1999



Ref: 8EPR-EP

Richard Zander
Bureau of Land Management
Buffalo Field Office
1425 Fort Street
Buffalo, Wyoming 82834

Re: Wyodak Coal Bed Methane Project
Draft Environmental Impact Statement

Dear Mr. Zander:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Region VIII office of the Environmental Protection Agency (EPA) has reviewed the referenced Draft Environmental Impact Statement (DEIS). We offer the following comments and concerns for your consideration in preparation of a Final Environmental Impact Statement (FEIS).

We understand the Proposed Action and Alternative 1- Expanded Project Area, propose development scenarios of 3,000 and 5,000 coal bed methane (CBM) productive wells respectively. These wells and their accompanying field gathering lines and compressors, plus servicing gas transmission lines and compressors, are located in a 3,600 sq mi analysis area of central Campbell and northern Converse Counties, Wyoming, within the eastern portion of the Powder River Basin, north and south of Gillette. Wells would be located on lands adjacent to producing coal mines along the eastern project boundary, and would extend to a western analysis boundary located from 18 to 36 miles in the west. This analysis area has been named the Wyodak CBM Project Area.

The EPA appreciates the BLM's cooperation in arranging for BLM project personnel and consultants to meet with us and other interested Federal Agencies to explain and discuss modeling methodology and results related to water and air quality issues. The BLM is to be complimented for the DEIS's disclosure of water and air quality impacts. However, we have remaining concerns with impacts that may require additional analysis or monitoring.

Subsequent to publication of the DEIS, additional interest in future Coal Bed Methane production for areas adjacent to the Wyodak CBM Project Area has been voiced. We have heard

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preliminary estimates of 20,000 productive wells. If there is evidence that this estimate is more than just speculation, the FEIS should discuss how the BLM plans to address additional environmental analysis related to this increased development.

Our review has identified significant concerns related to the amount of produced water that will be discharged on the surface,(58,000 ac-ft/yr for the Proposed Action) and the length (12 to 20 years) of this discharge. The FEIS needs to discuss in greater detail potential effects from this surface discharge, both direct and cumulative, on existing flora and fauna in the Project Area, anticipated changes in populations during the production years and how effective reclamation actions will be in restoring not only ground surface disturbances but the original ecosystem as well. Ecosystems are defined by the structure and function of plant and animal communities and by the habitats used. The FEIS must discuss the potential for invasion of noxious weeds and other undesirable vegetation in the Project Area due to produced water surface disposal.

The DEIS does not contain an overall BLM monitoring plan for surface environmental impacts. The potential for significant water quality and wetland impacts from produced water is extremely high in this analysis area. While the water management plans will provide an excellent start, it is not clear how the BLM will conduct its oversight responsibilities, nor how the overall monitoring data will be used to ensure BLM compliance with Federal laws and regulations. Please see our attached detailed comments for additional discussion.

The FEIS and ROD (record of decision) should include a coordinated plan to monitor effects and indicators of potential excursions/violations. Since this will be a complicated effort and should involve a large number of stakeholders in the development of a monitoring plan and management of produced data, a commitment in the FEIS and/or ROD is sufficient.

The EPA appreciates the opportunity to participate on the Wyodak Air Quality Advising Committee. With this participation, the EPA was assured that many of its primary concerns would be addressed prior to the air dispersion modeling effort. The EPA applauds the BLM's effort to include "Reasonably Foreseeable Future Actions" such as additional gas pipelines and expanded coal mining in its environmental impact analysis. By meeting the intent of the NEPA regulations, the BLM was able to identify significant visibility impacts that are forecasted to occur at a number of Class I areas in Montana and South Dakota. With this knowledge, state agencies and the EPA as a partnership can begin planning on ways of mitigating visibility impacts in these Class I areas.

Due to the overall significant visibility impacts predicted at the Class I areas due to cumulative sources, the EPA would expect to see a full array of mitigation actions and their associated cost and effectiveness at lowering impacts in the FEIS for the proposed project. This information would be essential for the public and decision-maker to make an informed decision on this major federal action and future actions.

As you are aware, a DEIS is being prepared for additional rail access to coal mines adjacent to the eastern edge of the Project Area. The Wyodak Coal Bed Methane Project FEIS

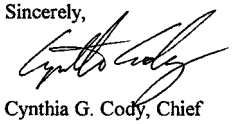
will need to include additional analysis in the Reasonably Foreseeable Future Actions impacts discussion based on air quality impacts from the Powder River Basin Expansion Project proposed by the Dakota, Minnesota & Eastern Railroad Corporation (DM&E). This additional analysis will need to include impacts from projected locomotive emissions and railyards as well as probable increased coal production air quality impacts.

We understand that the BLM is developing parameters for a Regional Assessment of present and future fossil fuel related activities, including coal and CBM production, in the Powder River Basin. The EPA applauds this decision and we offer our assistance in pursuing this assessment. Any applicable information related to the Regional Assessment should be included in the FEIS.

Based on the procedures the EPA uses to evaluate the adequacy of the information in the EIS and the environmental impacts of the proposed action, this DEIS will be listed in the Federal Register as Category E.C. - 2 (environmental concerns, additional information needed). A copy of our rating criteria is attached. This rating indicates that our review and the enclosed detailed comments have identified additional information, data and discussion in the FEIS.

The EPA appreciates the opportunity to review and comment on the DEIS. If we can provide further explanation of our concerns please contact me at (303) 312-6228, or Mike Hammer of my staff at (303) 312-6563.

Sincerely,



Cynthia G. Cody, Chief
NEPA Unit
Ecosystem Protection Program

Enclosure

cc: Elaine Suriano, EPA HQ, OFA
Mike Strieby, 8EPR-EP
Dana Allen, 8EPR-EP
Toney Ott, 8EPR-EP
Rich Muza, 8EPR-EP
Robert Edgar, 8EPR-EP
Dave Ruiter, 8EPR-EP

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommend for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

Monitoring the impacts of this project will develop a large amount of environmental data. Future analyses and assessments for future projects, permit renewals, etc., will require adequate access to information gathered now and throughout the project. Please explain what data management is planned. Where will monitoring data be stored? Will it be available through standard data bases and will it be accessible via the Internet?

The perceived short term benefits/impairments of additional water must be evaluated as well as long-term consequences of developing an aquatic system which is dependant on additional water which will eventually not be available. It should be clarified if water quality will worsen as the ground water is pumped over a number of years and the groundwater level lowers. Changing characteristics of the surface waters, such as the increase in bicarbonate, continuous flow and lower TDS values will alter the flora and fauna that are able to survive and prosper. As the original biotic congregate is displaced by one more suitable to the new conditions, an unstable condition could develop and should be monitored closely. At the end of the project, as the reversal of the aquatic characteristics begins, the aquatic system will again need to adjust. Highly unstable systems are susceptible to a wide variety of damaging scenarios, including stream bank failure, invasive/unwanted plant community development and the loss of water related beneficial uses. Monitoring the changes and interactions of the altered systems will be fundamental to maintaining a healthy aquatic system in the analysis area.

Impounded waters with unanticipated discharges not permitted by the State general or individual NPDES permits (unanticipated levels of produced water or storm exacerbated situations) should be expected. A monitoring and mitigation plan needs to be developed. In addition, there needs to be discussion related to future maintenance of the impoundment "dams" after the produced water is no longer available. Will the dams be removed and their impoundment area be reclaimed?

Standard conversion for the relationship for specific conductivity (SC) and total dissolved solids (TDS) may be adequate, but, if future data becomes available, a specific relationship would be developed (estimated) for the analysis area. The USGS or the State may already be using an area specific defined relationship. SC measurements taken by permittees and others can then be used with confidence as an indicator of water quality. Additional relationships in subregional areas for TDS and other indicator parameters may improve the ability to easily monitor water quality.

Water quality discussions seem to focus only on sediment and dissolved solids. The FEIS discussion should be revised to include potential toxic pollutants. Each and every discharge must be "free from toxins in toxic amounts". This State water quality standard is typically measured by a WET (Whole Effluent Toxicity) Test. The FEIS should disclose the toxicity of discharges from nearby existing CBM wells and estimate how many CBM wells are expected to have discharges which exhibit toxicity. The FEIS should also disclose the mitigation plans for toxicity, i.e., no pumping allowed until toxicity is removed or alternative disposal method is installed. It is anticipated that there may be toxicity problems from iron, manganese and salinity.

EPA DETAILED COMMENTS ON WYODAK COAL BED
METHANE PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT

GENERAL

Pages 2-1 and 2-2, Proposed Action discussion, in particular on page 2-2 states, "Development typically would result in wells drilled within productive portions of the project area on a spacing determined by the WOGCC. The remaining less productive portions of the project area may never have any activity." There needs to be additional discussion on the role of the BLM in ensuring that the public is well served by looking at possible production in the less-productive portions of the project area rather than by-passing these less productive portions.

WATER QUALITY

The EPA commends the BLM for requiring a water management plan to be submitted as part of an APD and its cooperating with State agencies.

The density of discharging wells, pods, compressors, collectors and pumping sites will be essential to good water management. The density of discharges will be especially important when there are multiple well operators, surface and mineral ownership. How will the density of discharges, multiple ownership and related factors be addressed by the BLM? How will water management plans be integrated?

All elements of the CBM collection and delivery process will need to dispose of water. Past discussions with the BLM did include the possibility that waters may not always be separated at the well head site. Will the process the BLM has developed adequately address waters discharges after the well head and well pods? Specifically, how will well waters not permitted by the State be monitored? If there are detectable impairments to the landscape and isolated waterbodies what corrective actions are available to the BLM?

It is not clear if the BLM will have the resources to fully evaluate the water management, continued complete inspections, and adequately monitor short and long-term environmental impacts (12 to 20 years of the project plus restoration and reclamation after methane pumping is reduced to minimal amounts). The amount of water discharged has the capability to alter the landscape and associated ecosystem significantly. Utilization of enhanced and seasonally interpreted aerial photography and GIS mapping technology to document changes in the aquatic landscape over the life of the project and for the years following the loss of CBM water discharges will improve the overall knowledge of the impacts to the analysis area.

Page 2-10. How are the temporary mud pits within each well area reclaimed upon completion of drilling activities? Is is recommended that mud pit reclamation efforts focus on protection of underlying ground-water resources.

Page 2-12. How are the pipeline corridors reclaimed upon completion of project activities? Pipelines can provide a conduit for the transport of contaminants in the subsurface and may result, over time, in impacting ground-water resources. It is recommended that pipeline reclamation efforts focus on protection of underlying ground-water resources.

Page 2-13. "Produced water contains an average (mean value) of 764 mg/l Total Dissolved Solids based on WDEQ discharge monitoring report data..." Was this water-quality data specific to historical coal bed methane development activities in the Powder River Basin? The reference cited does not specify the source area of the data.

Pages 2-15 to 2-20. The level of effort for planned ground-water monitoring should be commended. The only question/concern here is who will review all of this data and document any adverse impacts to the proper regulating entities?

Pages 3-7 to 3-18 (Table 3-6), Water Resources-Surface Water should be revised to include protection of aquatic life. The project area includes several streams which are designated for aquatic life:

Little Powder River	Warm water fishery Class-2
Belle Fourche River	Warm water fishery Class-2
Rawhide Creek	Marginal fishery Class-3
Antelope Creek	Warm water fishery Class-2
Little Thunder Creek	Warm water fishery Class-2

The remaining tributaries are Class-4 waters, protected for only livestock and irrigation as discussed in the DEIS on page 3-14. The FEIS should disclose current conditions in these fisheries and determine if aquatic life water quality standards will be achieved throughout the project life.

Page 3-25, There are a number of public water supply wells in the project area as well as many more domestic water supply wells. The use of contracts between coal bed methane developers and local well owners to provide for replacement of water if existing wells are impacted by the development activities should be commended. However, are such contracts put into place and enforceable in all instances?

Page 4-10, The first paragraph suggests that water quality problems can be mitigated through special conditions at sites when needed. It seems more appropriate to develop a basic plan for mitigating water quality as part of the EIS process. What are the standard requirements to mitigate sediment? And, as discussed above, what are the plans to treat toxic discharges? We recommend that the FEIS establish some trigger levels for water discharges. The following are examples of criteria/standards for expected pollutants:

TDS	1,000 - 2,000 mg/L
Chloride	200 - 550 mg/L
Iron	1 mg/L
Manganese	1 mg/L
Zinc	0.11 mg/L
Sulfate	500 Mg/L
WET	LC 50% (discharge lethal to 50% of test species)

We recommend contacting the Wyoming DEQ for more specifics.

Pages 4-22 to 4-44, The ground-water flow modeling effort for the DEIS looks to be a best effort based on the existing data base. Will this model be refined over time as new data is acquired to check the drawdown projections provided here? The drawdown projections from the model are significant. With the low recharge potential in the Powder River Basin, what are the long-term impacts to ground-water levels over time as the proposed project development occurs?

AIR QUALITY

Page 4-14, Mitigating Measures. The EPA recommends that costs to implement the mitigation measures and the effectiveness of the mitigation measures listed on pages 4-14 and 4-15 be addressed in the FEIS. Without this information, the decision-maker and the public have no basis on which to make a decision.

Page 4-68, Alternative 1 - Operational Impacts, third paragraph, second sentence. "These engines (i.e. Engines operating as of the end of April 1997) are already operating and are considered part of the monitored background and were not included in the air quality analysis." The EPA understands that far-field impacts do include sources permitted and reasonably expected to begin operation after 1995. Please clarify this point in the FEIS.

Page 4-71, Hazardous Air Pollutant Impacts, third paragraph, first sentence. "Therefore, to minimize the predicted risk, the largest compressor station (12,000-hp) should not be constructed and operated within ten kilometers of an established residence."

The EPA recommends that this distance restriction for the largest compressor station be part of the Record of Decision. The fourth paragraph on this page states that "...the WDEQ permitting process, especially for the largest compressor engine complex, would address mitigation to lessen the formaldehyde risk." WDEQ does not have any hazardous air emission regulations, and therefore, formaldehyde emissions would not be addressed in the air permit for the compressor station. Formaldehyde is listed as a hazardous air pollutant in 40 CFR Part 63 Subpart HHH - National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities. The Wyodak FEIS should state whether or not this regulation would be applicable to the proposed 12,000 hp compressor station.

Page 4-71, Hazardous Air Pollutant Impacts, fourth paragraph, second sentence. "Possible mitigation to lessen the formaldehyde risk could include raising the stack to reduce ground level impacts or adding a CO catalytic oxidizer... ." Recommend that the costs associated with the suggested mitigation be listed in the FEIS to provide information to the public and the decision-maker as to which mitigation could be suggested in the ROD.

Page 4-78, Visibility Impacts. "The impacts under the No Action Alternative would be expected to be similar to those described under Alterative 1." As stated on page 2-23, up to 2,500 of the proposed wells would be located on lands where CBM rights are owned by the federal government. With a 2,500 well difference, Alternative 1 would be expected to have a greater impact on visibility due to increased NOx emissions from additional compressor emissions associated with gas production. As stated in CEQ's 40 Most Asked Questions, Number 3, " "No Action" in such cases would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative to go forward." The EPA recommends that a "No-Action" Alternative be analyzed for environmental impacts so that its impacts can be compared to the impacts from the Proposed Action and Alternative 1.

SPECIFIC COMMENTS ON THE TECHNICAL REFERENCE DOCUMENT -
Wyodak CBM Project Air Quality Impact Analysis

Page 3-11, Section 3.2.3.1 Vehicle Road Dust, first paragraph, fugitive road dust equation. "p = number of days with more than 0.01 inches of precipitation; 100 for the expanded project area." Please provide justification for the 100 days/yr of precipitation. For an arid area, one would expect many fewer days that 100 per year especially for precipitation covering the entire project area. This comment also applies to Section 5.4.1.3 on page 5-21.

Page 5-34, Table 5-13, Cumulative Pollutant Emissions, Recommend that SO2 and PM10 emissions for locomotives be included in Appendix D - Emission Factors for Locomotives. These emissions will also contribute to visibility impacts at the sensitive receptor sites.

52

United States Department of the Interior

NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225

IN REPLY REFER TO:

BUREAU OF LAND MANAGEMENT
JUL 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY

July 14, 1999

N3615 (2350)

Richard Zander
Bureau of Land Management
1425 Fort Street
Buffalo, Wyoming 82834

Dear Mr. Zander:

The National Park Service (NPS) Air Resources Division has reviewed the Draft Environmental Impact Statement (DEIS) and the Air Quality Analysis for the Wyodak CBM Project, and has the following comments. The proposed Wyodak project is located 185 kilometers (km) and 230 km from Wind Cave National Park (NP) and Badlands NP, respectively. Both parks are mandatory Class I areas administered by the NPS. The proposed Wyodak project is also 90, 155, and 180 km from Devils Tower National Monument (NM), Jewel Cave NM, and Mt. Rushmore NM, respectively, which are Class II areas administered by the NPS.

The air quality analysis examined impacts from the proposed project and other sources in both the near and far fields. The near field analysis was performed with the EPA Industrial Source Complex Short Term Model (ISCST3). The annual nitrogen dioxide (NO_2) impact from the proposed Wyodak project is 9.0 micrograms per cubic meter ($\mu g/m^3$), which is below the Class II PSD increment of 25 $\mu g/m^3$. When Wyodak's impact is added to the 1996 monitored background NO_2 concentration and the modeled impact of all new emissions of NO_x constructed since 1996, the maximum concentration is 49 $\mu g/m^3$, which is below the National Ambient Air Quality Standard of 100 $\mu g/m^3$.

The far field analysis was conducted with the EPA CALPUFF/CALMET modeling system. This analysis used 1990 MM4 prognostic data as well as data from the National Weather Service's 5 surface and 3 upper air stations in the region. Impacts to the Class I and II areas were evaluated against the respective increments as well as visibility and acid deposition impacts. The impacts from the proposed Wyodak project and Wyodak plus other newly permitted increment consuming sources were evaluated. The impacts from the Wyodak project alone are well below the short and long term PSD Class I and II increments for NO_2 and PM_{10} at all of the NPS units modeled. The cumulative impact analysis indicates that the impacts are well below the short and long term Class I and II increments for NO_2, PM_{10} and SO_2. We realize that this was not a complete cumulative increment tracking analysis, due to the cut off emissions inventory year being new

emissions after 1996. We believe that although this is stated deep in the body of the text of the document, it should be emphasized in the Final EIS so as not to mislead the reader.

The reported impacts of nitrogen deposition from the Wyodak project are below levels expected to affect resources at any of the NPS units. In addition, the cumulative analysis indicates that nitrogen and sulfur deposition is below levels expected to affect resources at any of the NPS units.

The regional haze visibility analysis followed the recommendations of the Interagency Workgroup on Air Quality Modeling (IWAQM) and the NPS. Impacts calculated from the proposed Wyodak project alone, and the cumulative analysis sources, were included in the visibility analysis. The visibility analysis indicates that the Wyodak project alone would cause a change greater than 0.5 deciview (or a 5% change in background extinction) for 4 days at Badlands NP and for 3 days at Wind Cave NP. Based on the frequency, magnitude, and duration of the impacts, the NPS has determined that the impacts from the Wyodak project alone are not adverse.

The cumulative visibility analysis indicates significant adverse impacts to visibility in both the frequency and magnitude of the modeled impacts at both Badlands NP and Wind Cave NP. The NPS considers that a 10% change in extinction (1.0 deciview change) is an adverse impact in a NPS Class I area. The visibility analysis of non-project sources indicates that there are 87 days and 76 days of impact above 10% change in extinction at Wind Cave NP and Badlands NP, respectively. Badlands NP is only one of two National Parks in the country where the worst visibility days (the worst monitored 20% of days) are getting dirtier. This trend is contrary to the goal in the Regional Haze Regulations. The non-project analysis has actually underestimated the impacts to regional haze by not including the diesel soot particulate and SO_2 emissions from the coal haul trains.

We realize that Wyodak is only a small contributor to the modeled and monitored visibility impairment. Consequently, regional strategies will need to be developed to deal with the visibility issue. We are hopeful that the June 29, 1999, meeting held in Denver, Colorado, with the BLM, State of Wyoming, EPA Region VIII, U.S. Forest Service and NPS is the first step in the process of revising the Wyoming visibility State Implementation Plan to reduce there modeled and monitored visibility impacts to the Badlands and Wind Cave NPs.

If you have any questions regarding these comments, please contact John Notar of my staff at (303) 969-2079.

Sincerely,

John Bunyak
Chief, Policy, Planning and Permit Review Branch

BUREAU OF LAND MANAGEMENT
JUL 22 1999
BUFFALO FIELD OFFICE
BUFFALO, WY