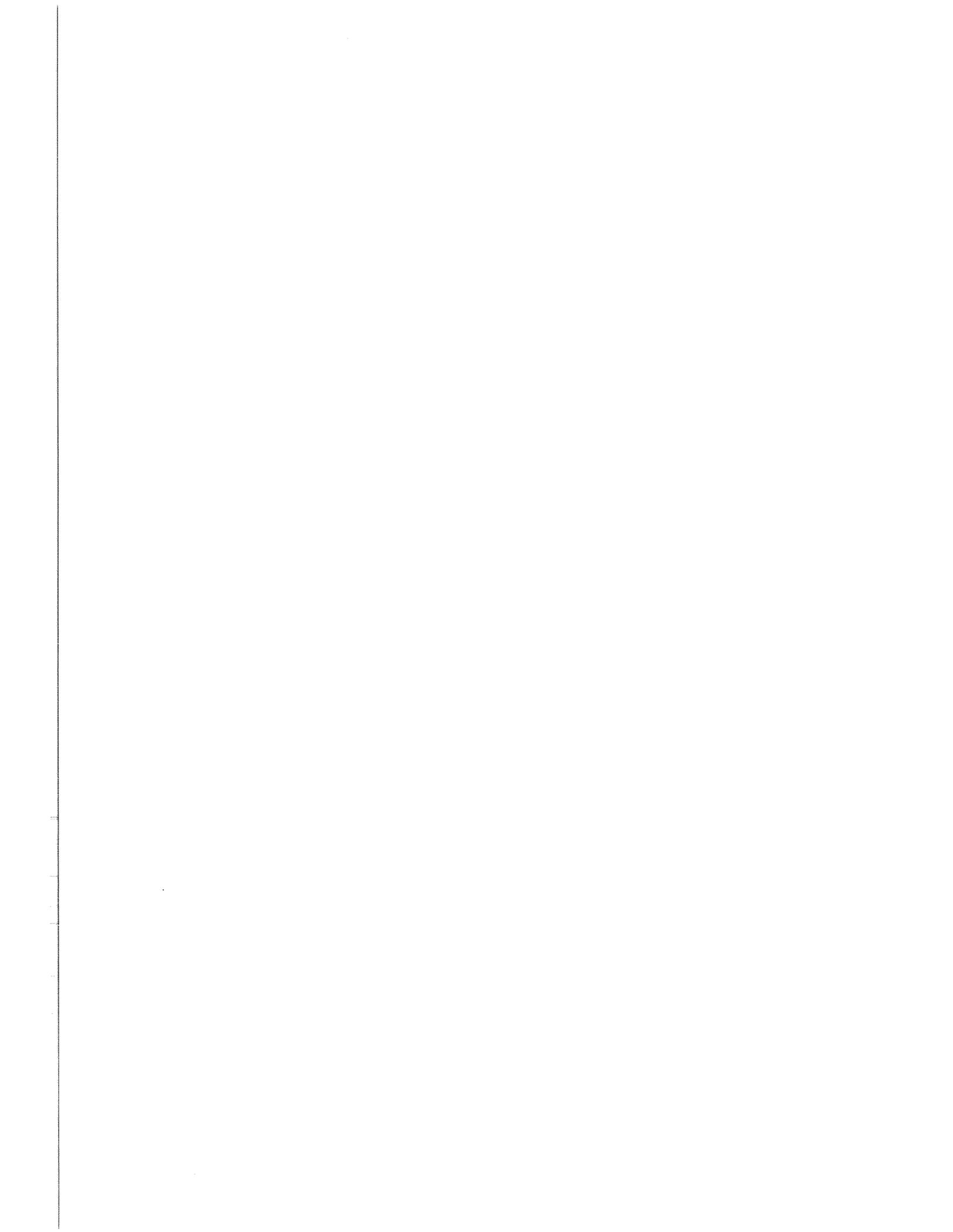


**APPENDIX H**

**COMMENT LETTERS AND RESPONSES**





United States Department of the Interior

LAND MANAGEMENT  
CASPER DISTRICT OFFICE



BUREAU OF RECLAMATION 97 SEP 23 PM 1:39  
Great Plains Region  
Wyoming Area Office  
P. O. Box 1630  
Mills, Wyoming 82644-1630

IN REPLY REFER TO:

WY-450  
ENV-6.00

SEP 22 1997

MEMORANDUM

To: Bureau of Land Management, Casper District Office, 1701 East E Street, Casper WY 82601  
Attention: Ms. Nancy Doelger

From: John H. Lawson  
Area Manager, Mills WY

Subject: Draft Environmental Impact Statement (EIS) of the Powder River Coal Lease Application and Thundercloud Coal Lease Application

Thank you for providing the Bureau of Reclamation (Reclamation) Wyoming Area Office (WYAO) with the opportunity to comment on the above-mentioned subject. Our Office has reviewed the draft EIS, and it was noticed that the Lease-By-Application tracts are located within the Cheyenne River basin. Reclamation's Angostura Reservoir, under administration by Reclamation's Dakotas Area Office (DKAO), is situated on the Cheyenne River in South Dakota. As this is the case, the WYAO and DKAO must be notified of any change in water quality and quantity at the Wyoming-South Dakota state line. In addition, any change in water quality and quantity of water in the Cheyenne River must be addressed in the EIS.

If we can be of further assistance, please let us know.

cc: U.S. Bureau of Reclamation  
Dakotas Area Office  
Dennis Breitzman, Area Manager  
P.O. Box 1017  
Bismarck ND 58502



REPLY TO  
ATTENTION OF

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

BUREAU OF LAND MANAGEMENT  
CASPER DISTRICT OFFICE

October 8, 1997

97 OCT 14 PM 1:35

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

Ms. Nancy Doelger  
Bureau of Land Management  
Casper District Office  
1701 East "E" Street  
Casper, Wyoming 82601

Dear Ms. Doelger:

This is in response to your agency's request for comments on the Draft Environmental Impact Statement for the Powder River Coal Lease Application and Thundercloud Coal Lease Application received August 20, 1997.

A review of the provided information indicates that the document accurately reflects the need for authorization in accordance with Section 404 of the Clean Water Act. The Corps of Engineers regulates the discharge of dredged and fill material into wetlands and other waters of the United States primarily under the authority of the Clean Water Act.

As the EIS states, the Corps requires that a detailed delineation and identification of all waters of the U.S. (including wetlands) contained in the mine permit area needs to be accomplished prior to receiving authorization for surface coal mining activities. Kerr-McGee Coal Corporation submitted a jurisdictional delineation of wetlands and other waters of the U.S. on the Thundercloud Tract on July 10, 1997. A September 8 & 9, 1997 site visit resulted in minor revisions to that delineation. Based upon the information submitted and the referenced site visit, it has been determined that the wetland and waters of the U.S. delineation lines shown on the plan entitled, "Wetlands and Other Waters of the United States Inventory," consisting of 1 sheet, dated 9-29-97 with no revisions, and as clarified in Addendum D10 - Wetlands and Other Waters of the U.S. Inventory, Kerr-McGee Coal Corporation, Thundercloud Tract, dated September 1996, and revised September 1997, are an accurate depiction of wetlands and waters of the United States contained in the Thundercloud Tract. The delineation identifies a total of 104.39 acres of waters of the U.S. of which 56.65 acres are wetlands. There is an additional 0.97 acres of non-jurisdictional wetlands also contained in the tract. Totals in section 3.8 of the EIS should be modified to reflect these numbers.

No request has been made for the proposed Powder River Coal Application tract but one is anticipated.

Section 4.5.7 on page 4-44 states that no cumulative are expected to occur. The document should justify that conclusion. The Jacobs Ranch Mine has been authorized to impact over 90 acres of waters of the U.S. (80 acres which are wetlands). The Rochelle and North Antelope Mines have been authorized to impact 21 and 5 acres, respectively. Although it is anticipated that all wetlands and other waters will eventually be re-established through mitigation techniques, there is a period of time where wetland functions are lost. Additionally, reclamation of the mine site may not replace exact functions and landscape features which should be a consideration in cumulative effects evaluations.

Thank you for the opportunity to comment on the EIS. If you have any questions concerning this matter, please contact Chandler Peter at (307) 772-2300. Please refer to File No. 199740368 in any future correspondence.

Sincerely,

  
for Matthew A. Bilodeau  
Program Manager  
Wyoming Regulatory Office

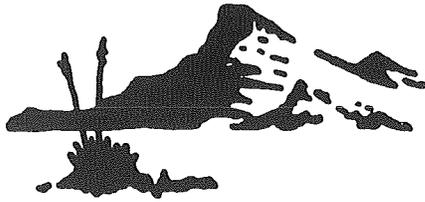
Copies furnished:

Darryl Maunder  
Kerr-McGee Coal Corporation  
Caller Box 3013  
Gillette, Wyoming 82717

Jim Orpet  
Intermountain Resources  
P.O. Box 1589  
Laramie, Wyoming 82073

POWDER RIVER BASIN RESOURCE COUNCIL

23 North Scott • Sheridan, WY 82801 • (307) 672-5809



October 27, 1997

FAX TRANSMISSION

97 OCT 28 PM 12:50

POWDER RIVER BASIN RESOURCE COUNCIL

Ms. Nancy Doelger  
Bureau of Land Management  
Casper District Office  
1701 East E Street  
Casper, Wyoming 82601

RE: Comments on the EIS for the Powder River Coal Lease Application and the Thundercloud Coal Lease Application

Dear Ms. Doelger,

The Powder River Basin Resource Council is a membership based organization dedicated to the conservation of our unique land, minerals, water and clean air consistent with the reasonable use of these resources to sustain the livelihood of present and future generations. We are also dedicated to the preservation and enrichment of our agricultural heritage and rural lifestyle. The organization also has a longstanding concern and involvement in coal leasing and development.

The Proposed Action:

**1** The Environmental Impact Statement (EIS) notes that under the proposed action the Powder River Coal Company would acquire 4,023.46 acres and an estimated 489 million tons of federal coal. The Kerr McGee Coal Company would acquire 3,395.91 acres and an estimated 427 million tons. These seem to be unusually large lease by application tracts. Has the BLM issued tracts to one company this size before? If so, when?

**2** In the case of the North Antelope and Rochelle mines this tract will secure an additional 7 to 8 year supply of coal at their projected levels of production. In the case of Kerr McGee the proposed lease would ensure 12 to 13 years of coal at their projected levels of production. How many years of coal reserves do they currently have? When was the last coal lease sold to these mines? How long were those reserves projected to last? Why are they coming back so soon to lease again? Why does the BLM need to supply this large coal reserve? Why not make it smaller and lease later when the price of coal could be higher?

Environmental Consequences - Groundwater:

3 We believe that the EIS is deficient in the analysis of the impacts to groundwater. On page 4-36 the document refers to a groundwater drawdown study and model that was to be conducted as part of a cooperative agreement signed in 1993. The results of this study are not included and the document states they are being edited. Moreover, that study did not take into account mining all the existing leases or proposed leases nor is that analyzed in this EIS. Rather, the BLM attempts to abdicate this responsibility to the state in the permitting process. In the analysis that was done by the coal companies please explain how the data was extrapolated and what independent analysis was done to verify the data. Also, no drawdowns were modeled for the Wasatch aquifer. Why not?

4 What are the impacts on the lower Fort Union aquifer. This aquifer becomes more critical and used as the coal aquifer is depleted yet, the EIS did not include any modeling or projected impacts on the Fort Union aquifer.

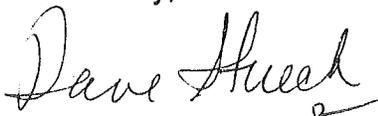
5 We are particularly concerned about the overlapping impacts of coal mining and coalbed methane development. We understand that additional coalbed methane development is planned in this area.

6 We are concerned about the quality of groundwater after mining. On page 4.44, the EIS discusses several analyses of wells completed in spoil aquifers that were conducted by the mines. Some of these analyses are outdated and any recent ones had Total Dissolved Solid (TDS) levels ranging from 400 to 25,000 mg/L. How many backfill wells were tested in the 1996 Gillette Area Groundwater Monitoring Organization (GAGMO) a report? Has there been any independent testing? What water replacement requirements exist when the water is unfit for domestic or livestock purposes? Why didn't the EIS do some independent analysis of cumulative groundwater impacts?

We have requested an on-the-ground tour of the proposed lease areas and may have additional comments to submit regarding habitat impacts, cultural resources or other issues.

Thank you for this opportunity to comment.

Sincerely,



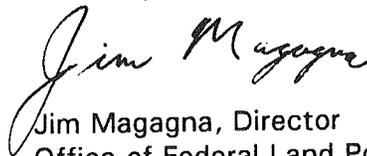
Dave Stueck  
PRBRC Member

Nancy Deolger  
Powder River/Thundercloud DEIS  
October 28, 1997  
Page Two

Department, and the State Geological Survey for your review. I trust you will give them careful consideration.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script that reads "Jim Magagna".

Jim Magagna, Director  
Office of Federal Land Policy

JM:jh  
Enclosures

WYOMING  
GAME AND FISH DEPARTMENT



6

October 7, 1997

WER 8754  
Bureau of Land Management  
Casper District Office  
Draft Environmental Impact Statement  
Powder River and Thundercloud Coal Lease  
Applications  
SIN: 97-140  
Campbell County

WYOMING STATE CLEARINGHOUSE  
OFFICE OF FEDERAL LAND POLICY  
ATTN: JULIE HAMILTON  
HERSCHLER BUILDING, 3W  
CHEYENNE, WY 82002

Dear Ms. Hamilton:

The staff of the Wyoming Game and Fish Department has reviewed the Draft Environmental Impact Statement for the Powder River and Thundercloud Coal Lease Applications. We offer the following comments.

1. Public Land Access, Powder River Lease. If the proposed lease is issued, there will be a loss of accessible public land along the Piney Canyon Road. This area receives use by the public for hunting and other wildlife-based recreation. Section 4.3.11 states Powder River Coal Company has agreed to help the U.S. Forest Service finance land exchanges within the area to acquire more accessible public land. As more information becomes available, the amount and location of lands to be acquired should be identified. If there is still a net loss of accessible public land or wildlife-based recreation opportunities, the Bureau of Land Management should assure these losses are mitigated.
2. Cumulative Impacts. From a wildlife habitat perspective, we believe the attempt to minimize the potential cumulative impacts (Section 4.5, third paragraph, p 4-25) is misleading. We agree the numbers of acres and type of vegetation disturbed would vary from year to year. However, until the habitat is restored to pre-mine condition, the habitat function may not be restored. This is especially true for areas of medium to high shrub density. Therefore, the impact from mining is cumulative until the habitat function is restored.



# WYOMING STATE GEOLOGICAL SURVEY

P.O. BOX 3008 • LARAMIE, WYOMING 82071-3008  
 (307) 766-2286 • FAX 307-766-2605 • E-MAIL [wsgs@wsgs.uwyo.edu](mailto:wsgs@wsgs.uwyo.edu)

STATE GEOLOGIST - Gary B. Glass

## GEOLOGICAL SURVEY BOARD

*Ex Officio*  
 Governor Jim Geringer  
 Douglas R. Dow  
 Philip L. Dubois  
 Gary B. Glass

*Appointed*  
 Nancy M. Deelger  
 Victor R. Haslforth  
 Ronald A. Baugh  
 Charles M. Love  
 Stephen L. Payne

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 Robert M. Lyman

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 James C. Case

*Geologic Mapping*  
 Alan J. Ver Ploeg

*Industrial Minerals/Ironium*  
 Roy E. Harris

*Metals/Precious Stones*  
 W. Dan Hausel

*Oil and Gas*  
 Rodney H. De Bruin

*Publications*  
 Richard W. Jones

October 13, 1997

## MEMORANDUM

**TO:** Julie Hamilton, Wyoming State Clearinghouse

**FROM:** Gary B. Glass, P.G., State Geologist

**SUBJECT:** Draft Environmental Impact Statement for the Powder River Coal Lease Application (WYW136142) and Thundercloud Coal Lease Application (WYW136458) (State Identifier # 97-140)

We have the following comments regarding this document:

First, we support both of these proposed coal lease sales. There is a growing need for the low-sulfur, compliant coal in these leases. This need and the importance of the coal mining industry to Wyoming are addressed in the document. So is the need to lease these tracts as expeditiously as possible.

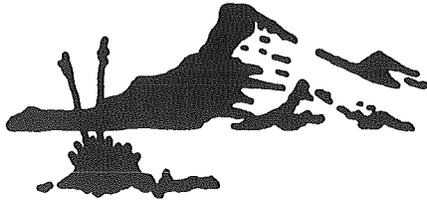
- 1 There was mention of chemical changes to the soil as a result of mining. Do the changes pose any documented or potential problems that need discussion?

2 There is some potential for finding significant mammalian fossils in the Wasatch and Fort Union outcrops in the lease areas. The document addresses this potential and notes that paleontologic surveys have been completed on the Powder River tract. Are there plans for a similar study of the Thundercloud tract?

3 On page 3-8, the average analysis of the Wyodak coal reportedly taken from Glass and Jones (1992) is incorrect. The volatile matter should be 30.7%, and the moisture content 29.8%. The analysis was also on an as-received basis, therefore, the moisture content is not an "equilibrium moisture".

4 In regard to the section on bentonite (p. 3-10), this clay is not used in the manufacture of concrete. Bentonite is also not found in the Tertiary units that crop out on or near the lease tracts.

5 Because Wyoming has passed legislation requiring the licensure of geologists practicing before the public, it would be appropriate to identify those licensed individuals listed in Table 5-2 on pages 5-3 and 5 4.



## POWDER RIVER BASIN RESOURCE COUNCIL

9

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

December 1, 1997

Ms. Nancy Doelger  
Bureau of Land Management  
Casper District Office  
1701 East E Street  
Casper, Wyoming 82601

97 DEC -2 PM 1:23

BUREAU OF LAND MANAGEMENT  
CASPER DISTRICT OFFICE

RE: Additional Comments regarding the EIS and the proposed coal leases for Powder River Coal Company and the Kerr McGee Coal Company

Dear Ms. Doelger:

The Powder River Basin Resource Council has the following additional questions and comments concerning the above referenced leases since our tour of the proposed lease areas on November 6th.

1 First, it became clear from the tour that there is a real question about the need for leasing, particularly in the case of the Thundercloud tract. According to Kerr McGee's representative Mr. Turpin, Kerr McGee has not mined the 132 million tons of coal they leased in 1992. This being the case we want to see more justification for the need to lease this tract at this time? It seems the answer lies in the fact that the opportunity for competitive bidding is much less, according to Mr. Gaskill of the BLM, because ARCO is getting out of the coal business and the adjacent Thunderbasin mine is up for sale. Therefore the chance of any competitive bidding is not very likely. It appears that the decision to place the Thundercloud tract up for lease is opportunistic and not a true or urgent need to maintain current production levels.

2 Please include details and facts that justify the need for these leases. Both companies say they need them to meet contracts yet, we see no proof of that. Please include maps in the final EIS showing previous lease tracts and current mined out or mining areas. These leases appear to be speculative in nature and with the price of coal so low why is the BLM leasing at the time? Please discuss how the BLM values or prices the coal? Is the coal priced on the basis of overburden? How has the BLM considered or analyzed delaying leasing until the price of coal improves or competition improves? Please include some discussion of the important issue of getting the best value for this public resource.



recycled paper

3

There also needs to be a more detailed discussion in the EIS on the public lands that will be taken out of public use that are currently used for recreation and hunting. How many public surface lands are involved and what sort of mitigation is proposed?

4

Please included a better description of the cultural resources in these lease areas and mitigation plans for the sites.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Dave Stueck". The signature is written in black ink and includes a small flourish at the end.

Dave Stueck  
PRBRC Member

## 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."

RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

Letter 1: Bureau of Reclamation, Great Plains Region, Wyoming Area Office, Casper, Wyoming

As explained in the EIS, the Powder River and Thundercloud LBA tracts are maintenance tracts for the existing North Antelope, Rochelle, and Jacobs Ranch Mines. Therefore, if they are leased, there would be a continuation of ongoing mining activities, not new mining activities. Please refer to Sections 4.1.5 and 4.5.5 of the EIS for a discussion of potential impacts to surface water quality and quantity. State and federal regulations require that all surface runoff from mined lands be treated as necessary to meet effluent standards. The current approved mining and reclamation plans for the North Antelope, Rochelle and Jacobs Ranch Mines include sediment ponds and other sediment control devices designed to control surface water quality impacts on the existing leases. If the two LBA tracts are leased and before they can be mined, the existing mining and reclamation plans must be amended to include the LBA tracts and the amended plans must be approved. The amended mining and reclamation plans would include sediment control for the additional area of disturbance at each mine.

The Dakotas Area Office has been added to the mailing list for the FEIS.

Letter 2: Department of the Army, Corps of Engineers, Omaha District, Omaha, Nebraska

The wetland delineation discussion of the Thundercloud tract in Section 3.8 and the wetland cumulative impact discussion in Section 4.5.7 have been updated or revised in accordance with the information and comments provided in your comment letter.

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

Letter 3: Powder River Basin Resource Council, Sheridan, Wyoming,  
October 27, 1997

*(Note: Responses are numbered in reference to numbered paragraphs in the comment letter.)*

Paragraph 1:

As indicated in Table 1-1 of the draft and final EIS documents, the two largest federal coal leases issued under the lease by application process were: the West Black Thunder lease, issued to Thunder Basin Coal Company in 1992, which included approximately 3,500 acres and 429 million tons of minable coal; and the North Antelope/Rochelle LBA, issued to Powder River Coal Company in 1992, which included approximately 3,000 acres and 403.4 million tons of coal. Several large leases were issued after the 1982 lease sale, including the original Rocky Butte lease (approximately 4,900 acres, and a lease to the Buckskin Mine (approximately 3,275 acres). Prior to that, leases issued in the late 1960s and early 1970s include: a lease now owned by the Caballo Rojo Mine (5,251 acres, 1/20/71), a lease now owned by the Black Thunder Mine (5,844 acres, 12/1/66), a lease now owned by the Caballo Mine (5,250 acres, 12/1/67), and a lease now owned by the Cordero Mine (6,500 acres, 3/1/71).

Paragraph 2:

Question 1: *How many years of coal reserves do they currently have?*

As of January 1, 1997, there were approximately 269 million tons of remaining recoverable reserves at the Jacobs Ranch Mine. This would be mined out in approximately 10 years at the No Action Alternative production rate of 27 million tons per year. (See draft and final EIS documents, page 1-9.)

At the North Antelope and Rochelle Mines there are approximately 665 million tons of remaining permitted recoverable coal. If this were mined at the currently permitted rate of 65 million tons per year, it would take 10 years. However, Powder River Coal Company (the applicant) has evaluated the remaining reserves in their existing leases, and determined that, due to quality problems, not all of the coal in the existing leases is currently marketable unless it can be mixed with higher quality reserves like those in the Powder River LBA tract. As a result, they anticipate that their marketable reserves would be mined out

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

in 2002 without the additional higher quality coal in the LBA tract. Powder River Coal Company applied for the Powder River LBA tract in order to maintain a blend of coal quality needed to meet customer specifications at the currently permitted production rates and to maximize the use of their already leased, lower quality reserves. (See the FEIS, page 1-9, for additional discussion of this topic.)

Question 2: *When was the last coal lease sold to these mines?*

The Jacobs Ranch Mine was most recently issued a lease effective October 1, 1992. The North Antelope and Rochelle Mines were also most recently issued a lease effective October 1, 1992. (see draft and final EIS documents, Table 1-1 and page 1-5.)

Question 3: *How long were those reserves projected to last?*

According to the "*Final Environmental Assessment for the North Antelope and Rochelle Coal Lease Applications for Powder River Coal Company*", May 1992, page 10, it was anticipated that the lease issued in 1992 would extend the life of the North Antelope Mine and Rochelle Mines by 10 years and 8 years respectively at the 1992 estimated production rates of 12 million tons and 18 million tons per year, respectively. Using the currently permitted production rates of 65 million tons per year, the coal leased in 1992 represents 6.2 years of production.

According to the "*Jacobs Ranch Federal coal Lease Application Environmental Assessment*", June 1991, page 11, it was anticipated that the lease issued in 1992 would extend the life of the Jacobs Ranch Mine by approximately 8 years at the 1992 estimate production rate of 16.8 million tons per year. Using the currently permitted production rates of 27 million tons per year, the coal leased in 1992 represents 5.4 years of production.

Question 4: *Why are they coming back so soon to lease again?*

The leasing and permitting process is lengthy, so the companies must plan ahead in order to acquire and market the coal. The Powder River and Thundercloud tracts were applied for in 1995, decisions on leasing these tracts are scheduled for 1998, and if the two tracts are leased, the permitting process will probably take a year or two to complete, which will be 1999 or 2000. That will be 7 or 8 years after the two previous LBAs

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

were issued to the current applicants, and the reserves in the 1992 leases were predicted to last for 8 to 10 years as indicated in the response to question 3 above. Also, as indicated above, the production rates at these mines have increased, so the existing reserves will, in fact, be mined more quickly than anticipated in 1992.

*Questions 5 & 6: Why does BLM need to supply this large coal reserve? Why not make it smaller and lease later when the price of coal could be higher?*

BLM evaluates leasing maintenance LBA tracts in response to applications filed by companies with an interest in acquiring them. The mines apply for coal based on their need for additional coal to extend the lives of their existing mines.

At current rates of production at the North Antelope, Rochelle and Jacobs Ranch Mines, the coal in the Powder River and Thundercloud LBA tracts is projected to be mined in approximately 8 and 11 years, respectively. As indicated in the response to Question 4, approximately 5 years will probably elapse between the time the Powder River and Thundercloud tracts were applied for (1995), and the time they would be permitted to mine if they are leased (estimated 2000). Reducing the size of the tracts would reduce the time it takes to mine them, but it would not significantly change the time or expense (for both the regulatory agencies and the mining operators) that it takes to lease and permit them.

Delaying the lease sales until the price of coal is higher is considered in the draft and final EIS documents as Alternative 4 (see Page 2-11 of the draft and final EIS documents). As indicated in the EIS, an increase in coal prices in the Powder River Basin could increase the fair market value of the coal when it is leased, which would potentially increase the bonus bid received for the coal at the time it is leased. There is no way to predict when or if coal prices are going to increase, however, if they do, the royalty that the government receives for the coal at the time it is sold will increase. Royalty payments are the largest source of income to federal and state governments from the leasing and mining of federal coal.

Paragraph 3:

The results of the groundwater drawdown study discussed in

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

the DEIS on page 4-36 are included in the FEIS, and that analysis is independent of the analyses done by the coal companies. Figure 4-3 of the draft and final EIS documents includes a prediction of the cumulative worst case drawdown for the existing leases owned by the Jacobs Ranch, Black Thunder, North Rochelle, Rochelle and North Antelope Mines, and the Thundercloud and Powder River Tracts.

For the Powder River tract, the extent of the 5-foot drawdown was predicted by modeling. For Thundercloud, the extent of the 5-foot drawdown contour presented in the approved Jacobs Ranch Mine mining and reclamation permit was extended by the same distance that mining of the Thundercloud LBA tract of the Thundercloud LBA tract would extend the coal pit. This extrapolation is consistent with the previous modeling results, which are evaluated by comparing them with actual drawdowns measured in monitoring wells. Evaluation of past predictions prepared during the leasing stage with predictions prepared during the permitting stage indicates that the more detailed analysis that is done as part of the permitting process may result in minor changes to the predicted extent of the 5-foot drawdown, but not the general type and magnitude of groundwater impacts that can be expected as a result of maintenance leasing by existing mining operations.

As explained in the draft (page 3-20 and 4-40) and final (pages 3-19, 3-20, and 4-42) EIS documents, the sandstone and coal aquifer units within the Wasatch Formation are not continuous so the Wasatch is not considered a regional aquifer, and the Wasatch Formation within the Thundercloud and Powder River LBA tracts includes relatively little saturated sand. This is why the Wasatch Drawdown is not modeled, as indicated on pages 4-7 and 4-37 of the DEIS and pages 4-7 and 4-38 of the FEIS.

Paragraph 4:

The cumulative impacts to the sub-coal Fort Union Formation are discussed on pages 4-42 and 4-43 of the DEIS, and 4-44 and 4-45 of the FEIS. No new sub-coal Fort Union Formation wells are planned under either of the action alternatives, however, the lives of existing sub-coal water supply wells would be extended and therefore additional water would be withdrawn from the sub-coal Fort Union if the LBA tracts are mined as extensions of the existing operations. In the area analyzed by the DEIS, the only

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

permitted wells greater than 1000 feet deep completed in the Fort Union Formation that do not belong to mining companies are wells that belong to the City of Wright. Extending the time that water is withdrawn from the sub-coal Fort Union by the mines as a result of mining the LBA tracts is not expected to impact these wells.

Paragraph 5:

Currently, no coal bed methane production is being reported in the area of either LBA tract. A search of the December, 1997 PI/Dwights Location Drilling & Completion Database identified seven wells with a total depth of less than 1000 feet in Townships 41-43 North, Ranges 70 and 71 west. One of these wells was completed in the Fort Union in 1983 and ceased production in 1986; four of the wells were drilled in 1994 by a company named Energx, but have never reported production; and the remaining two wells were stratigraphic tests drilled by Western Gas Resources in 1995 and 1996. No new locations have been reported in this area. This information based on data submitted to the Wyoming Oil and Gas Conservation Commission, which must approve all oil and gas well drilling in the state.

As indicated in the cumulative impact analysis in the DEIS and the FEIS, the area of coal bed methane development is expected to continue southward in the direction of the southern six coal mines. If coal bed methane resources are developed adjacent to these mines, the resulting groundwater drawdown in the Wyodak coal seam would be expected to overlap with the drawdown caused by mining the Wyodak coal seam.

Paragraph 6:

Question 1: *How many backfill wells were tested in the 1996 GAGMO report?*

Fifty-two backfill well quality tests were reported in the in the 1996 GAGMO report (which summarizes 1995 monitoring data).

Question 2: *Has there been any independent testing?*

The data presented in the Gillette Area Groundwater Monitoring Organization (GAGMO) reports are collected by the mining companies. Several of the mines use independent contractors to sample wells and independent labs to analyze water quality.

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

*Question 3: What water replacement requirements exist when water is unfit for domestic or livestock purposes?*

The Wyoming Environmental Quality Act W.S. 35-11-415(b) (xii) states:

"For surface coal mining operations, replace in accordance with state law the water supply of an owner of interest in real property who obtains all of part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where the supply has been affected by contamination, diminution, or interruption proximately resulting from the surface coal mine operation."

*Question 4: Why didn't the EIS do some independent analysis of cumulative groundwater impacts?*

The BLM participated in the cooperative agreement to develop an independent model evaluating impacts to groundwater quantity, which was used in the previously mentioned pilot study involving the Jacobs Ranch, Black Thunder, and North Rochelle Mines, as discussed in the DEIS and FEIS documents. Four plates summarizing the results of this pilot study are included in the FEIS. This model was also used to evaluate coal bed methane development in the Lighthouse coal bed methane project area. The modeling done by the mining companies is technically evaluated by the Wyoming Department of Environmental Quality, Land Quality Division, and the modeling results are compared with monitoring data collected by the mines. The monitoring wells are a requirement of the mining and reclamation permits

U.S. Geological Survey Water Resources Investigations Report 88-4046, also known as the US Geological Survey CHIA, describes independent geochemical studies relating to post-mining groundwater quality. A comparison of the results of these studies with the water quality analyses that have been reported for the backfill monitoring wells in GAGMO do not suggest that the monitoring being done by the companies is unreliable.

Letter 4: U.S. Forest Service, Douglas, Wyoming

As indicated in the FEIS, the cultural survey for the Thundercloud LBA Tract has been completed, and has been sent to SHPO for review.

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

Letter 5: State of Wyoming, Office of the Governor, Cheyenne, Wyoming

Comment 1.

Wyoming State Law requires that water wells damaged as a result of surface coal mine operations be replaced. The Wyoming Environmental Quality Act W.S. 35-11-415(b)(xii) states: "For surface coal mining operations, replace in accordance with state law the water supply of an owner of interest in real property who obtains all or part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where the supply has been affected by contamination, diminution, or interruption proximately resulting from the surface coal mine operation." This requirement is reinforced in the mining and reclamation permits that must be approved by Wyoming Department of Environmental Quality-Land Quality Division before a mine can begin operating. For example, the mining permits for both the North Antelope and Rochelle Mines include the following commitment:

The North Antelope and Rochelle Mines "will cooperate with the owner on site-specific mitigation plans for all existing water rights. A typical mitigation plan will include: documenting that drawdown has occurred, lowering the pump so that more water is available, and if necessary, installing a pump with a larger lift capacity. If further mitigation is needed" the North Antelope and Rochelle Mines "will drill a new well into the Fort Union Formation below the Wyodak-Anderson coal seam, and a solar pump or windmill will be installed. This mitigation plan will insure that no water rights will be adversely affected by mining operations."

The mining and reclamation permits also require monitoring to keep track of the impacts caused by surface coal mining.

Letter 6: Wyoming Game and Fish Department, Cheyenne, Wyoming

Comment 1. Public Land Access, Powder River Lease.

A number of federal/non-federal land exchanges between the United States Forest Service (USFS) and private interests have been accomplished or are in various stages of completion on the Thunder Basin National Grasslands. To date, Powder River Coal

RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

Company has participated in partnership with the USFS in fourteen proposed exchanges. Twelve of the exchanges, involving 60,693 acres, have been completed.

The most recent land exchange, known as the LLC Land Exchange (Fiddleback Ranch) involved private lands located in Converse and Campbell counties, Wyoming that are situated along Antelope Creek and the Cheyenne River south and southeast of the North Antelope and Rochelle mines.

Some of the benefits of this exchange that the USFS identified were:

The exchange would eliminate 56 isolated Federal parcels of land encompassing 13,367 acres and would create a nearly contiguous block of National Forest System land in excess of 50,000 acres.

The exchange would make eight parcels of State School Trust lands, encompassing 2600 acres, more accessible and usable by the general public.

Conflicts of crossing private lands to reach public lands would be decreased.

The loss of accessibility to public lands is long term, but it is not permanent. The public ownership of the surface does not change with the issuance of a lease to mine coal, and public access will be restored after mining and reclamation are completed.

Comment 2: Cumulative Impacts.

The statement referenced in your comment letter is in the introductory paragraphs to the cumulative impact analysis (Section 4.5, third paragraph, p. 4-25). It does not describe an impact, it describes the existing situation, i.e., that the number of acres and types of vegetation disturbed by mining varies from year to year. The cumulative vegetation and wildlife impacts are described in Sections 4.5.8 and 4.5.9. The impacts described in those sections include:

"The reduction in acreage of big sagebrush vegetation type would, therefore, reduce the carrying capacity of the reclaimed lands for pronghorn and sage grouse populations."

RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

"Cumulative impacts to most wildlife will increase as additional habitat is disturbed but will moderate as more land is reclaimed."

"Lease of the LBA tracts would increase the area of habitat disturbance in the southern group of mines by 22%, and would enlarge the area where daily movement is restricted."

Letter 7: Wyoming State Historic Preservation Office, Cheyenne, Wyoming

As indicated in the draft and final EIS documents, cultural resource surveys have been conducted on both the Powder River and Thundercloud LBA tracts at the Class III level, and these reports have been submitted to your office.

Letter 8: Wyoming State Geological Survey, Laramie, Wyoming

Paragraph 1:

The soils in the LBA tracts and the potential environmental consequences of the chemical changes to the soil are described in Sections 3.4 and 4.1.3 of the draft and final documents. As indicated in those sections:

the reclaimed soils are more uniform in type, thickness and texture;

the most suitable soils are salvaged and used for reclamation;

since only the better soils are salvaged, the average quality of topsoil would be improved following reclamation.

Soils that are not suitable (and therefore not used as topsoil material during the reclamation process) include soils with high alkalinity, salinity or clay content.

Paragraph 2:

The Thundercloud tract was not surveyed for paleontological resources because rock outcrops and/or rock materials that could contain paleontologic remains are not present at the surface on that tract. This is now stated in the EIS.

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Paragraph 3

In the draft EIS document, the percentages of volatile matter and moisture content were rounded. The final EIS document has been corrected to include the more precise percentages.

Paragraph 4

The statement that bentonite is used in concrete has been removed in the final EIS. Concrete was included in the draft EIS because it is included in a "partial list of products in which bentonite is used, either in the processing of those products or directly in the products themselves" that was prepared for a BLM publication. In the paper "Bentonite Mining in the Black Hills Region", published in the 1988 Wyoming Geological Association Guidebook on the eastern Powder River Basin and Black Hills (page 312), it states: "Bentonite added to cements, mortars, and concretes suppresses the bleeding of water."

Paragraph 5

Table 5.2 has been revised.

Letter 9: Powder River Basin Resource Council, Sheridan, Wyoming,  
December 1, 1997

Paragraph 1

The responses to the questions asked in paragraph 2 of your 10/27/97 comment letter explain the need for the coal in terms of the estimated remaining reserves and estimated remaining mine life at the North Antelope, Rochelle and Jacobs Ranch Mines, and the length of the leasing and permitting process. The fact that ARCO Coal Company is for sale does not mean that the Black Thunder Mine will cease to operate, or that it will not need additional reserves, and ARCO Coal Company was not for sale when Kerr-McGee applied for the Thundercloud tract. A decision has not been made to place either tract up for lease at this point in the process. It will be made by the authorized officer of the BLM, after review of the Powder River and Thundercloud DEIS, FEIS, and all public comments.

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

Paragraph 2

Questions 1: Please include maps in the final EIS showing previous lease tracts and current mined out or mining areas.

The remaining reserves at each mine are discussed on page 1-9 of the draft and final EIS documents, and the need for the coal is explained further in the responses to the questions asked in paragraph 2 of your 10/27/97 letter, as indicated under comment 1 above. Maps showing the mined out areas are included with this response. This information is reported in the Annual Reports filed for each mine with the Wyoming Department of Environmental Quality, Land Quality Division, and can be reviewed at their offices in Cheyenne and Sheridan.

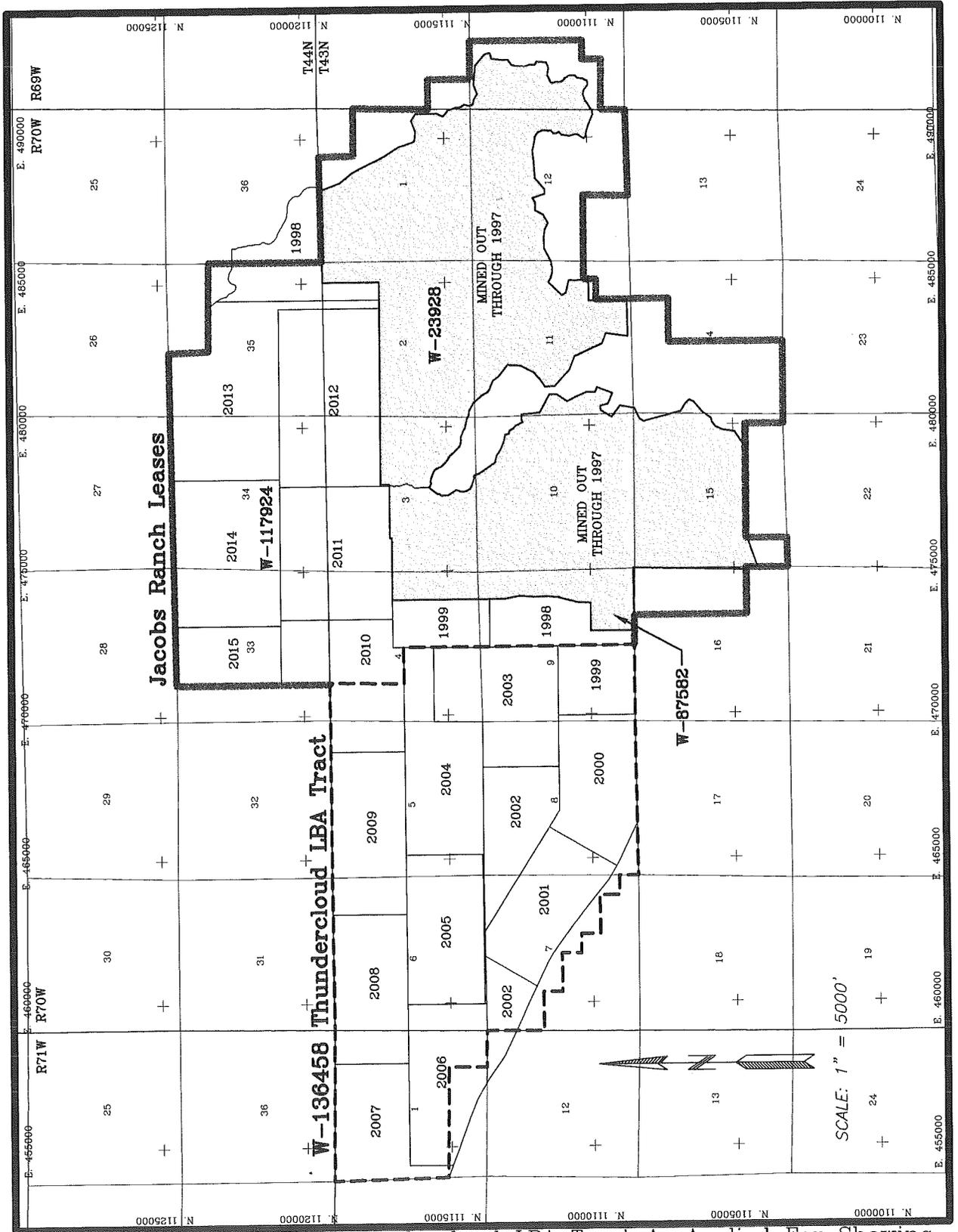
Question 2: These leases appear to be speculative in nature and with the price of coal so low why is the BLM leasing at the time? BLM does not consider applications for maintenance coal leases to be speculative in nature. There are significant costs associated with acquiring a lease (e.g., data acquisition for the environmental analysis, data acquisition for the geologic report, bonus bids, etc.), which are not recoverable if the coal is not mined. Also, Congress included diligent development provisions in the Federal Coal Leasing Amendments Act of 1976 in order to deter speculative leasing of federal coal resources. The diligent develop provisions require that commercial quantities of federal coal be produced within 10 years of issuance of a federal lease. If Powder River Coal Company and Kerr McGee Coal Company (or anyone else) acquire these leases and do not mine commercial quantities within 10 years, they will lose the leases.

BLM evaluates leasing LBA tracts in response to applications received from companies with an interest in acquiring them. BLM has the responsibility and regulatory authority to require that the government receive fair market value for the coal.

Questions 3 & 4: Please discuss how the BLM values or prices that coal? Is the coal priced on the basis of overburden?

BLM is required to determine the fair market value of federal coal that is being considered for competitive sale. As defined at 43 CFR 3400.0-5(n): "Fair market value means that amount of cash, or on terms reasonably equivalent to cash, for which in all probability the coal deposit would be sold or leased





Proposed Mine Plan With Thundercloud LBA Tract As Applied For Showing Coal Removal By Year.

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

by a knowledgeable owner willing but not obligated to sell or lease to a knowledgeable purchaser who desires but is not obligated to buy or lease." In order to evaluate the fair market value of the federal coal in the LBA tracts that are applied for, BLM independently prepares a detailed mining plan incorporating the existing leases owned by the applicant and the LBA tracts. That mining plan considers overburden thickness and composition, coal quality and thickness, projected mining rates, projected prices, mining methods used by the applicant to mine the coal, mining equipment owned by the applicant and the potential need for replacing that equipment, employment costs, and a number of other factors. BLM economists use this information to evaluate the cost of mining the coal in the LBA tract and the anticipated value of the coal when it is mined to help determine the fair market value.

*Questions 5 & 6: How has the BLM considered or analyzed delaying leasing until the prices of coal improves or competition improves? Please include some discussion of the important issue of getting the best value for this public resource.*

Delaying leasing of the coal until the price improves is considered in the DEIS and FEIS as Alternative 4 in Chapter 2. It is also in the response to questions 5 & 6 of paragraph 2 of your 10/27/97 comment letter. There is no way to predict if or when the price of coal is going to increase, but, if it does, the royalty that the government receives for the coal at the time it is sold, which is the main source of income for federal and state governments from the leasing and mining of federal coal, will increase as the price increases. If leasing is delayed until the price of coal is higher, the fair market value of the coal might be higher, which would mean that the bonus bid might be higher. However, the price increase may or may not last through the time the coal is permitted and can be mined, which is when the royalty would be paid.

Ninety-seven percent of the coal that is mined in Wyoming is used for power generation. Higher prices for Wyoming coal would benefit the coal companies and the treasuries of the state of Wyoming and the Federal government, but they would also probably lead to higher electricity prices, since the higher costs to generate the electricity would probably be directly passed on to the public that consumes it. As a result, an increase in coal prices could be accompanied by hardships for the part of the public that consumes the energy that is generated by burning

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

Wyoming coal in many parts of the country,

Paragraph 3:

Surface ownership of the lands included in the two LBA tracts is shown in Figures 3-12 and 3-13 of the draft and final EIS documents. Section 4.1.11 of the draft and final EIS documents states: "Hunting on the LBA tracts would be eliminated during mining and reclamation. Mining the LBA tracts would remove public access to approximately 1,240 acres of federal land on the Thundercloud LBA Tract and 2,675 acres of federal land on the Powder River LBA Tract." Section 4.3.11 of the draft and final EIS documents discusses PRCC's participation in a partnership with the US Forest Service to facilitate land exchanges in the Thunder Basin National Grasslands. These exchanges are also discussed in the response to comment 1 of Letter 6 from the Wyoming Game and Fish Department.

Paragraph 4:

Section 3.12 includes a general description of the cultural resources that have been found on both tracts. The sites are not described in detail nor are legal locations provided in order to protect them from unauthorized access, vandalism, and looting in accordance with provisions of the Archeological Resources Protection Act (ARPA).

Section 9(a) of ARPA states that "Information concerning the nature and location of any archaeological resource...may not be made available to the public under subchapter II of chapter 5 of Title 5 of the United States Code or under any other provision of law unless the Federal land manager concerned determines that such disclosure would (1) further the purposes of this Act...and (2) not create risk of harm to such resources or to the site at which such resources are located."

In other words, a government agency may make decisions to release cultural resource information if there is a benefit to doing so. Information on a cultural site can be released if the party it is being released to is qualified in some way to assist the agency with the site. For example, site information may be released to representatives of Native American tribes who can evaluate the significance of sites to their culture. The cultural resource mitigation process is discussed in Section 4.1.12 of the draft and final EIS documents, and the BLM and USFS stipulations concerning cultural resources that are added to federal coal leases are given in Appendix D of the draft and final EIS

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

documents.

As discussed in Section 4.3.12 of the EIS, Class I and Class III inventories are conducted on all lands included in the LBA tracts. All cultural sites identified in the inventory process are evaluated for eligibility for the National Register of Historic Places (NRHP). All sites that are determined to be eligible for the NRHP are avoided, or, if that is not possible, the data from the eligible sites are recovered.

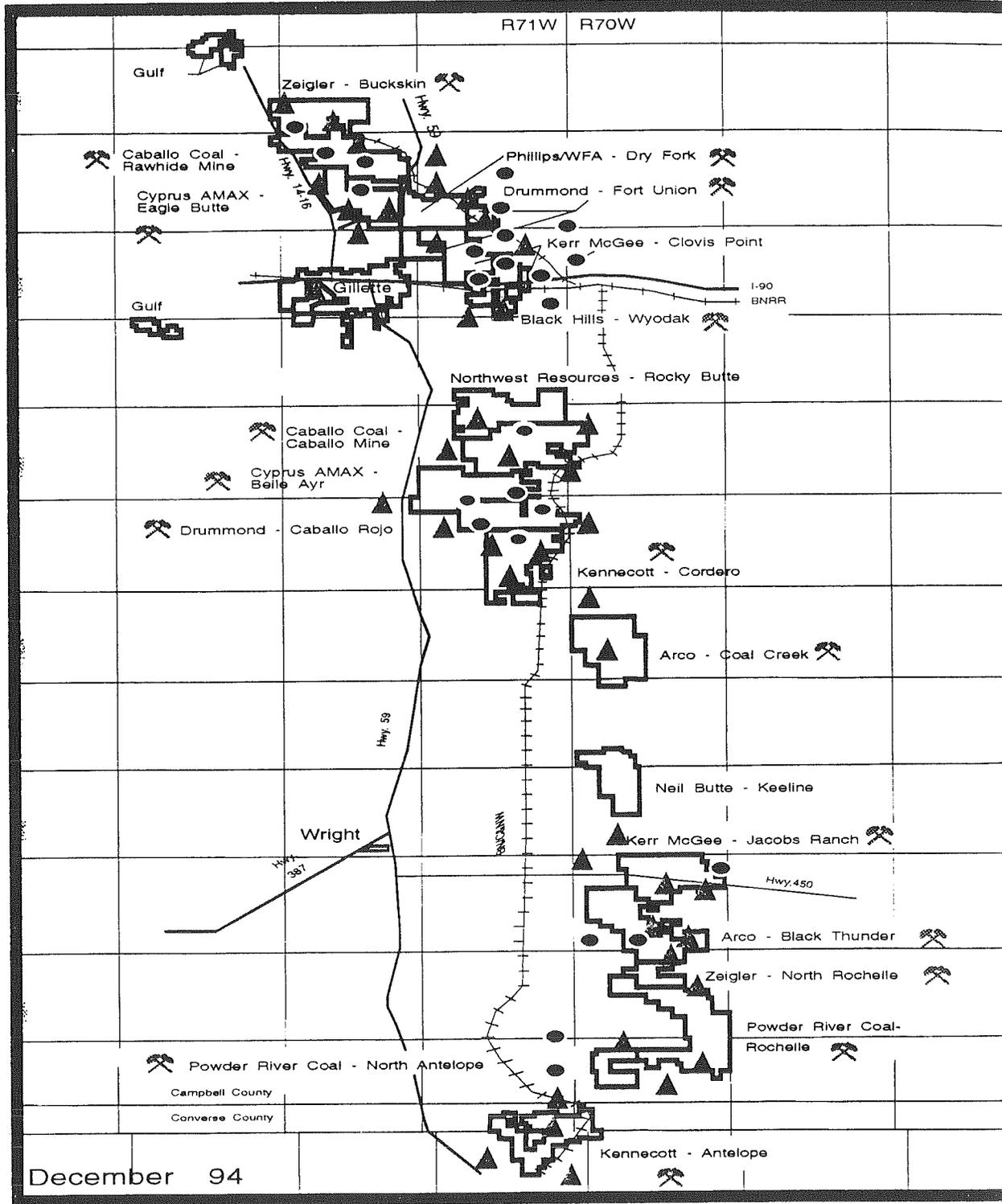
It is possible that there are sites located on the tracts that are not visible prior to mining. Both BLM and USFS attach stipulations to federal coal leases requiring that the lessee notify the surface managing agency of cultural resources discovered during mining operations, and that those resources be evaluated prior to disturbing them. These stipulations, which are included in Appendix D of the EIS, also require that the cultural resource inventories be conducted by a qualified professional cultural resource specialist.

**Letter 10: Environmental Protection Agency, Denver, Colorado**Comment 1:

A wind rose and map showing the air quality sampling locations at the existing adjacent mines is now included for each tract in Chapter 3 of the final EIS document. A map showing air quality monitoring sites for all of the mines in the Wyoming portion of the Powder River Basin is included with this response.

Comment 2:

There is little data on the gas content of the coals in the Powder River Basin, particularly in this area. U.S. Geological Survey Open-File Report 84-831, Coalbed Methane study of the 'Anderson' Coal Deposit, Johnson County, Wyoming - - - - A Preliminary Report by Donna L. Boreck and Jean N. Weaver does include coal gas desorption data from one core hole located in the western part of the Powder River Basin. In this core, the measured gas content ranged from 60 to 74 cubic feet per ton. The core hole is located in Johnson County, and the depth to the coal samples that were measured ranged from 1052 to 1226 feet.



AIR QUALITY MONITORING SITES



INACTIVE SITE



ACTIVE SITE



ACTIVE MINE

Source: Wyoming Department of Environmental Quality, Land Quality Division

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

The coal in the area of current coal bed methane production west of the mines is generally less than 400 feet below the surface. Gas content generally decreases as coal depth decreases because the gas is held in the coal by the hydrostatic pressure of the water in the coal and this pressure decreases as depth to the coal decreases. Therefore, the gas content of the coal in the area of coal bed methane production would be expected to be lower than that recorded deeper in the basin. Any estimate of the gas content at these shallower depths is complicated by the following factors:

1. Some of the coal bed methane being produced west of the mines appears to have already desorbed from the coal, but it is still trapped in the coal by the shales overlying the coal. It is more typical for the desorbed gas to migrate out of the coal, where it may be trapped in shallower porous zones or diffuse into the atmosphere.

2. The trapped, desorbed gas appears to be concentrated in structures in the coal rather than being uniformly distributed throughout the coal. As a result, the existing wells are drilled in "pods" located on the structures in the coal. It may become economically possible to expand the size of the producing pods by drilling lower on the coal structures after the existing producing wells reduce the water level in the coal and allow more gas to be desorbed, but that is not yet occurring.

3. There is currently no coal bed methane production in the vicinity of the Powder River and Thundercloud LBA tracts, and the potential in this area is unknown. Based on the existing production data, there are differences in production histories, estimated ultimate recoveries, and estimated well life for the coal bed methane wells north of Gillette versus those south of Gillette, and between coal bed methane wells in the same area. These differences are probably due to variations in: coal thickness, coal fracturing, the characteristics of the units overlying the coal which determine how effectively the gas is trapped in the hydrologic conditions in the coal, etc.

As indicated by the above discussion, it is difficult to estimate the amount of coal bed methane production that could be lost if the Powder River and Thundercloud tracts are mined prior to coal bed methane development. The following assumptions were

## RESPONSES to COMMENT LETTERS RECEIVED ON THE POWDER RIVER AND THUNDERCLOUD DEIS

made based on the existing coal bed methane production data and drilling patterns in the productive area north of the LBA tracts:

1. Coal bed methane recovery west of the southern group of mines will be similar to established coal bed methane recovery west of the central group of mines.
2. The wells would be less than 400 feet deep, and the average per well production in a pod of production wells would range from 0.1 to 0.2 billion cubic feet (bcf).
3. The wells would be drilled on 40-acre spacing in pods occupying 20% to 30% of the LBA tracts. Under this assumption, the productive area on the Powder River LBA Tract would be 804 to 1,207 acres in size and 20 to 30 coal bed methane wells would be drilled on the tract. For the Thundercloud LBA Tract, the productive area would be 679 to 1,018 acres in size and 17 to 25 coal bed methane wells would be drilled on the tract..

Using these assumptions, potential coal bed methane production would range from 2 bcf to 6 bcf from the Powder River LBA Tract and from 1.7 bcf to 5 bcf from the Thundercloud LBA tract. This is a very uncertain evaluation, however, given the unknown potential in this particular area. Based on newspaper reports dating back to the early 1900s, methane has been encountered in more than a few shallow water wells in Campbell County. For example, the following stories appeared in the Gillette News-Record on 5/25/48 and 4/5/51, respectively: "*Vein of Gas Struck on L.C. Reed Ranch*", depth to gas 262 feet; "*Gas Struck in Water Well on Ted Barlow Ranch*", depth to gas 305 feet. Based on the reports that we know of, it appears that these encounters have occurred much more frequently in northern Campbell County than in southern Campbell County. This anecdotal evidence could indicate that, as a result of some geologic and/or hydrologic differences between northern and southern Campbell County, there is less gas trapped in the coal in the southern part of the county. One possible explanation is that the beds overlying the coal in the southern part of the county have been less effective in trapping the gas in the coal. If that is the case, the gas that has desorbed from the coal would have tended to migrate out of the coal and diffuse into the atmosphere instead of migrating into geologic traps in the coal. The potential production capacity of the area can not be evaluated with any reasonable certainty until coal bed methane wells are drilled and produced in this area.

Comment Responses-20