APPENDIX I

DRAFT EIS COMMENT LETTERS, BLM RESPONSES,
AND HEARING SUMMARY

ENCOURAGING RESPONSIBLE DEVELOPMENT TODAY ~ FOR TOMORROW

934 N. MAIN ST. SHERIDAN, WY 82801 (307) 672-5809 FAX (307) 672-5800
INFO@POWDERRIVERBASIN.ORG WWW.POWDERRIVERBASIN.ORG

POWDER RIVER BASIN
Resource Council

August 24, 2009

Sarah Bucklin
Bureau of Land Management
Wyoming High Plains District Office
2987 Prospector Dr.
Casper, WY 82604

Sent via electronic mail to casper_wymail@blm.gov

Re: Draft Environmental Impact Statement for the Wright Area Coal Lease Applications

Dear Ms. Bucklin,

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) and present our comments and concerns on the proposed Wright Area Coal Lease Applications.

The Powder River Basin Resource Council (PRBRC) has a long history of involvement working for responsible coal leasing and mining in the Powder River Basin. PRBRC was formed in 1973 by ranchers and concerned citizens of Wyoming to address the impacts of strip mining on rural people and communities. Today, we work for the preservation and enrichment of our agricultural heritage and rural lifestyle; the conservation of our unique land, mineral, water, and clean air resources, consistent with the responsible use of those resources to sustain the livelihood of present and future generations; and the education and empowerment of our citizens to raise a coherent voice in the decisions that will impact their environment and lifestyle. Our members live, raise families, ranch, work, and travel throughout the Powder River Basin near the various coal mines of the area. We write these comments on their behalf.

I. BLM Must Properly Assess the Purpose and Need of this major federal action 1

At the outset of any NEPA document, a federal agency is required to analyze the purpose and need for the project. *See, e.g.* 40 C.F.R. § 1502.10 (describing the recommended format for an environmental impact statement). If the project is not needed, it is incumbent upon the agency to proceed with the no action alternative to avoid unnecessary environmental impacts

According to the Energy Information Agency's (EIA's) April 2009 Total Electric Power Industry Summary Statistics, coal generation is down 13.9% from April 2008 to 43.9% of total U.S. generation. In fact, according to the EIA "U.S. coal consumption declined in every coal-

consuming sector" and "[t]otal coal stocks at the end of 2008 were [up] 199.2 million short tons, an increase of 6.4 million short tons from the prior year."

On the other hand, wind energy is up 34.8% to 2.3% of total U.S. generation. While still a small portion of U.S. power, the trends are clear – renewable energy is growing while U.S. demand for coal and coal-fired power has flattened and is now decreasing.

That said, the BLM should not be leasing more coal at a time when demand for coal is down and there is a surplus in supply. Among other things, leasing coal at a time when demand is low and surpluses are high will impact the fair market value of coal and prevent the public from obtaining an optimum return on this federal resource. If the price of coal increases, "the bonus and royalty payments to the government [would] be higher." *See* DEIS at 2-67.

Further, BLM provides no indication of the overarching purpose and need for leasing coal on public lands at a time when demand is decreasing exponentially.

BLM's failure to determine and evaluate the true purpose and need for this federal action has a very important consequence in the context of NEPA: it prevents the agency – or the interested public through the public comment period – from evaluating a range of alternatives that will meet the project need and purpose. 2

For instance, delaying the sale of the lease tracts, an alternative which was not analyzed in detail, could potentially meet the project need and provide environmental and socio-economic benefits (such as potential increase in royalty revenue, increased opportunity and likelihood for contemporaneous reclamation, and improved local and regional air quality). Likewise, the no action alternative may be the most prudent choice at this time given the significant environmental and public health consequences of the other alternatives. However, given the lack of specific and detailed analysis in the DEIS about project purpose and need, it is almost impossible for a member of the public, or the agency, to exercise their judgment to determine what alternative is best.

As noted by BLM, "a decision to reject one or more of these six coal lease applications at this time would not preclude an application to lease that respective tract in the future." DEIS at 3-248. Thus, any delay in leasing by BLM in order to properly evaluate and expound on the legitimate purpose and need for additional coal leasing would not prejudice or harm the applicants. Therefore, BLM needs to properly assess supply and demand of coal and determine whether delaying the sale should be the preferred alternative for this project. Additionally, the decrease in demand for coal supplies gives the BLM an opportunity to properly evaluate the impacts of additional leasing (including but not limited to ensuring compliance with reclamation and other standards).

II. BLM should not lease the tracts unless air quality impacts will be minimized and air quality standards will be complied with 3

According to the DEIS, "From 2001 through 2006, there were 29 monitored exceedances of the 24-hour PM_{10} standard at seven operating mines in the Wyoming PRB…In 2007, there were a

total of six exceedances at three operating PRB surface coal mines, five of which occurred in the general Wright analysis area." The Black Thunder Mine alone caused seven exceedances of the 24-hour PM_{10} standard in 2007. DEIS at S1-6.

The Wyoming Department of Environmental Quality's (WDEQ) "Natural Events Action Plan" does not provide a legal basis for the BLM to ignore violations of air quality standards. As the BLM is aware, this is a "policy" not a regulation—in fact it has never been promulgated in the DEQ regulations. In this case, it would be unlawful and an abuse of agency discretion for BLM to lease additional acres in the Wright analysis area where, as here, there are currently exceedences of air quality standards that are unmitigated.

Federal permitting or leasing actions in the Powder River Basin (and especially on public lands) should be designed to prevent exceedances in the first place. If BLM is leasing coal, without mitigation measures, and knowing that air quality standards will likely be exceeded, the agency is not meeting its duties to prevent violations of air quality standards. FLPMA mandates that BLM manage federal lands according to federal and state air quality standards.[1] The Mineral Leasing Act also mandates that the agency insert in each coal lease provisions that require compliance with the Clean Air Act (as well as the Clean Water Act). 30 U.S.C. § 201. Thus, the BLM must ensure compliance with all air quality standards on existing leases in the Wright lease area and prior to conducting any additional leasing.

Additionally, and at a minimum, BLM in coordination with the WDEQ, who is a cooperating agency in this EIS, must ensure compliance with the prevention of significant deterioration (PSD) requirements of the CAA for NOx, PM and SO2. In particular, BLM must determine how much (if any) of the existing increment is available for additional and expanded coal mining and development. Similarly, the BLM in coordination with EPA must determine, prior to leasing, how the agencies will address regulation of CO_2 from mining operations as well as implementation of new standards for ozone. Even if some of this analysis will be conducted during DEQ's air quality permit process, BLM must include this information as part of this NEPA process. NEPA requires complete analysis of environmental impacts prior to an agency taking action.

BLM must also discuss and require enforceable mitigation measures through this EIS and Record of Decision to ensure that compliance with air quality standards is ensured both now and in the future, especially considering the result of cumulative increases of particulates and NOx from these mines.

Moreover, BLM needs to ensure compliance with the Regional Haze Rule. A full review of data gathered for national parks and wilderness areas within 300 km of the proposed mining activities is necessary for compliance with the Regional Haze Rule. Significant data is available to assess impacts on Wyoming's Class I areas as well as those in Montana and South Dakota that may

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[1] *See* 43 C.F.R. § 2920.7(b)(3) (requiring that BLM "land use authorizations shall contain terms and conditions which shall . . . [r]equire compliance with *air . . . quality standards* established pursuant to applicable Federal or State law") (emphasis added); *see also* 43 U.S.C. § 1712(c)(8) (requiring BLM in land use plans—which would therefore require implementation in daily management—to "provide for compliance with applicable pollution control laws, including State and Federal air . . . pollution standards or implementation plans").

experience visibility impacts from the proposed mining. The DEIS does not include an analysis of what those impacts may be or how they may be mitigated.[2]

In a related issue, the DEIS states that Air Quality Related Values (AQRVs) as established by land managers are "not legally enforceable as a standard," but the DEIS fails to state what significance should be attached to AQRVs. DEIS at section 3.4.4. Although AQRVs lack the legal force of criteria pollutant emission limits, for example, they are not without legal significance. The DEIS provides no discussion of how AQRVs should factor in the air quality permitting process, a serious omission in guiding regulators to weigh EIS input appropriately. The Final EIS must address protection of AQRVs.

Finally, BLM must properly assess whether new source review permitting is required for the expanded coal mining operations. Currently, Wyoming DEQ exempts surface coal mines from Clean Air Act major source review. DEIS at 3-81. However, Wyoming regulations include a definition of a major stationary source as "any physical change that would occur at a stationary source not otherwise qualifying under this definition if the change would constitute a major stationary source by itself." WAQSR Ch. 6 § 4(a).

A "stationary source," according to the Wyoming State Implementation Plan (SIP), includes "any structure, building, facility, equipment, installation or operation (or combination thereof) which emits or may emit any air pollutant subject to these regulations or regulations under the Federal Clean Air Act." *Id.* It is therefore a misstatement of the law to say that major expansions of existing stationary sources can be exempted from New Source Review at the discretion of WDEQ. If the physical change – in this case a major expansion of mining operations – constitutes a major stationary source by itself, then all legal requirements applicable to a major stationary source, including New Source Review and Prevention of Significant Deterioration permitting, must apply.

The DEIS does not address the key question of whether or not the physical change contemplated would constitute a major stationary source by itself. If a major stationary source is created – under the definitions established by federal law – then New Source Review cannot be avoided. The DEIS must address this definitional question and the potential legal requirements therein entailed. Permitting a minor source that in combination with future contemplated activities will constitute a major source is "sham permitting" and a violation of federal law.

III. BLM must consider the environmental impacts of climate change caused by increased coal mining and should consider measures to mitigate those impacts

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During coal mining operations, methane that was previously trapped within the coalbed may be released (i.e. gob gas). Methane is a powerful greenhouse gas – an estimated 20 times as potent

[2] According to DEQ and EPA regional haze regulations, "A single source that is responsible for a 1.0 deciview change or more should be considered to "cause" visibility impairment." Wyo. Air Quality Standards and Regulations (WAQSR) Chapter 6, § 9(d)(i)(A); 40 C.F.R. Part 51, Subpart P, Appendix Y—Guidelines for BART Determinations Under the Regional Haze Rule, Section III A. 1. There is no analysis in the DEIS of whether the coal mines meet this standard.

as carbon dioxide. The estimated annual carbon dioxide equivalent from methane venting related to these coal tracts is 483,600 metric tons. DEIS at 3-307.

The waste of methane is also the waste of a valuable commodity, and BLM has specifically directed agency staff to "prevent avoidable waste of the public's resources" and "mitigate environmental impacts" resulting from resulting from coalbed methane and coal mining conflicts. BLM Instruction Memorandum No. 2006-153. Further, PRBRC notes that a recent IBLA decision provides the BLM with authority to authorize the coal lessee to capture methane as part of coal mining. *Vessels Coal Gas, Inc.*, 175 IBLA 8 (2008).

Despite the damaging global warming impacts from the methane to be released, and the wanton waste of a much sought-after non-renewable natural resource, the BLM and Interior Department are approving additional mine leasing and expansion without analyzing the potential for capturing and using the methane. Nor did these agencies analyze the alternative of flaring – i.e., burning – the methane to drastically reduce the project's global warming impacts. The agencies failed to examine these alternatives despite the fact that methane is routinely captured at working coal mines in the United States and around the world, and despite the fact that methane is flared at working mines in Europe and Australia. The federal agencies' failure to even consider these reasonable mitigation measures and failure to account for the impacts of methane venting on climate change violates NEPA.

Additionally, methane capture or methane recovery prior to mining operations would allow recovery of federal natural gas in an area that is already slated for development. This is preferable to greenfield natural gas development in sensitive areas, such as Fortification Creek, where BLM is currently permitting coalbed methane operations in spite of public concerns and opposition. As BLM notes, the majority of the oil and gas within the analysis area (67 percent) is federally owned and "most...is currently leased." DEIS at 3-228. BLM needs to assess of the 212 currently producing CBM wells in the study area, DEIS at 3-228, how many will be plugged and abandoned by the time the tracts are mined? Will wells be abandoned prior to complete recovery of the resource and if so, approximately how much methane will be left that will be vented in the course of mining? BLM notes that "a large portion of the CBNG resources on the tracts has been recovered or would be recovered prior to mining" but also that "CBNG that is not recovered prior to mining would be vented to the atmosphere during the mining process." DEIS at 3-303. BLM needs to take the analysis one step further and determine whether delaying the lease of the coal tracts until methane recovery is complete is in the best interest of the public. If not, BLM must ensure proper mitigation such as methane capture.

As noted above, methane capture is a reasonable measure that can be implemented at these mines. For instance, the North Antelope Rochelle Mine has a methane capture project that involves methane drainage from surface wells in advance of the mining face. According to EPA, "the project is estimated to reduce 200,000 tonnes of carbon dioxide equivalent annually." In addition to the climate change benefits, the mining company also receives economic benefits through the carbon credit process. U.S. EPA, Coalbed Methane Outreach Program, May 2009 newsletter, at 7, *available at* http://www.epa.gov/cmop/docs/spring_2009.pdf.

Additionally, BLM should consider alternatives for the mining process that will mitigate the climate change impacts of these mines. As electrical power consumption during the mining process is one of the largest sources of carbon emissions from mining, BLM should mandate requiring renewable energy to power mining. According to recent press reports, some mines in the Powder River Basin have already been considering wind power or other renewable energy power sources for mining operations. This would be preferable to the consumption of coal-fired electricity, which increases the need for new power plants such as Basin Electric Power Cooperative's Dry Fork Station (which, according to Basin Electric, is being built to provide power to industrial operations in Northeast Wyoming). 5

In addition to the climate impacts of the mining process, BLM must also assess and mitigate impacts of the coal cycle, which are related and connected actions to the mining process. Mined coal will be sent via train to coal-fired power plants. Coal-fired power plants are the leading emitter of carbon dioxide. These emissions cause global warming, or climate change, which is widely acknowledged to pose "serious and well recognized" impacts to the human environment and is a pollutant under the Clean Air Act. *Massachusetts v. EPA*, 127 S. Ct. 1438, 1455 (2007).

BLM must analyze, and consider reasonable mitigation alternatives for, these reasonably foreseeable impacts in this EIS. Secretarial Order No. 3226 (1/16/09) recognizes the ability of the Department of Interior (DOI) to identify changes that may result from climate change and directs bureaus to "consider and analyze potential climate change impacts" in "long range planning" and/or when making "major decisions affecting DOI resources." Clearly, this leasing action is "long range planning" as the coal will not be needed for many years and is a "major decision affecting DOI resources" given the amount of coal being leased.

We believe BLM must consider and appropriately address the comments of other parties, such as the Center for Biological Diversity, discussing climate change on a national and global scale. Additionally, the EIS must discuss not only projected global impacts but the anticipated dramatic local impacts in Wyoming and other Western states. Numerous studies have documented that climate change will dramatically impact states like Wyoming. For instance, the National Wildlife Federation estimates that "Global warming is likely to alter essential habitat in the Greater Yellowstone Ecosystem" and impact plant and animal species across the state. Global warming could also impact industries that depend on snow and water resources, such as skiing, tourism, and agriculture. In a report released in May 2008, the U.S. Department of Agriculture found "climate change is already affecting U.S. water resources, agriculture, land resources, and biodiversity, and will continue to do so." For these reasons and others, State Climatologist, Steve Gray, has warned that global warming could dramatically impact Wyoming, especially water supplies in the state. Communities in Wyoming, including the City of Gillette, are already facing water shortages and climate change impacts caused by increased coal mining could intensify those impacts. The DEIS needs to assess both local and global climate change impacts caused by mining these coal tracts. 6

IV. BLM must properly assess land use impacts

BLM's preferred alternative includes 12,480 federal acres (about 1/3 of the acres proposed to be leased). DEIS at 3-221. While BLM acknowledges that "livestock grazing on native rangelands

is the primary land use," *Id.*, BLM does not properly assess the socio-economic impacts of turning these portions of the Thunder Basin National Grassland from livestock and wildlife habitat into coal mines. How many grazing leases will be lost? What is the value of those leases? How is BLM, in conjunction with the Forest Service (who is a cooperating agency to this EIS), ensuring that multiple use standards will be protected? This is especially relevant given the lack of contemporaneous reclamation at current mining operations (see discussion below). BLM is leasing yet more tracts of coal which is putting a further strain on grazing and other land uses in the area. 54

BLM must assess how long land uses will be impacted (e.g. what is the expected time frame for reclamation and the area to re-gain access for grazing, hunting, and recreational purposes?). The EIS says that the "loss of accessibility to lands successfully leased and proposed for mining is long term" but "[p]ublic access to federal lands would be restored after mining and reclamation are complete." DEIS at 3-246,3-247. How many years? This analysis is critical to ensuring proper consideration of socio-economic impacts prior to agency action. 7

The EIS also notes that the area is currently used for oil and gas operations. Will "ancillary facilities…needed to support oil and gas production" such as pipelines, powerlines, access roads, etc. currently on the tracts be moved to new areas? Will they still be needed for oil & gas activities once mining takes place on the tracts? How will this impact neighboring lands? BLM must analyze the movement of these facilities to new lands as they are connected actions to the leasing of the coal reserves. 8

V. BLM must not lease new tracts of coal without first ensuring compliance with SMCRA's contemporaneous reclamation mandates for existing tracts

Once again, BLM fails in this EIS to disclose reclamation data for current mining operations and projected timelines for reclamation of new tracts.[3] This information is critical to assessing the environmental impacts of new mining operations. SMCRA requires that reclamation of mined land be "as contemporaneous as possible." 30 U.S.C. § 1202(e). 9

If BLM does not have this information, surely BLM's cooperators on this DEIS do. OSM and DEQ are both cooperators and have access to reclamation data given they are the agencies charged with SMCRA compliance.[4] BLM cannot keep pointing fingers elsewhere and ignore its responsibility to ensure compliance with federal laws and regulations. BLM's role in the process

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[3] By reclamation, we mean stage 3 bond release, which is indicative of final reclamation for mining tracts. Although there is some information about lands that have been "reclaimed or [are] in the process of being reclaimed," DEIS Section 3.0, the EIS does not disclose the amount of lands that have been released from bonds as a result of reclamation. The EIS also does not discuss reclamation plans for new mining tracts.

[4] In previous coal mine EIS comments, we have submitted data from OSM on reclamation. *See, e.g.* Office of Surface Mining Reclamation and Enforcement, Annual Evaluation Summary Report, Administered by the Land Quality Division of the Wyoming Department of Environmental Quality for Evaluation Year – 2005 (July 1, 2004 to June 30, 2005) August 24, 2005, *available at* http://www.osm.gov/oversight/wyoming04.pdf. OSM states that "the rate at which lands are being reclaimed in Wyoming compared to the rate of disturbance…is about 3 to 1… Ideally the ratio should be 1 to 1… The gap between the acres disturbed versus reclaimed is widening, thereby creating a backlog of lands available for reclamation, contributing to a delay in contemporaneous reclamation and subsequent bond release."

– leasing the coal on federal lands – is not trivial. In fact, it is the go or no go stage for mining operations. Once leased, other agencies, such as DEQ, claim to have little ability to prevent new mining because of pre-existing lease rights. BLM has the sole ability to control the pace and scale of coal leasing and subsequent mining in response to the failure of mining companies to comply with SMCRA mandates. In short, if SMRCRA mandates are not being complied with, BLM must not lease new coal and instead should wait to lease new tracts until reclamation of current tracts is complete.

In addition to SMCRA, BLM has a legal obligation under its organic statute, the Federal Land Policy and Management Act, to "prevent unnecessary or undue degradation of the lands." 43 U.S.C. §§1702(c), 1732 (b). This provision has been interpreted to require BLM "to prevent, not only unnecessary degradation, but also degradation that, while necessary to [mineral activity], is undue or excessive." *Mineral Policy Center v. Norton*, 229 F.Supp.2d 30, 42 (D.D.C. 2003). These requirements are applicable on both federal surface and split-estate lands. *See* 2003 PRB Oil and Gas RMP-EIS ROD at 10 ("To meet the consistency requirements of FLPMA, the same standards used for environmental protection of Federal surface are also applied to the federal mineral portion of split estate lands (private surface underlain by federal minerals)"). Permanent alteration of the land as a result of untimely or failed reclamation is unnecessary and undue degradation, which BLM can prevent by delaying or preventing the lease of these federal coal tracts.

BLM has a duty under NEPA to fully disclose and evaluate SMCRA compliance and environmental impacts of coal leasing and associated mining. The lack of contemporaneous reclamation is a significant impact that must be properly analyzed. Lack of reclamation has substantial impacts, such as the spread of noxious weeds, decreased air quality as a result of a larger area of disturbance, less water restoration, and a longer loss of livestock and wildlife pastureland.

VI. BLM should not lease new coal tracts without first ensuring compliance with SMCRA's hydrologic balance protection requirements

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The coalbed in the Powder River Basin is itself an aquifer. According to the EIS, "Due to its continuity, the Wyodak coal seam is considered a regional aquifer" and "[h]istorically, the Fort Union coal seams have been a source of groundwater for domestic and livestock uses in the eastern PRB." DEIS at 3-94.

With great consequence to those who live and ranch in the Powder River Basin, "[r]oughly 30 years of surface mining and the more recent CBNG development have resulted in complete dewatering of the coal aquifer in localized areas." DEIS at 3-95. There is a "continuous cone of depression" around the mines because of cumulative groundwater drawdown. *Id.*

These statements essentially acknowledge that coal mining is resulting in material damage to the hydrologic balance of ground and surface water and that compliance with SMCRA's statutory requirement to restore the regional Wyodak coal aquifer to "pre-mining conditions" may in fact be impossible.

That said, it is incumbent upon the agency to demonstrate: (1) how disturbance to ground/surface water from coal mining is currently being mitigated and restored to pre-mining conditions; and, (2) analyze how additional leasing (and subsequent coal development) would serve to minimize disturbance to ground and surface water, restore the recharge capacity of both the mined and leased area and restore the aquifer to pre-mining conditions. At a minimum, the agency must analyze aquifer recharge capacity, what engineering techniques would be used to restore the aquifer to pre-mining capacity and water quality conditions, and what timetable and costs would be involved with such reclamation. The same must be done for surface water. This analysis is important to "insure the professional integrity, including scientific integrity, of the discussions and analyses" in this NEPA document. 40 C.F.R. § 1502.24. Mere speculation that aquifers will be recharged some time in the very distant future is not enough.

Additionally, the ongoing damage to ground and surface water by current coal mining operations warrants additional bonding in an amount that covers mine-wide restoration of the hydrologic balance of the surface and ground water to pre-mining conditions --and for each of the mines which would gain additional leased acreage. Under the Federal Coal Leasing Act Amendments, the need for additional bonding for each of the four mines must be evaluated by the agency during the NEPA process prior to leasing and any analysis should be re-noticed to the public. 30 U.S.C. § 201 et al.

VII. BLM needs to ensure compliance with the Mineral Leasing Act and the Federal Coal Leasing Act Amendments

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The agency has failed to demonstrate compliance with the Mineral Leasing Act (MLA) and Federal Coal Leasing Act (FCLAA). Among other things, the MLA requires that the agency ensure that no person or corporation (including subsidiaries thereof) hold or control at one time "coal leases or permits on an aggregated of more than 75,000 acres in any one State and in no case greater than an aggregated of 150,000 acres in the United States." 30 U.S.C. § 184.

In this case, the BLM has a statutory obligation to ensure that the nominating companies (who have filed applications in an effort to expand their existing operations) are in compliance with this provision prior to any lease sale of the federal coal tracts. Compliance with these statutory provisions must be evaluated based on an evaluation of the holdings of parent companies. These companies include Arch Coal, Peabody Energy Corporation, and Rio Tinto Energy America.[5]

Upon information and belief and upon review of publicly available information, PRBRC believes that these three companies hold or control aggregated coal leases in excess of the acreages allowed for the in MLA. Compliance with this statutory provision must be analyzed by the agency and needs to be included as part of the NEPA process.

VIII. BLM must properly assess sage-grouse impacts and develop mitigation measures

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The BLM should expand its wildlife survey area. The wildlife surveys conducted for this EIS included the land projected to be leased and "a 2-mile perimeter surrounding the general analysis

[5] However, it should be noted that the Federal Trade Commission recently gave its approval for the sale of Jacobs Ranch Coal Mine from Rio Tinto Energy America to Arch Coal, so the Jacobs Ranch leases should be assessed under Arch Coal.

area." We believe the surveys should be extended to a four-mile radius, which is the now recognized radius for impacts related to sage-grouse from oil and gas operations. *See, e.g.* Carr Draw 3-E Plan of Development Environmental Assessment and Augusta Unit Zeta Project Environmental Assessment, available on the Buffalo BLM's NEPA webpage. Given the noise[6] and other impacts related to coal mining, in the absence of studies specific to coal mining, BLM should at least be consistent with its own oil and gas leasing and permitting practices.

BLM also needs to ensure compliance with its Sensitive Species Policy. BLM has a duty to mitigate impacts to the greater sage-grouse, a state listed sensitive species. Species are designated as "sensitive" to ensure actions on BLM administered lands consider the welfare of these species and do not contribute to the need to list a Special Status Species under the provisions of the Endangered Species Act. BLM Wyoming Sensitive Species Policy and List at 1. Beyond requiring the BLM not to take actions that lead to ESA listing, the BLM Special Status Species Management Manual Provisions also provide that the requirement to conserve special status species means "to use, and the use of, methods and procedures such that there is no longer any threat to their continued existence *or need for listing as a special status species*." *See* BLM Manual 6840 at Glossary of Terms (defining conservation, conserve, and conserving). Thus, with regard to sage-grouse, the BLM is required to take affirmative steps that lead to *removing* the species from the sensitive species list and not simply avoiding activities that may lead to *future* listing under the ESA. To comply with these policies, BLM management decisions must "avoid or minimize adverse impacts and maximize potential benefits to [sensitive] species." BLM Wyoming Sensitive Species Policy at 2.

According to the EIS, there are four sage-grouse leks that are active and occupied within the study area. DEIS at 3-201. Also according to the EIS, almost ½ of the study area is sagebrush and "[u]ntil sagebrush returns to its premining density levels, there would be a reduction in potential habitat for wildlife species." DEIS at 3-207. However, there is no analysis in the EIS of whether sage-grouse populations will be impacted by mining operations. Will leks be abandoned? Will local populations be extirpated? Have habitat surveys been completed to determine whether high quality nesting, brooding, or wintering habitat is present in the area? If so, what percentage of that habitat will be impacted by mining operations? As BLM notes, "there is no evidence that populations attain their previous levels [after reclamation], and reestablishment in reclaimed areas may take 20 to 30 years or longer." DEIS at 3-208. Again, BLM cannot just use speculation to determine impacts and must do a site-specific analysis of impacts to sage-grouse populations and habitat. This analysis is critical in order to determine, among other things, whether additional lease conditions or stipulations are necessary to protect species including the grouse.

Given the importance of sage-grouse in state and federal policy right now, BLM should do a much better job in assessing impacts *and* more importantly, in developing measures to mitigate those impacts. An ESA listing will have substantial economic impacts on all industries in Wyoming, including agriculture, and thus our members want to ensure that BLM does all it can to comply with its Sensitive Species Policy.

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[6] The EIS acknowledges that "noise associated with mining operations may disrupt sage-grouse breeding and nesting activities..." DEIS at 3-208.

Thank you for your time and consideration of these comments. If you have any questions or need more information, please do not hesitate to contact me at 307-672-5809 or via email at sanderson@powderriverbasin.org.

Sincerely,

Shannon Anderson
Organizer, Powder River Basin Resource Council

National Headquarters
1130 17th Street, N.W. | Washington, D.C. 20036-4604 | tel 202.682.9400 | fax 202.682.1331
www.defenders.org

Bureau of Land Management
Wyoming High Plains District Office
Attn: Sarah Bucklin
2987 Prospector Drive
Casper, Wyoming 82604
casper_wymail@blm.gov

August 25, 2009

Re: Comments on the Wright Area Coal (WAC) Lease Applications and Comments on Draft Environmental Impact Statement for the Proposed WAC Applications, 74 Fed. Reg. 32642 (July 8, 2009)

Dear Ms. Bucklin:

Thank you for the opportunity to comment on the Wright Area Coal ("WAC") Lease Applications and Draft Environmental Impact Statement ("DEIS"). These comments are submitted on behalf of Defenders of Wildlife ("Defenders"), a non-profit public interest conservation organization with over 500,000 members nationally.

Defenders is dedicated to protecting imperiled species and their habitats by combining scientific research, public organizing, and administrative and legal advocacy. Defenders relies on the Endangered Species Act ("ESA"), and other federal conservation laws to protect endangered and threatened species, and imperiled species not currently benefiting from ESA protections. In addition to species-specific litigation, Defenders is a committed advocate for the protection of the nation's wildlife refuges, parks, forests and other public lands.

Our nations lands and natural resources will undoubtedly be effected by climate change, DEIS, 4-110, and the Bureau of Land Management ("BLM") is obligated to consider the impacts in a revised DEIS. In February 2007, the Intergovernmental Panel on Climate Change ("IPCC") declared, "[w]arming of the climate system is unequivocal," and it is "very likely" that most of the warming since the middle of the 20th century is the result of human pollutants. Global warming is a global crisis with well-documented and considerable local impacts. In addition to its other disruptive direct effects, the mining of coal will likely result in the generation of high quantities of greenhouse gas emissions, a significant contributor to global warming.

National Headquarters
1130 17th Street, N.W. | Washington, D.C. 20036-4604 | tel 202.682.9400 | fax 202.682.1331
www.defenders.org

The four Federal coal Lease-by-Applications ("LBAs") are adjacent to the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines. The DEIS analysis of the potential impacts of issuing leases for six Federal coal tracts, totaling over 2.6 billion tons of leased coal, must include a thorough analysis of the impacts from increased greenhouse gas emissions. The failure to do so results in a deficient environmental analysis in violation of the National Environmental Policy Act ("NEPA").

The DEIS Fails to Analyze Greenhouse Gas Emissions

6

In 2006, the Wyoming Powder River Basin ("PRB") coal mines produced approximately 432.0 million tons of coal. and approximately 716.9 million metric tons of carbon dioxide. DEIS, 4-118. This estimate represents approximately 33.6 percent of the estimated 2,134.1 million metric tons of U.S. carbon dioxide emission from coal combustion. Id. In 2006, Wyoming PRB mines accounted for approximately 37.2 percent of the coal produced in the U.S. Id.

Out of the 432.0 million tons of coal produced in 2006 from the PRB, the three Wright Area coal mines produced 195.9 million tons of that coal in 2006, which represents about 45.4 percent of coal produced in the Wyoming PRB in 2006, or about 6.4 percent of the estimated U.S. carbon emissions in 2006. DEIS, 4-121. Under the No Action Alternative, CO_2 emissions attributable to burning coal produced by the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines would be extended at about this level for up to approximately 11 years beyond 2008, in which time the mines recover their remaining estimated 2,691 million tons of currently leased coal reserves. Id.

NEPA requires that the BLM prepare an Environmental Impact Statement ("EIS") for "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(c). The EIS is "a procedural obligation designed to assure that agencies give proper consideration to the environmental consequences of their actions." Arizona Cattle Growers' Ass'n at 1110 (citing Merrell v. Thomas, 807 F.2d 776, 777-78 (9th Cir. 1986)). In addition, the EIS serves to inform both decision makers and the public about the alternatives and adverse impacts of the project. See Columbia Basin Protection Ass'n v. Schlesinger, 643 F.2d 585, 592 (9th Cir. 1981) ("[T]he preparation of an EIS ensures that other officials, Congress, and the public can evaluate the environmental consequences independently.").

The BLM failed to adequately address the greenhouse gas emissions that will be emitted as a result of leasing the LBA tracts, instead limiting the emissions inventories to "mining operations, electricity used on site . . . and mining processes . . . ." DEIS, 3-306. The DEIS emits from the emissions inventory all carbon dioxide emissions from "rail transport" because of a lack of information Id. With carbon dioxide emissions projected to increase at

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the Black Thunder, Jacobs Ranch and North Antelope Rochelle mines if the North Hilight Field, South Hilight Field, West Hilight Field, West Jacobs Ranch, North Porcupine, and South Porcupine LBA Tracts are added to the mining operations, combined annual production rate from these three mines is 270 tons. DEIS, 3-307.

The BLM disregarded NEPA's mandate to disclose the full environmental consequences of the Wright Area coal project, and instead hid the true cost of the project. The BLM stated that it is "not possible to project the level of CO_2 emissions that burning the coal from the six Wright Area Coal LBA tracts would produce due to the uncertainties about what emission limits will be in place at that time or where and how the coal in these LBA tracts would be used after it is mined." DEIS, 4-122. The BLM cannot escape NEPAs environmental analysis mandate with the conclusory statement that "because there are multiple other sources of coal that . . . could supply the demand for coal beyond the time that the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines compete recovery of the coal in their existing leases" that there would be no decrease in U.S. carbon emissions attributable to coal-burning power plants. DEIS, 4-122. 5

By failing to consider the total greenhouse gas emissions that will result from the coal lease, and instead limiting the analysis to selected emissions, the DEIS fails to properly consider the greenhouse gas and global warming implications of the lease sale, prior to proceeding to the Final EIS. The inadequate NEPA analysis, including the failure to estimate and calculate the carbon emissions that will result from the leases, results in an inadequate DEIS.

<u>The DEIS Fails to Analyze the Observed and Projected Effects of Global Warming</u> 6

Global warming represents the most significant and pervasive threat to the future of biodiversity worldwide, affecting both terrestrial and marine species. The periodic assessment reports issued by the United Nations Intergovernmental Panel on Climate Change ("IPCC") serve as a useful barometer for the advancement of understanding surrounding global warming. The IPCC's mission is to comprehensively and objectively assess the scientific, technical and socioeconomic information relevant to human-induced climate change, its potential impacts, and options for adaptation and mitigation (IPCC Mandate). T he technical reports underlying these periodic assessments are a synthesis of the existing scientific and technical literature compiled by the world's leading climate change experts, representing the collective wisdom of thousands of scientists from around the world, including hundreds of academic and government researchers within the U.S. The reports represent the "best available science" addressing climate change and its impacts on the natural world.

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The IPCC reports convincingly indicate that greenhouse gases, including carbon dioxide ("CO_2"), endanger public health, welfare, and the environment. The IPCC's fourth assessment report, issued in February 2007, determined that the evidence of warming global temperatures is "unequivocal" and that observed changes in temperatures since the mid-20th century have been "very likely" (>90% chance) caused by increases in anthropogenic greenhouse gas emissions. In addition, the largest growth in global greenhouse gas emissions between 1970 and 2004 has come from the energy supply sector (an increase of 145%) (IPCC).

Many of the public resources managed by the Department of the Interior are being harmed by global warming resulting from increased greenhouse gas emissions (see generally GAO, Climate Change). As stated by the U.S. Supreme Court last year, "[t]he harms associated with climate change are serious and well recognized." Massachusetts v. EPA, 127 S. Ct. 1438, 1455 (2007). These harms—already occurring worldwide—include "the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of rivers and lakes, [and] the accelerated rate of sea levels during the 20th century relative to the past few thousand years." Id. (quoting National Research Council, Climate Change: An Analysis of Some Key Questions, at 16). The impacts from global warming on species and ecosystems are not too uncertain to predict.

For example, one of the most immediate general effects of climate change on terrestrial plants and wildlife are shifts in geographical ranges, catalyzed by changes in the normal patterns of temperatures and humidity that generally determine such ranges (Thuiller 2007). As a result of warming temperatures, significant range shifts averaging 6.1 kilometers per decade towards the poles and an advancement of spring events by 2.3 days per decade have already occurred (Parmesan & Yohe 2003). Because many ecosystems and species cannot make such "shifts," global warming presents risks of widespread extinctions (Thomas et al. 2004; Thuiller 2007).

In addition to general impacts, different regions throughout the world will be increasingly affected in ways specific to those locations.

The Arctic region has been the most obvious early indicator of the effects of global warming on the planet. While the planet as a whole warmed approximately 1°F during the 20th century, some regions of the Arctic experienced warming of 4-5°F since the 1950s alone, and the region continues to warm at rates approximately twice that in the rest of the world (ACIA 2004).[1] Most notably, the melting of Arctic sea ice due to global warming has

[1] A phenomena known as the "Ice-Albedo feedback" is largely responsible for these disproportionate effects. Because the arctic ice has high albedo, meaning it reflects much more solar radiation than

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occurred much more rapidly and on a scale that scientists believed would not happen for another half century. At the end of summer in 2007, the volume of Arctic sea ice was half what it was only four years ago, nearly 23 percent below the previous record low. (Borenstein 2007).

The rapid melting of the Arctic ice has grave repercussions for the many Arctic species that rely wholly or partially on the ice for feeding, nesting, breeding, sheltering, and other essential behavioral functions. The melting of Arctic sea ice caused by global warming directly threatens the polar bear, which is completely dependent on the ice for every aspect of its life cycle. Melting sea ice will shorten the time frame in which polar bears can hunt seals due to earlier ice break-up and later freeze-up dates, reduce availability of prey, increase distances bears need to swim because of melting ice, and increase bear-human conflicts as bears move into terrestrial and populated areas in search of food.

Additionally, the world's oceans, occupying 70 percent of the planet, are being profoundly affected by global warming, as primarily evidenced by warming temperatures and increasing acidification of the oceans (Rosenzweig 2007). Coral reefs have served as an early bellwether of these changes, and NMFS on May 9, 2006 determined two species—the elkhorn (*Acropora palmata*) and staghorn (*A. cervicornis*) corals—to be threatened, the first coral species to be give protection under the ESA. 71 Fed. Reg. 26,852.

In addition to the precipitous declines in staghorn and elkhorn coral populations as a result of global-warming inducted bleaching, global warming also adversely affects coral species by increasing the acidification of ocean waters (Hoegh-Guldberg 2007). Ocean acidification is especially driven by CO_2; as greater levels of CO_2 enter the ocean, it reacts with seawater to produce carbonic acid, which ultimately reduces the amount of carbonate available to the reefs, leading to decreased calcification and increased erosion. In a recent study, a team of researchers presented three scenarios based on the business-as-usual/alternative scenario approach, and found that even if CO_2 emissions leveled at 380 ppm, coral reefs worldwide would still undergo fundamental changes (Hoegh-Guldberg 2007). If carbon dioxide levels rise to double that of preindustrial levels under a business-as-usual approach, "[t]hese changes will reduce coral reef ecosystems to crumbling frameworks with few calcareous corals...Under these conditions, reefs will become rapidly eroding rubble banks" (Hoegh-Guldberg 2007).

Like the rapidly accumulating evidence addressing the negative effects of global warming on coral reef species and the polar bear, new scientific information demonstrates

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other sources, once that ice melts, the uncovered land and water absorbs more solar radiation, leading to a positive feedback loop and rising temperatures.

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that global warming is increasingly having negative effects throughout the western United States. The west has warmed more than any other area in the country outside of Alaska, with projections of future warming varying from 3 to 7°F, to as much as 14°F in the Southwest (Leung and Qian 2005; Overpeck 2005). As new scientific information developed since 1996 convincingly demonstrates, global warming is already affecting the West by causing wetter and warmer winters with reduced snowpacks and earlier springs with associated early-season melting of the already-reduced snowpack (Mote et al. 2005). In addition, many areas of the West are in the midst of the worst drought in hundreds of years, and researchers believe global warming could cause drought to become essentially permanent.

This combination of effects is already having real-world consequences for biological resources. For example, scientists identified high temperatures as one of the likely causes of a massive die-off of piñon and ponderosa trees across 3.5 million acres of Arizona and New Mexico (Breshears et al. 2005). In addition, less snowpack and earlier snowmelt have been correlated with increasing numbers of large forest fires in the west, as earlier snowmelt acts to dry out forest fuels (Westerling 2006).

The effects of global warming present heightened risks to species already imperiled by other causes, especially those with restricted ranges or highly specific ecological needs (Randall 2006). Climate change during the past 30 years has in fact already been implicated in one species-level extinction, and a potential mass extinction (an estimated 67 percent of 110 species) of *Atelopus*, a genus of amphibians endemic to the American tropics (Pounds et al. 1999; Pounds et al. 2006). If levels of greenhouse gases continue to rise unabated, newly-developed science indicates that extinction levels in the U.S. and worldwide would likely be catastrophic. As stated by James Hansen, senior scientist at Columbia University Earth Institute and Director of the NASA Goddard Institute for Space Studies:

> In my opinion there is no significant doubt (probability >99%) that [] additional global warming of 2°C would push the Earth beyond the tipping point and cause dramatic climate impacts including eventual sea level rise of at least several meters, <u>extermination of a substantial fraction of the animal and plant species on the planet</u>, and major climate disruptions. Much remains to be learned before we can define these effects in detail, <u>but these consequences are no longer speculative climate model results</u>.

(Hansen 2006). Echoing this assessment, a team of 18 scientists recently estimated that 15-37 percent of terrestrial species within sample regions covering approximately 20 percent of the Earth's surface would be "committed to extinction" by 2050 if greenhouse gas emissions continue rising on current trajectories (Thomas et al. 2004). If those percentages of loss are extrapolated to a planetary level, more than 1 million species could be driven extinct in the

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next fifty years (Thomas et al. 2004). Many ocean species will also suffer pronounced losses (Hunter 2007).

The BLM is required under NEPA to analyze global warming impacts that result from its actions

The severity of the climate crisis was recognized by the U.S. Supreme Court in April 2007, when it ordered the Environmental Protection Agency to confront the problem. The Supreme Court held, in Massachusetts v. EPA, 127 S. Ct. 1438 (2007), that the "unambiguous" definition of "air pollutants" includes carbon dioxide and other greenhouse gases. The Supreme Court's ruling is widely viewed as a landmark recognition of the global warming crisis by the judiciary. The Court noted that the "[t]he harms associated with climate change are serious and well recognized." Id. at 1455. The Court also acknowledged "the enormity of the potential consequences associated with man-made climate change," and the contribution of carbon dioxide emissions to global warming. Id. at 1457-58. The "harms associated with climate change are serious and well recognized," and the federal government has a responsibility to take action to reduce it, even if such action may not completely reverse global warming. Id. at 1458. BLM is not exempt from that responsibility.

U.S. coal production increased from 1,029.1 million tons in 1990, to 1,161.4 million tons in 2006, an increase of 12.9 percent. DEIS, 4-118. In the same time, Wyoming coal production increased from 184.0 million tons in 1990 to 444.9 millions tons in 2006, an increase of 242 percent. DEIS, 4-118. As noted in the DEIS, if the coal in the North Hilight Field, South Hilight Field, West Hilight Field, West Jacobs Ranch, North Porcupine, and South Porcupine LBA Tracts are leased and mined, additional greenhouse gases will be released into the atmosphere, further contributing to global warming and the resulting impacts. DEIS, 3-305.

Since 1990, 25 coal leases containing almost 5.8 billion tons of federal coal have been issued following competitive sealed-bid sales in the Powder River Basin. DEIS, 4-4. This mined coal will inevitably be used in coal-fired power plants, DEIS, 3-305, emitting carbon dioxide (CO_2), the principal anthropomorphic greenhouse gas. CO_2 emissions represent about 84 percent of the total U.S. greenhouse gas emissions. DEIS, 4-115. Of that 84 percent, estimated CO_2 emissions from the electric power sector totaled 2,343.9 million metric tons, or about 39.5 percent of total U.S. energy-related CO_2 emissions in 2006. DEIS, 4-115. See Massachusetts, 127 S. Ct. at 1446 ("A well documented rise in global temperatures has coincided with a significant increase in the concentration of carbon dioxide in the atmosphere. Respected scientists believe the two trends are related . . . It is therefore a species—the most important species—of a 'greenhouse gas.'").

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The concentration of CO_2 in the Earth's atmosphere now exceeds 380 parts per million ("ppm"), more than 80 ppm greater than the maximum levels of at least the last 740,000 years, and perhaps the last 20 million years (Hoegh-Guldberg et al 2007). Because coal-fired power plants are one of the two "largest and fastest growing" sources of carbon dioxide emissions, their greenhouse gas outputs "must be addressed to move emission trends off the Business-as-Usual path and onto something approximating the Alternative scenario" (Hansen 2006; EPA 2007:8) (emphasis added).

Greenhouses gases emissions are within the direct, indirect and cumulative effects that NEPA documents must analyze. 40 C.F.R. § 1508.8. Not only are increased greenhouse gas emissions "reasonably foreseeable" but so too are their climate consequences. 40 C.F.R. §§ 1508.7, 1508.8. As discussed previously, the overwhelming consensus of national and international scientific evidence supports the conclusion that the build-up of greenhouse gases in the atmosphere is contributing to global warming, and that the subsequent changes will adversely affect local, regional and global environments. The PRB coal reserves continue to attract significant attention and continued increase in mine leases and development. As a result, the DEIS should have analyzed the impacts from greenhouse gas emissions from past, proposed, and estimated future coal production. Because the DEIS fails to consider these cumulative impacts, the DEIS must be revised.

Coal-fired power plants are a significant contributor to the generation of greenhouse gases, and consequently, to global warming. The BLM has a responsibility to examine not only the increase in greenhouse gases from the proposed leasing and development of the Wright Area Coal lease areas, but also the regional and global impacts of global warming on resources. The current DEIS neither discusses these impacts nor attempts to quantify them. 5

There is now growing scientific consensus that greenhouse gas emission reductions must begin within the next decade; otherwise, the planet will cross a "tipping point," beyond which "it is virtually certain that there will be large-scale disastrous climate impacts for humans as well as for other inhabitants of the planet," including "extermination of a substantial fraction of the animal and plant species on the planet" (Hansen 2006:15, 30). The impacts of climate change, which are exacerbated by coal leasing and development are much more than "reasonably foreseeable"—and the BLM must analyze them in the DEIS.

The DEIS Fails to Analyze the Alternatives to Coal Based Energy and the "No Action" Alternative 2

The DEIS correctly acknowledges that the demand for power is increasing in the U.S. and throughout the world. DEIS, 4-116. According to the North American Electric Reliability Council, peak demand for electricity in the U.S. is expected to double in the next

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22 years. DEIS, 4-116 (citing Associated Press, 2007). There are methods of generating electricity that result in fewer greenhouse gas emissions than burning coal, including natural gas, nuclear, hydroelectric, solar, wind, and geothermal resources. DEIS, 4-116. According to the IPCC, "there is high agreement and much evidence that all stabilization levels can be achieved by deployment of a portfolio of technologies that are either currently available or expected to be commercialized in coming decades...." DEIS, 4-105. The existence of a viable but unexamined alternative renders an EIS inadequate. An agency must look at every reasonable alternative. Alaska Wilderness Recreation & Tourism Ass'n v. Morrison, 67 F.3d 723, 729 (9th Cir.1995)

NEPA mandates that federal agencies "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(2)(E). Yet the DEIS failed to consider alternative methods. NEPA "requires that alternatives . . . be given full and meaningful consideration." Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1229 (9th Cir. 1988). The BLM failed to meet NEPA's requirements.

Climate change scientists have shown that imminent action is necessary to stabilize and reverse the rapid climate change already occurring. Regardless of what actions are taken to reduce greenhouse gas emissions, some level of global warming is already "in the pipeline," because of past and current emissions. Scientists, however, have generally outlined two broad scenarios based on levels of future emissions: the "Business-as-Usual" scenario and the "Alternative" scenario. Under the alternative scenario, which would yield global warming of less than 1°C in the 21st century, carbon dioxide emissions must moderately decline before 2050 and then have a subsequent steeper decline in order that atmospheric carbon dioxide peaks at 475 ppm in 2100 and declines slowly thereafter. Under the business-as-usual scenario, if emissions continue to rise 2 percent a year, the same rate of increase as the first five years of the 21st century, there will be at least 2°C of global warming by 2100. If warming approaches these levels, the Earth will be a "different planet," and "it is virtually certain that there will be large-scale disastrous climate impacts for humans as well as for other inhabitants of the planet" (Hansen 2006).

The window of opportunity to implement the alternative scenario is exceedingly narrow. If carbon dioxide emissions continue to rise at 2 percent per year for another decade, "the 35% increase [] (between 2000 and 2015) will make it implausible to achieve the Alternative scenario"). At the same time, "the tripwire between keeping global warming less than 1°C, as opposed to having a warming that approaches the range 2-3°C, may depend upon a relatively small difference in human-made direct forcings" (Hansen 2006).

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To comply with NEPA's reasonable alternatives mandate, the BLM was required to include an analysis of the impacts of the proposed lease sale with those of the no action alternative and alternative energy sources. Without the required analysis, the decision makers and the public cannot make an informed decision about the proposed project. The proposed project, with over 2.6 billion tons of coal for lease, makes continued coal power a certainty, even in the face of the impacts on global warming.

The DEIS Fails to Analyze the Impacts of the Coal Lease Project on Threatened and Endangered Species 13

Scientific evidence indicates that global warming will adversely affect and jeopardize the continued existence of many threatened and endangered species. The BLM has a duty under the Endangered Species Act to consult with the U.S. Fish and Wildlife Service ("FWS") to ensure that the greenhouse gas emissions that will result from the leasing of the Wright Area Coal LBA will not "jeopardize the continued existence of threatened and endangered species . . . or . . . destroy or adversely modify their designated critical habitat." 16 U.S.C. § 1536(a)(2).

Statutory Background

The ESA "is the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." Tennessee Valley Authority v. Hill, 437 U.S. 153, 180 (1978). The Supreme Court's review of the ESA's "language, history, and structure" convinced the Court "beyond a doubt" that "Congress intended endangered species to be afforded the highest of priorities." Id. at 174. As the Court noted, "the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost." Id. at 184.

Under section 7(a)(2) of the ESA, every federal agency "shall...insure that any action authorized, funded, or carried out by such agency ("action agency") is not likely to jeopardize the continued existence of the endangered or threatened species or result in the destruction or adverse modification of habitat of such species...determined...to be critical...." 16 U.S.C. § 1536(a)(2) (Section 7 consultation). Agency "action" is defined in the ESA's implementing regulations to include "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to: (a) actions intended to conserve listed species or their habitat; (b) the promulgation of regulations; (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or (d) actions directly or indirectly causing modifications to the land, water, or air." 50 C.F.R. § 402.02.

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The Wright Area Coal Leases "Affect" ESA-Listed Species

The scientific community has made enormous strides in its understanding of the nature and scope of anthropogenic global warming, as well as the enormous risks it poses to wildlife, birds, fish, and plants—especially those species that are already imperiled. Numerous species will be affected by global warming. Species that are already imperiled by habitat destruction and fragmentation, pollution, over-harvesting and other factors will be especially prone to extinction as a result of global warming (Hannah et al. 2005:3-14). Therefore, the greenhouse gas emissions of the Wright Area Coal Leases "may affect" such species, triggering the consultation requirement. FWS and the National Marine Fisheries Service ("NMFS") must prepare a biological opinion, which must address whether the project will violate the ESA's prohibition against jeopardizing listed species or adversely modifying their critical habitat. If so, the biological opinion must then identify "reasonable and prudent alternatives," that would sufficiently mitigate the project's impacts below the jeopardy or adverse modification threshold. 16 U.S.C. § 1536(b)(3)(A).

More pronounced global warming effects in the western U.S. pose particular risks to the region's many threatened and endangered species. For example, the "sky island" mountains of Arizona, so named because they contain "islands" of forested habitat rising above a "sea" of desert and grasslands, contain at least 28 threatened or endangered species listed under the ESA. Because many of the mountain ranges are isolated from one another, their forested expanses contain a high proportion of endemic wildlife with highly restricted ranges. The U.S. Forest Service, which administers most of the land within these ranges, recently concluded that rising temperatures associated with global warming had adverse impacts on the sky islands, stating that its plants and wildlife "have not evolved to tolerate these new conditions" (Egan 2007). For species that exist at the higher elevations of these ranges, there may be no opportunity to adapt: as temperatures rise, their habitat will simply disappear. As stated by one prominent scientist, "[a]s the climate warms, these species on top of the sky islands are literally getting pushed off into space." Or in the words of another researcher, "I honestly believe that we are standing at the edge of a very, very large mass extinction, and top-of-mountain species are going to be the first to go" (Erickson 2005).

The highly imperiled Mt. Graham red squirrel, listed as endangered, vividly illustrates this risk. Endemic to a sky island range known as the Pinaleños, its population numbers have already been dramatically reduced through historic habitat loss. Beginning in 1996, the species' only forest habitat has been altered through a series of insect outbreaks driven by warmer and drier conditions caused by global warming (Koprowski et al. 2005). As noted by scientists studying the species, "these impacts are expected to increase with current trends in global climate change" (Koprowski et al. 2005: 491; Ayres and Lombardero 2000). If those

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trends do continue, "[i]n a sense, the topmost community [of the Pinaleños] (the spruce-fir community [will] literally be[] burned up into the sky," causing the Mt. Graham red squirrel to go extinct (Warshall 2007).[2]

The adverse effects of global warming on listed species within the western U.S. are by no means limited to mountaintop species. For example, global warming has been identified as a driving factor in the extirpation of thirty of the eighty peninsular bighorn sheep populations in California, as researchers have correlated those extirpations with those places where the climate has been the warmest and driest (Epps et al. 2004). In addition, decreasing snowfall associated with global warming has been found to negatively affect the Canada lynx, through decreased prey availability and decreased competitive advantage over other carnivores (Carroll 2006).

BLM is Violating Section 7 the ESA

Section 7 of the ESA requires federal agencies to insure that any "action" they authorize, fund, or carry out is not likely to "jeopardize the continued existence of any endangered [ ] or threatened species," or result in the destruction or adverse modification of critical habitats. 16 U.S.C. § 1536(a)(2). As noted in TVA v. Hill, "this language admits of no exception. 437 U.S. 153, 173. The applicable regulations direct agencies, in considering whether formal consultation is required, "to determine whether any action may affect listed species or critical habitat." 50 C.F.R. § 402.14(a). A later portion of the same regulation confirms that agencies must consider the "effects of the action as a whole." 50 C.F.R. § 402.14(c). The "[e]ffects of the action" include the "direct and indirect effects of an action on the species or critical habitat," and "[i]ndirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." 50 C.F.R. § 402.02.

Despite increasing recognition that global warming poses grave threats to both human society and the natural world, and the fact that the mining and burning of coal is one of the paramount contributors to such warming, the BLM continues to approve new coal leases, which will in turn increase greenhouse gas emissions. Coal mining emissions, and their contribution to global warming and species endangerment, are thus an "effect" of the BLM coal leasing program triggering a duty to initiate formal consultation. 1

Under these regulations, federal agencies are required to consider the "total impact" of a proposed project on listed species when consulting under section 7. Riverside Irrigation Dist. v. Andews, 758 F.2d 508, 512 (10th Cir. 1985); North Slope Borough v. Andrus, 642

[2] Global warming and, in particular, longer drought, is also predicted to negatively impact another squirrel species endemic to the eastern U.S., the Delmarva fox squirrel (Hilderbrand et al. 2007).

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F.2d 589, 608 (D.C. Cir. 1980) (agency must look at "all ramifications" of its action). By requiring federal action agencies to broadly assess the effects of their proposed actions, and to consider such effects in the context of independent, baseline harms already occurring to a species, ESA regulations ensure that the section 7 consultation process is not conducted "in a vacuum," and that agencies will "not take action that will tip the species from a state of precarious survival into a state of likely extinction." NWF v. NMFS, 481 F. 3d 1224 (9th Cir. 2007).

By defining "effects of an action" broadly, the ESA regulations do not distinguish between direct and indirect effects—both must be considered during consultation. Indeed, the centrality of indirect effects analysis to the consultation process is highlighted throughout the section 7 regulations. In addition to "effects of the action" encompassing both "direct and indirect effects," the regulatory definition of "action" (actions include those "indirectly causing modifications to the land, water, or air"), "action area," ("all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action") and "destruction or adverse modification" of critical habitat ("a direct or indirect alteration that appreciably diminishes the value of critical habitat") all explicitly include indirect effects. 50 C.F.R. § 402.02 (emphasis added); see also Village of False Pass v. Clark, 733 F.2d 605, 611 (9th Cir. 1984) (consultation must insure that direct and indirect effects of agency action will not jeopardize listed species); Connor v. Burford, 848 F.2d 1441, 1452 (9th Cir. 1988) (section 7 requires preparation of biological opinion analyzing all phases of agency action).

In determining what constitutes an indirect effect, the regulations demand only that they be "reasonably certain to occur," 50 C.F.R. § 402.02, a standard that is consistent with normal tests of proximate causation and foreseeability. While "[p]roximate causation is not a concept susceptible of precise definition . . . It is easy enough [] to identify the extremes." Babbitt v. Sweet Home Chapter of Cmtys. for a Great Ore., 515 U.S. 687, 713 (O' Connor, J., concurring). As such, questions of causation "depend[] to a great extent on considerations of the fairness of imposing liability for remote consequences . . . [A]t the least, [] proximate cause principles inject a foreseeability element into the statute." Id.

Under even the most rigid of formulations, the contribution of coal-burning power plants on global warming are reasonably foreseeable indirect effects of the BLM coal leasing program under ESA regulations.[3] The causal chain at issue is, in fact, short and unattenuated: the BLM permits the lease of coal, the Office of Surface Mining ("OSM")

[3] As noted above, the actual process of coal mining, and the handling and transportation of the mined coal, both result in significant greenhouse gas emissions, particularly methane. Thus, global warming is also a direct effect of the OSM coal mining program.

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approves the mining of coal under its coal regulatory program, and the mined coal is then utilized at coal-fired generating stations that comprise the largest source of CO_2 in the country. The greenhouse gas emissions and their contribution to global warming—which pose greater risks of mass extinctions than that any other activity in human history—are consequently a reasonably foreseeable consequence of the BLM's action. C.f. Friends of the Earth v. Watson, 2005 U.S. Dist. LEXIS 42335 (N.D. Cal. Aug. 23, 2005) (finding causation for standing purposes in action against agencies that provide loans, loan guarantees, and insurance to U.S. companies that invest in large international energy projects which contribute to global warming). It is equally clear that the mining and burning of coal within the U.S., by contributing to global warming, poses threats to listed species far beyond the regulation's de minimis "may affect" threshold. See 51 Fed. Reg. 19,926, 19,949 (June 3, 1986) (section 7 rulemaking in which FWS and NMFS interpreted the "may affect" threshold for initiation and reinitiation of consultation as a very low bar, finding that "any possible effect, whether beneficial, benign, adverse, or of an undetermined character, triggers the formal consultation requirement.") (emphasis added). Consequently, greenhouse gas emissions from coal-fired power plants, and their effect on global warming and listed species, are an indirect effect of the BLM's lease sales compelling formal consultation.

In addition to the requirement to consider greenhouse gas emissions as an indirect effect of the coal lease sale, the ESA regulations create an independent duty on the BLM to consider coal-fired power plant emissions as an interrelated and interdependent action. "The test for interrelatedness or interdependentness is 'but for' causation: but for the federal project, these activities would not occur." Sierra Club v. Marsh, 816 F. 2d 1376, 1387 (9th Cir. 1987) (quoting 51 Fed. Reg. 19,932 (1986)). Here, U.S. coal-fired power plants would not and could not operate without the domestic coal mining program possible through coal leases administered by the BLM. In recent years, approximately 90 percent of coal mined in the U.S. has been utilized at domestic power plants, while importation has always "represented a negligible share of U.S. coal," and has not risen above 3.5 percent of domestic consumption for the past 35 years (EIA 2006:17; EIA 2007:3). Because these coal-fired power plants are interrelated to, and interrelated with the BLM coal leasing program, their effects on threatened and endangered species present an additional and independent basis compelling the BLM to initiate consultation. 6

Species of Concern

The Greater sage-grouse (*Centrocercus urophasianus*) is a known species of concern throughout the West, and a BLM sensitive species, relies on sagebrush for food, cover, and shelter habitat year round. ES-49, ES 3-198. In recent surveys, a total of 10 safe-grouse leks have been documented on and within two miles of the six combined general analysis areas. ES-49. With four of the ten leks active and classified as occupied, the mining 12

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impacts, including loss of nesting habitat and disturbance to breeding activities presents significant concern. ES-49. The mining of the six LBA tracts will reduce potential habitat for wildlife species, including the sage-grouse. The BLM must analyze in greater detail the impacts of the proposed LBAs on the on the imperiled sage-grouse.

Conclusion

Based on the aforementioned deficiencies and concerns raised, we believe the BLM must revise the DEIS and update it to include an accurate, current, and complete discussion of the impacts of greenhouse gas emissions from the LBAs.

All references cited in the text are listed in the Literature Cited section below. We request that the BLM carefully review and consider these important references. A CD with the scientific studies will be provided at a later date and under a different cover. They are also part of the administrative record for this rulemaking.

Thank you very much for your consideration of these comments. Please contact me at (202) 682-9400 or at the address on this letterhead if you have any questions or concerns.

Sincerely,

Erin D. Lieberman

Erin Lieberman
Legal Fellow

National Headquarters
1130 17th Street, N.W. | Washington, D.C. 20036-4604 | tel 202.682.9400 | fax 202.682.1331
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August 25, 2009

VIA ELECTRONIC MAIL
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Wyoming High Plains District Office
Bureau of Land Management
Attn: Sarah Bucklin
2987 Prospector Drive
Casper, Wyoming 82604
casper_wymail@blm.gov

Re: Draft Environmental Impact Statement for the Wright Area Coal Lease Applications

Dear Ms. Bucklin:

These comments are submitted on behalf of the Center for Biological Diversity ("Center") in response to the Bureau of Land Management's Draft Environmental Impact Statement ("DEIS") for the Wright Area Coal Lease Applications.[1] The Center is a non-profit conservation organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 225,000 members and supporters throughout the western United States and around the world, and offices in New Mexico, Arizona, California, Nevada, Oregon, Alaska, Illinois, Minnesota, Vermont, and Washington, D.C. The Center also works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health.

Introduction

As stated in the Draft EIS, BLM is proposing to hold a competitive coal lease sale and issue a maintenance lease to the successful bidder(s) for the North Hilight Field, South Hilight Field, West Hilight Field, West Jacobs Ranch, North Porcupine, and South Porcupine Lease by Application ("LBA") Tracts, which altogether include approximately 18,021.73 acres of public land containing approximately 2.570 billion tons of federal coal.

As explained below, the Draft EIS for this proposal does not adequately disclose and take a hard look at the environmental consequences of the Wright Area leases. Mining the Wright Area LBA Tracts as proposed would result in significant impacts to air and climate, water, soil, species, and other resources that were not considered in the Draft EIS. While the Draft EIS is

[1] U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT, *Draft Environmental Impact Statement for the Wright Area Coal Lease Applications* (June 2009) ("DEIS" or "Draft EIS").

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inadequate in a number of respects, without question some of its most troubling aspects are its failure to disclose information about and analyze changing environmental baseline conditions due to global warming, the combined effect of climate change and the Wright Area leases to affected resources, and the LBA Tracts' substantial contribution to the problem of global warming, with billions of tons of greenhouse gases being released into the atmosphere as a result of BLM actions. The Draft EIS also fails to demonstrate conformity with standards under the Clean Air Act.

With literally the fate of our planet at stake, the proposed leasing should be shelved and a phase-out of all coal-related development commenced immediately, particularly on public lands. At a minimum, the DEIS (or a supplemental environmental impact statement) must be revised and recirculated to properly evaluate the global warming impacts of all reasonably foreseeable consequences of leasing the LBA Tracts.

DISCUSSION

I. The Proper Context for an Analysis of the Wright Area Project is The Climate Crisis. 6

A. The Climate Crisis is Worsening.

Climate change is already changing weather patterns, intensifying drought, causing increased fire danger, melting Arctic sea ice, causing sea level rise and ocean acidification, and creating a host of additional dangers for people and wildlife.[2] Recent observations show greenhouse gas levels and effects on the environment that are generally at the upper bounds of, or even outstripping, recent projections.[3] Some of these impacts make clear that at today's greenhouse gas concentrations we are already beyond the natural climate variability experienced over the last several thousand years, suggesting negative climate consequences of an unpredictable magnitude yet to come.[4]

Federal scientists understand that climate change is happening and that its impacts will continue to grow. Federal agencies have issued clear and forceful reports on the magnitude of the crisis, including in two recent documents: the Global Change Research Program's June 2009 report, *Global Climate Change Impacts in the United States* ("GCRP Report") and the Environmental Protection Agency's April 2009 *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act* ("GHG TSD"). These documents describe the impacts of climate change to human health, ecosystems, and the economy, including impacts that are already being documented in the U.S., and

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[2] For the most comprehensive and up-to-date statement of the impacts of climate change in the U.S., see U.S. Global Change Research Program, *Global Climate Change Impacts in the United States* (June 2009) ("GCRP Report") available at http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts. For the most up-to-date statement of the impacts of climate change internationally, see Copenhagen Climate Congress, *Synthesis Report – Climate Change: Global Risks, Challenges and Decisions* (Mar. 2009) ("Copenhagen Report"), available at http://climatecongress.ku.dk.

[3] *Id.*

[4] *Id.*

projections for impacts that will likely get far worse. These reports show that already, temperatures are warmer, temperature extremes have shifted upward, precipitation patterns have changed, sea levels have risen, oceans have become more acidic, and glaciers and Arctic ice have melted.[5] Indeed, much of Wyoming, the state where the proposed leases are located, has already experienced a 2 to 3°F increase in annual average temperature compared to the 1961-1979 average.[6]

The overwhelming weight of scientific evidence leaves little doubt that unless we rapidly and completely curtail greenhouse gas emissions – primarily from burning coal, oil, and natural gas[7] – the U.S. will continue to warm at an accelerating rate and greater than the global average, and experience greater-intensity heat waves more frequently as well as changes in precipitation patterns, more frequent and severe droughts, greater-intensity hurricanes, and accelerating ocean acidification.[8]

Indeed, scientists are telling us that global greenhouse gas atmospheric concentrations are already too high, and that to avoid "severe, widespread and irreversible impacts," levels of greenhouse gases must soon be stabilized no higher than levels already reached.[9] It cannot be over-emphasized that the Earth is already past the danger point. Even stabilizing at today's atmospheric concentrations of greenhouse gases is no guarantee that severe, widespread, and irreversible climate impacts can be avoided.[10] The inescapable conclusion is that to assure a livable world we must bring greenhouse gas emissions down drastically, starting immediately. Further postponing action decreases the Earth's chances of preventing catastrophic climate change and greatly increases the eventual costs of stabilization.[11] Inaction now inevitably means more suffering and even greater economic losses in the not-too-distant future. 5

B. Coal's Unique Role in the Solution to the Climate Crisis

When viewed in the context of all greenhouse gases emitted by all sectors in the U.S. economy – including electricity generation, transportation, industry, and agriculture – burning coal to produce less than half of the nation's electricity represents more than one-third of all net U.S. emissions.[12] Compared even to oil or gas, coal emits 31-84 percent more carbon dioxide per unit of energy delivered.[13] Phasing out the use of coal is a critical first step toward stabilizing the climate. There are two principle reasons for this. 14

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[5] *See, e.g.*, GHG TSD at ES2-ES3.
[6] *See* GCRP Report at 28.
[7] *See id.* at 9.
[8] *See, e.g.*, GHG TSD at ES3-ES4.
[9] GCRP Report at 23.
[10] *Id.*
[11] Copenhagen Report at 6.
[12] EPA, *2009 U.S. Greenhouse Gas Inventory Report* (April 2009) at http://www.epa.gov/climatechange/emissions/usinventoryreport.html.
[13] EIA, *Official Energy Statistics from the U.S. Government*, at http://tonto.eia.doe.gov/ask/environment_faqs.asp.

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One, coal has the worst global warming emissions profile of any conventional fossil fuel.[14] Production of one million British thermal units ("BTU") of energy from burning natural gas produces 117 pounds of CO_2, while the same energy production from sub-bituminous coal mined in the Powder River Basin produces 213 pounds of CO_2.[15] Thus, for no gain in energy output, coal from Wyoming over natural gas means 82 percent more greenhouse gases are pumped into the atmosphere.[16]

Meanwhile, scientists now say that if the world continues on a business-as-usual path for even another decade without initiating phase out of unconstrained coal use, the prospects for avoiding a dangerously large, extended overshoot of the 350 ppm level will be dim, and the prospects for a near-term return of atmospheric composition beneath the tipping level for catastrophic effects virtually eliminated. In a seminal paper, Dr. Hansen and eight co-authors state that the curtailment of coal use is critical if we want to "preserve a planet similar to that on which civilization developed and to which life on Earth is adapted … ."[17] They warn that a failure to do so may bring "irreversible, catastrophic effects." And if we burn all the coal, Dr. Hansen has warned that "there is a good chance that we will initiate the runaway greenhouse effect" – *i.e.*, a relatively rapid increase of CO_2 concentrations in the atmosphere that can stimulate the potentially unstoppable release of massive amounts of stored carbon and methane into the atmosphere.[18]

The second reason for prioritizing the elimination of coal is that renewable sources of energy and energy efficiency measures are available to replace coal use *now*. In each of the last four years, more new electric generating capacity in the U.S. was added by renewable energy sources than by coal.[19] According to the latest available figures, comparing April of 2009 with April 2008,

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[14] Processing oil from tar sands and from shale, which has been approved to occur in Colorado, Utah, and Wyoming by the Department of Interior and BLM, will have climate emissions portfolios worse than coal, and include significant additional impacts to air and water quality. *See* Hansen, J. 2008. Climate Threat to the Planet: Implications for Energy Policy and Intergenerational Justice. Bjerknes Lecture (slides), American Geophysical Union (stating that "…if we burn all the coal, there is a good chance that we will initiate the runaway greenhouse effect. If we also burn the tar sands and tar shale (a.k.a. oil shale), I think it is a dead certainty.").

[15] EIA, *Official Energy Statistics from the U.S. Government.*

[16] On top of that, the U.S. coal industry does not efficiently use coal as a source of energy. For example, although coal is also the dirtiest conventional fossil fuel used in Japan, it is at least used more efficiently; a kilowatt-hour of coal-fired power produced in Japan creates 418 grams of CO_2, in comparison to the 625 grams of CO_2 that are emitted to produce a kilowatt-hour of electricity in the U.S.[16] In the U.S., older coal-fired power plants can often avoid installing air pollution control equipment that is required on newer plants. For this reason, 145 of the dirtiest coal-fired power plants in the U.S. still in operation today were built in the 1940s or earlier. Pope, C., *The Clean Air Act story: back to the beginning*, Grist (Aug. 10, 2009) available at http://www.grist.org/article/2009-08-10-the-clean-air-act-story-back-to-the-beginning/.

[17] Hansen, J., et al., Target Atmospheric CO_2: Where Should Humanity Aim?, The Open Atmospheric Science Journal 217, 229 (2008).

[18] Hansen, J. (2008) (Bjerknes Lecture (slides)). In Congressional testimony more than 20 years ago, Dr. Hansen warned that climate change could not be ignored by the world, leading the *New York Times* to publish a story under the headline, "Global Warming Has Begun, Expert Tells Senate." Senate Energy and Natural Resources Committee, 100th Congress (June 23, 1988); Philip Shabecoff, *Global Warming Has Begun, Expert Tells Senate*, New York Times (June 24, 1988).

[19] *See, e.g.*, Worldwatch Institute, *Wind Power Increase in 2008 Exceeds 10-Year Average Growth Rate* (May 7, 2009) at http://www.worldwatch.org/node/6103.

U.S. coal-fired generation was down 14 percent compared to the previous year, while wind generation surged ahead by 35 percent during the same period.[20] Renewable energy now generates 11 percent of our nation's electricity, and rising.[21] The trend away from fossil fuels will likely continue and accelerate.[22]

Energy efficiency is widely recognized as the most important substitute for coal. The National Academy of Sciences, in a new report, finds that U.S. projected energy demands could be reduced by at least 15 percent by 2020 and 30 percent by 2050 through energy efficiency.[23] A detailed new report by global consulting firm McKinsey and Associates finds even more savings. Non-transportation energy use in the U.S., primarily electricity, could be reduced 23 percent from projected levels by 2020 with a net savings to the economy of about $700 billion.[24] The efficiency measures employed only include those that save costs and do not even include a price on carbon. Yet another report finds that by employing efficiency measures, U.S. electricity consumption by 2050 could fall 30 percent below today's levels, despite significant growth in demand.[25] With committed employment of efficiency measures and continuing growth of renewable industries at current rates, all coal-fired plants could be shuttered within the next several decades, without any disruption to the U.S. electricity supply.

Predictions of the power of efficiency are backed up by an impressive, real world example of effective implementation of widespread efficiency measures. About three decades ago, California per capita electricity consumption was similar to the national average as a whole. After years of pursuing efficiency goals, the state has reduced its peak power requirements by 12 GW, at a cost of about 2-3 cents per kW-hr.[26] California per capita consumption today runs about 40 percent below the national average, and California now gets only one percent of its

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[20] EIA, *Electric Power Monthly* (July 2009) at http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html?featureclicked=3&.

[21] *Id.* Of course, to truly be "green" renewable energy projects must be sited in areas that are already disturbed, or near degraded private lands and existing infrastructure and wastewater sources, in order to avoid unnecessary impacts to threatened and endangered species, sensitive environmental areas and the water that sustains them as well as human communities.

[22] Early in the process of building a new power plant, a developer needs to enter into a "queue" for interconnection to transmission capacity. By looking at which types of projects have entered the interconnection queue, it is possible to see what sources of electricity are likely to come on line in the next few years. According to a new Department of Energy report, there are almost 300 GW of wind power projects in the queue. Coal has less than 50 GW of generation in the queue. Planned renewables far outpace all fossil fuel and nuclear sources of likely new power combined. U.S. Department of Energy, *2008 Wind Technologies Market Report* (July 2009) at 13, available at www1.eere.energy.gov/windandhydro/pdfs/46026.pdf. And given that 100 coal-fired power plants have been cancelled since 2002, even the possible addition of 45 GW of new coal power is surely a gross overestimate of future increased generation. *Utah Coal Plant Scuttled, 100th in U.S. Since 2002*, Reuters (July 9, 2009) at http://www.reuters.com/article/GCA-GreenBusiness/idUSTRE5684UN20090709.

[23] National Academy of Sciences, *America's Energy Future: Technology and Transformation* (press release) (July 2009) available at http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12091.

[24] Granade, H.C., et al., *Unlocking Energy Efficiency in the U.S. Economy*, McKinsey and Associates (July 2009) available at http://www.mckinsey.com/clientservice/electricpowernaturalgas/US_energy_efficiency/.

[25] Greenpeace International, *Energy Revolution: A Sustainable USA Energy Outlook* (March 2009) at 6.

[26] Romm, J., *If Obama Stops Dirty Coal As He Must, What Will Replace It?*, Climate Progress (Feb. 19, 2009) available at http://climateprogress.org/2009/02/18/obama-replace-dirty-coal-nuclear-efficency-cogeneration-wind-solar-csp-biomass-cofiring/.

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electricity from coal.[27] Dozens, if not hundreds, of our oldest and dirtiest coal-fired plants could be closed quickly if utility incentives were restructured to promote efficiency measures, like they have been in California, instead of continuing to provide incentives to install new power plants, as in much of the nation. We continue to use coal by choice, not by necessity.

C. The Unique Role of Public Lands in the Climate Crisis

Public lands provide some of our most critical refuges for species in an era of ecosystem onslaught due to climate change. They are the last, best places where natural processes remain functional.[28]

As the effects of climate change grow and intensify, it will be the ecosystems with the greatest resiliency that will best be able to survive these unprecedented changes. A healthy old-growth forest will support far more biological diversity in a warming world than a corporate tree farm. The seeps and springs of a natural desert might still provide water necessary for life, where nearby lands pumped dry for mining or irrigation will not. In an era of potentially massive species extinction, resilient ecosystems on public lands may be the only hope for many species. Public lands can play a critical role in providing migration corridors for species on the move, as they will provide large areas of natural forest or prairie or desert in public ownership can provide useful corridors for migration, whereas the broken landscapes of private ownership, development, agriculture and industrialization often cannot.

Public lands will play one other critical role in the face of climate change: sequestration. About one-eighth of all U.S. greenhouse gas emissions are currently absorbed by U.S. lands and the plants that grow there.[29] If, as described above, the U.S. fulfills the President Obama's commitment to reduce total emissions by 80 percent by 2050, that same absolute level of carbon absorption by terrestrial ecosystems will amount to a 40 percent absorption of emissions in the future.[30] Public lands could be managed now to absorb even more carbon dioxide per acre than current rates. Or they could be degraded further, by more mining, more logging, drilling and grazing, reducing this critical natural sequestration function. 15

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[27] American Coalition for Clean Coal Electricity, *America's Power – The Facts*, available at http://www.americaspower.org/The-Facts.

[28] DEIS at ES-51.

[29] GHG TSD at 10.

[30] In his "Remarks on the Declaration by the Major Economies Forum on Energy and Climate Change in L'Aquila Italy" on July 9, 2009, President Obama recently committed the nation to holding climate change in check, stating:

> We all agreed that by 2050 developed nations will reduce their emissions by 80 percent, and that we will work with all nations to cut global emissions in half. This ambitious effort is consistent with limiting global warming to no more than 2 degrees Celsius, which, as our declaration explicitly acknowledged for the first time, is what the mainstream of the scientific community has called for.

The President added that one of his Administration's "highest priorities" is to "drive a clean energy transformation of our economy… ."

II. The Purpose and Need Warrants Adoption of the No Action Alternative. 1

It is a not easy to identify the "purpose and need" of the Wright Area project from the two pages of prose under that heading.[31] Nevertheless, BLM does appear to suggest that the purpose and need for this project stems from a need to continue to implement two Congressional mandates, the Federal Land Policy Management Act, 43 U.S.C. § 1701, *et seq.* ("FLPMA") and the Energy Policy Act of 2005 ("EPAct").

Only the "No Action" alternative fulfills the stated purpose and need. As the DEIS notes, FLPMA requires BLM to "manage public lands for multiple use so that the lands are utilized in the combination that will best meet the present and future needs of the American people." DEIS at 1-16. As discussed below, the Wright Area lands proposed for mining under the Proposed Action can best meet the needs of present and future Americans if the coal is left in the ground and the carbon is kept out of the atmosphere. By proposing to allow the mining of over 2.5 billion tons of federal coal in the Wright Area lands, BLM is proposing to use such lands in direct contradiction to the most basic needs of future Americans: an environment on Earth that is hospitable to life.

Likewise, the DEIS notes the important goals of the EPAct that implicate this project: promote energy efficiency, ensure secure, affordable and reliable domestic energy, and add energy supplies from diverse sources. *Id.* As also demonstrated below, these needs are best met by leaving the coal in the ground. Given coal's many tremendous costs to society, coal is not "affordable" and works to prevent energy efficiency. In addition, coal's role in creating global warming threatens U.S. security; at about 46 percent of domestic electricity generation, further coal mining works against diversifying U.S. energy supplies.

III. The Draft EIS Fails to Adequately Disclose and Take a Hard Look at the Impacts of the Wright Area Leases. 6

A. The DEIS Fails to Account for all Greenhouse Gases.

The DEIS fails to adequately catalogue the greenhouse gas emissions that will result from issuance of the leases. While the DEIS states that "Section 3.4.5 contains estimates of greenhouse gas emissions resulting from the combined mine operations", in fact, Section 3.4.5 reads simply, in its entirety, "No residual impacts to air quality would occur following mining and reclamation."[32] This is unacceptable; whether intentional or an oversight, this error mandates recirculation of a DEIS that adequately discloses and takes a hard look at the direct, indirect, and cumulative effects of the leases, or issuance of a SEIS, whereby the public is given an actual opportunity to review BLM's promised estimates of project climate emissions, analyze those estimates, and comment on the estimates and implied impacts.

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[31] DEIS at 1-16.
[32] *Id.* at 4-109, 3-85.

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B. The DEIS Does Not Adequately Estimate, Disclose, or Consider the Environmental Consequences of the Greenhouse Gas Emissions Resulting from Issuance of the Leases. 6

Section 3.18.2 attempts a rough estimate of mining-related greenhouse gas emissions, but this estimate is inadequate as it excludes the largest source of emissions from this project: the burning of the coal that will be mined.[33] When analyzing greenhouse gas emissions, the DEIS would have a blindfold on as to the use for the coal, as if it is somehow uncertain and cannot be estimated or analyzed precisely. Yet in the DEIS, BLM recognizes that approving this project is an irreversible and irretrievable commitment of resources that are "*to be used for electrical power generation.*"[34]

Indeed, there can be no serious doubt that coal mined in the lease areas will be combusted for power generation. Therefore, no EIS is complete without analyzing the impacts of burning that coal, including impacts on the climate. *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (when the *nature* of the effect is reasonably foreseeable but its *extent* is not, we think that the agency may not simply ignore the effect"); *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008) (greenhouse gas emissions are "unquestionably subject to NEPA's cumulative impacts requirements"). The first step in that analysis must be an inventory of emissions, and that inventory, once it is disclosed, will show billions of tons of CO_2 would be released as a result of this project, thousands of times more than the DEIS admits.[35] A SEIS, with an opportunity for public comment, is therefore the only solution for addressing this otherwise unlawful omission.

Even when climate impacts are described in the DEIS, the best available science is not applied. For example, the DEIS asserts that, "[e]xisting climate prediction models are not at a scale sufficient to estimate potential impacts of climate change within the Powder River Basin."[36] And, "[t]ools necessary to quantify incremental climatic changes associated with those factors for the projected development activities in the PRB are presently unavailable."[37] These are the same misleading incorrect assertions that were made about other air quality models a generation ago.[38] Similarly, quoting a 22 year-old study on global temperature changes omits the top ten hottest years in the global temperature record.[39] Trying to attribute global warming to solar activity changes – without even citing one peer-reviewed study – would be laughable if it were not so frightening for its display of scientific ignorance.[40]

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[33] *Id.* at 3-304.
[34] *Id.* at 3-308 (emphasis added).
[35] *Id.* at 3-307.
[36] *Id.* at 4-110.
[37] *Id.*
[38] As an example, we cannot say which people exactly will actually die from an increase in ozone precursors. We cannot say exactly how many additional lives will be lost from a given increase in emissions. Nonetheless, we clearly know enough to place controls on industrial processes known to emit these dangerous ozone-forming pollutants.
[39] DEIS at 4-112.
[40] *Id.; see also* 40 C.F.R. § 1502.24 (An agency must also insure the professional integrity, including scientific integrity, of the discussions and analyses included in its EIS.).

Likewise, the discussion on greenhouse gas emissions in Section 4.2.14 never actually describes the cumulative environmental consequences of this action on climate change. Instead, the section is largely devoted to a description of the role that coal plays in electricity generation now, and how important that role will remain in the future. The section is largely used to argue that because emissions from this project are small relative to global emissions, PRB emissions are of no consequence. This is the opposite of disclosure and analysis of cumulative impacts, which is required under NEPA. *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d at 1217 (greenhouse gas emissions are "unquestionably subject to NEPA's cumulative impacts requirements"). Additionally, BLM's conclusion that disapproval of mining these 2.5 billions tons of coal, compared to mining them, would not "result in a decrease of U.S. CO2 emissions attributable to coal-burning" is stunning.[41] Where does BLM think greenhouse gas emissions come from if not mining coal and burning it? This degree of denial as to the effects of the Proposed Action has no place in a DEIS.

When assessing the future of U.S. coal use, BLM uses two models, both of which assume that coal use continues to grow at the same rate other sources of electricity grow, despite all evidence from the last decade to the contrary.[42] This is also despite the President Obama's pledge to transform the nation's energy infrastructure. While the President, world leaders and scientists call for a rapid decrease in carbon emissions, BLM continues to assume a high rate of carbon emissions growth for the next two decades and beyond.[43] Only by continuing to hold on to outdated views and ignore current science could BLM even contemplate approval of this project. 14

Furthermore, the Energy Information Administration ("EIA") has disavowed the very analysis on which BLM relies. A new EIA analysis was published in March 2009, months before this DEIS was published.[44] If BLM would have sought out this updated information before DEIS publication , it would have learned that the EIA is now predicting "much less new coal capacity" in future decades than previously projected, coal providing about one-third of the growth that BLM projects. Prediction of total energy growth is reduced to about 0.5 percent per year, far less than BLM estimates in the DEIS. Of course, new legislation or a new international treaty would require even greater scaled back predictions for coal demand. And as noted above, coal demand in the last year has dropped by 14 percent, while renewables have surged forward.[45]

The DEIS also excludes any and all consideration of combustion by-products like black carbon, or soot, which is generated (among other things) by combustion of fossil fuels including coal. Black carbon is a particulate that deposits to the surface of the Earth, often in Alaska, Greenland, or the Arctic Ocean, within about a week of its emission, which usually occurs in the northern hemisphere. Black carbon influences the climate both in the atmosphere and at the surface, before and after it is deposited; the contrast between black carbon, the darkest aerosol, and snow and ice, the brightest surfaces of the planet, causes black carbon to absorb sunlight and to warm 16

[41] *Id.* at 4-122.
[42] *Id.* at 4-119.
[43] *Id.*
[44] EIA, *Annual Energy Outlook 2009* (March 2009) Executive Summary available at http://www.eia.doe.gov/oiaf/aeo/execsummary.html.
[45] EIA, *Electric Power Monthly* (July 2009) at http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html?featureclicked=3&.

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the Arctic atmosphere by approximately the same amount as human-injected CO_2 in spring and summer, when snow and ice are most vulnerable to melting.[46] The DEIS must be revised and recirculated to include black carbon in its analysis of climate impacts.[47]

In yet another glaring omission, the DEIS also fails to note the effect climate change is already having on the project area environment. Chapter 4 of the DEIS claims that Chapter 3 of the DEIS does so, but it is not apparent where any such discussion may be found.[48] Significant changes to temperature and precipitation regimes, well documented by scientists, are completely ignored in the section of the DEIS devoted to describing climate in the area.[49] Some of these existing changes to climate are noted below, but such description cannot satisfy BLM's responsibility to disclose and consider climate change as part of the environmental baseline for the area. NEPA requires BLM to set forth such baseline environmental conditions, as there is no way to determine what effect on the environment the leases will have without doing so, and consequently, no way to comply with NEPA. *Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci,* 857 F.2d 505, 510 (9th Cir. 1998); *see also Robertson v. Methow Valley*, 490 at 349 (NEPA's fundamental purposes are to guarantee that: (1) agencies take a "hard look" at the environmental impacts of their actions by ensuring that they "will have available, and will carefully consider, detailed information concerning significant environmental impacts;" and (2) "the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision."); *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1166 (9th Cir. 2003) (NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision-making to the end that the agency will not act on incomplete information, only to regret its decision after it is too late to correct.") 6

C. The DEIS Fails to Disclose or Consider the Current and Projected Impacts of Climate Change.

The DEIS fails to adequately disclose and discuss the myriad ways in which climate change impacts human safety and public health. Because NEPA requires BLM to fully disclose the environmental consequences of its actions, BLM was required to rigorously explore both how ongoing climate change has impacted the environmental baseline conditions in the lease area – 17

[46] Zender, C.S. 2007. Arctic Climate Effects of Black Carbon. Written testimony to the Oversight and Government Reform Committee, U.S. House of Representatives. *See also* Schwartz, J. 2007. Testimony for the Hearing on Black Carbon and Climate Change House Committee on Oversight and Government Reform United States House of Representatives.

[47] *See Half Moon Bay Fishermans' Marketing Ass'n v. Carlucci*, 857 F.2d 505, 508 (9th Cir. 1988) (quoting *California v. Block*, 690 F.2d 753, 770-71 (9th Cir. 1982)) ("NEPA's public comment procedures are at the heart of the NEPA review process" and "reflect 'the paramount Congressional desire to internalize opposing viewpoints into the decision making process to ensure that an agency is cognizant of all the environmental trade-offs that are implicit in a decision.'" Thus, "[i]t is only at the stage when the draft EIS is circulated that the public and outside agencies have the opportunity to evaluate and comment on the proposal" and "[n]o such right exists upon issuance of a final EIS".); *id.* ("an agency's failure to disclose a proposed action before the issuance of a final EIS defeats NEPA's goal of encouraging public participation in the development of information during the decision making process").

[48] DEIS at 4-110.

[49] *See id.* at 3-10 to 3-11.

including in the ways described below – and *how those changes will combine with and exacerbate the impacts from the lease sale approval.* However, this was not done.

1. More frequent and intense heat waves

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Among weather-related causes of death in America, heat ranks as number one. For example, in 1998 in the U.S., between 5,000 and 10,000 Americans are believed to have died from heat waves and attendant air quality degradation.[50] Climate change is expected to significantly increase the number, duration, and severity of heat waves in America.[51]

By the end of the century, major U.S. cities can expect to experience two to four times as many heat wave days, resulting in two to four times as many heat-related deaths, or even more.[52] As one particularly stark example, depending on emissions scenarios, by the end of the century, many areas throughout Texas, Louisiana, Oklahoma, Arizona and California can expect more than 100 days in an average year with temperatures over 100°F.[53] Even large portions of states like Virginia, Illinois, and South Dakota could see an average of around 50 days per year over 100°F.[54] The Wright Area can expect about 75 days a year over 90°, far outside the normal range.[55]

A growing population of people over the age of 65 could be especially vulnerable. Heat waves lead not only to thousands of deaths, but increased illness among many, including ailments like heart attacks.[56] When currently-young citizens of Wyoming retire, they can expect heat waves that today occur once every 20 years or so to occur almost on annually.[57] In producing these estimates, researchers are assuming that people will become somewhat accustomed to this increased heat – otherwise, heat-related deaths will climb to levels even higher.[58]

2. Increases in smog

Increased ozone concentrations lead to lung tissue damage, worsened asthma, and premature death.[59] This is especially true for people who exercise outdoors and for children.[60] Unfortunately, "hot" and "smoggy" go hand in hand. The chance that ground-level ozone pollution, the primary constituent of smog, exceeds safety guidelines is a strong function of daytime temperatures.[61] Already 175 million Americans live in counties with unsafe ozone

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[50] GCRP Report at 102.
[51] *Id.* at 90
[52] *Id.* at 91.
[53] *Id.* at 90.
[54] *Id.*
[55] *Id.* at 34.
[56] GHG TSD at 70.
[57] GCRP Report at 33.
[58] Increasing winter temperatures can be expected to reduce cold-related deaths. Unfortunately, researchers believe that the reduction of winter deaths will not be able to match the increase in summer heat-related deaths. *See id.* at 92.
[59] *Id.* at 75.
[60] GCRP Report at 93.
[61] GHG TSD at 76.

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levels.[62] Global warming will make ozone pollution worse.[63] Hot air tends to be stagnant air that sits over cities.[64] On top of the heat, increased greenhouse gas emissions are strongly associated with increased smog-forming emissions.[65]

A future increase in greenhouse emissions compared with a future of decreased emissions presents strikingly different worlds when it comes to ozone.[66] Under a decreased emissions scenario, a small increase in temperatures is more than offset by reductions in ozone precursors, leading to a drop in smog concentrations across much of the country. With a high emissions scenario, both increasing emissions and rising temperatures lead to a tremendous degradation in air quality across most of the country. The implications for public health could be profound, especially given that more than one-half of the country already lives in areas that are not meeting federal air pollution quality standards, including counties that now border Wyoming.[67] Some studies have even found that the ozone problem could extend into spring and fall seasons, further amplifying negative health impacts.[68]

Under a high emissions scenario, Wyoming can expect a severe worsening of its growing ozone problem. Projections for the end of this century expect average summertime ozone levels in the project area to increase by about 8 to 10 parts per billion.[69] This increment, on top of existing ozone levels in the project area, would be enough to put the Wright Area into non-attainment with the 2008 8-hour ozone standard.[70] These impacts will converge with existing ozone problems that are discussed further below. 3

3. More frequent and intense flooding and hurricanes

Global warming has changed precipitation patterns in many ways. Rain now tends to fall in more extreme events, leading to more frequent and disastrous floods in many areas of the country.[71] Tropical cyclone activity is also on the increase.[72] Increased hurricane activity, combined with rising sea levels, leads to higher storm surges and more dangerous flooding. The increased flooding that results from these processes can create a variety of human health problems. 6

Flooding can expose millions of people to increased rates of infectious and skin diseases and can lead to long-term degradation of water quality due to accidental releases of hazardous chemicals and heavy metals.[73] One way in which this problem is greatly exacerbated is through the problem of combined sewer overflow. In the U.S., 770 cities, including many of our nation's

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[62] American Lung Association, *State of the Air: 2009*, available at http://www.stateoftheair.org/2009/key-findings/executive-summary.html.
[63] GHG TSD at 75.
[64] *Id.* at 76.
[65] *Id.*
[66] *See* GCRP Report at 92.
[67] *Id.*
[68] GHG TSD at 78.
[69] GCRP at 92.
[70] DEIS at 3-66.
[71] GHG TSD at 72.
[72] *Id.*
[73] *Id.*

largest, pump raw sewage through the same pipes that deal with storm overflow.[74] When precipitation is particularly heavy, the flow that combines city street run-off, human sewage, and industrial waste overwhelms treatment facilities and runs into nearby bodies of water. Unfortunately, these lakes and rivers are often drinking water sources or sites of recreation activities, like swimming and fishing. The number of days with very heavy precipitation has increased across the U.S. in the last half century, with the Northeast being particularly hard hit.[75] By the end of this century, global warming could cause the number of precipitation events that overwhelm treatment facilities to more than double.[76]

4. More frequent and intense drought and wildfire

Different areas of the country are likely to experience different changes in precipitation patterns, leading to different kinds of extremes. For example, northern latitudes have experienced increased precipitation, falling in extreme events.[77] That trend will likely continue. Subtropical latitudes, on the other hand, like the southern tier of U.S. states, are predicted to experience increased drought, perhaps becoming so severe as to leave the Southwest in a permanent "Dust Bowl."[78]

But even regions with longer and more severe drought may experience increased flooding. This can happen due to changes in rainfall patterns that lead to long intervals of drought, capped by severe storms, thus, drought and flooding. And like the flooding described above, drought has consequences for public health. 6

Although people do not generally die from drought, drought has economic consequences that can affect people's health and well-being. Drought, especially when combined with increased insect and disease attacks, can lead to increased forest fire danger.

The size, frequency, and severity of U.S. wildfires have increased and are predicted to continue to do so.[79] Forest fires can affect air quality across hundreds of square miles for months at a time, leading to increased emergency room visits and eye and respiratory ailments.[80] Forest and brush fires can destroy lives, homes, and livelihoods. And forest fires are often at their worst during heat waves, at times likely to coincide with stagnant, deadly air.

Northeastern Wyoming has already experienced a measurable reduction in rainfall in the last half-century.[81] While the area might receive more rain in the future during winters, predictions are for drier summers and falls.[82]

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[74] GCRP Report at 94.
[75] *Id.* at 44.
[76] *Id.* at 95.
[77] *Id.* at 44.
[78] GHG TSD at ES-3
[79] *Id.* at 72.
[80] *Id.*
[81] GRCP Report at 30, 43.
[82] *Id.* at 31.

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5. Increased Disease Transmission

The survival zones for many organisms in the Northern Hemisphere are moving north with increasing temperatures. Such organisms include dangerous microbes and diseases borne by insects, like mosquitoes. For example, before 1999, no case of West Nile Virus had ever been reported in the U.S.[83] In just five years, the disease had spread across the country, striking hard in areas experiencing drought or above-average temperatures.[84] One thousand Americans have died from the disease thus far.[85] West Nile Virus has been reported in counties surrounding and including Wright Area.[86]

But the problem of climate amplifying disease is not restricted to West Nile Virus. There are a wide variety of diseases that benefit from global warming's increased temperatures and precipitation changes. A partial list includes salmonella, cryptosporidium, giardia, encephalitis, Lyme disease, and hantavirus.[87] Tick-borne diseases can also be expected to increase.[88] Yet-unidentified tropical diseases may also experience a newfound ability to survive in a warming U.S.

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6. Increased Allergens

The increase in atmospheric concentrations of CO_2 also impacts directly the growth of pollen-producing plants.[89] In a warmer world with increased CO_2, ragweed, like many other plants that produce pollen allergens, can be expected to flower earlier and produce more pollen.[90] In fact, because of climate change that has already taken place, ragweed pollen production on a per plant basis might already be at concentrations double what it was a century ago, with close to another doubling to come if carbon dioxide emissions levels are not checked.[91] Increased pollen levels combined with longer allergy seasons could lead to a significant health risk. Especially for the millions of Americans suffering from asthma, allergies can represent a serious health threat, frequently leading to emergency room visits and even hospitalization.[92]

7. The DEIS Fails to Consider the Current and Projected Impacts of Climate Change to Ecosystems.

Plants and animals throughout the world have been reacting to ongoing climate change for decades.[93] With changes in temperature and precipitation regimes, and changes in climate-

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[83] *Id.* at 95.
[84] *Id.*
[85] *Id.*
[86] *Id.* at 98.
[87] *Id.* at 95.
[88] GHG TSD at 73.
[89] *Id.*
[90] *Id.* at 74.
[91] GCRP Report at 96.
[92] *Id.*
[93] Rosenzweig, C., et al., *Attributing physical and biological impacts to anthropogenic climate change*, Nature 453:353-357 (May 15, 2009).

driven natural processes, species have been responding in a variety of ways. Survival ranges, ecosystem species mixes, and the timing of seasonal events have all shifted.

Predictions of what is to come for ecosystems are horrifying. In just this century, we could lose one quarter or more of all plant and animal species on the planet from climate change.[94] A species loss of this magnitude is completely outside the entire human experience, not having occurred on Earth for millions and millions of years. Projects like this one must identify and consider current and future climate impacts of endangered, threatened, and sensitive species.

a. Shrinking ranges

All species have a band of temperature range outside of which they will perish. Likewise, all species have precipitation requirements that, if not met, will kill them. With changing temperature and precipitation patterns, species have been dying off within parts of their natural ranges, areas where they have lived for thousands of years.[95] Because of increased temperatures, it is often the southern most (for Northern Hemisphere species) and lowest elevation areas of natural ranges where species first disappear.

Some species have been able to occupy other areas to partially compensate for their loss of habitat. However, many species do not disburse quickly. For example, birds can often travel many miles to a new habitat area when temperatures in old habitat areas are too high to survive, but snails often cannot do this. New habitat might have a livable climate but present other problems, like absence of food sources, or nest sites, or the presence of predators or competitors. Physical barriers might make retreat impossible. A natural area that is home to threatened species might not be linked to a new home area by a suitable migration corridor. Cities, suburbs, highways, agricultural tracts or even rivers, mountains or deserts could stand in the way of successful migration. Thus, when there is pressure on a whole ecosystem to "move north" to avoid the heat, only some species will complete the transition successfully. And of course for species in the coldest ecosystems, like the polar regions or areas near the tops of mountain ridges, there will soon be nowhere cool enough to go. 6

Scientists expect climate change to force range shifts in forest types across most of the eastern U.S.[96] It is projected that 75 years from now, few forested areas in the East are expected to support the same tree mixes that they do today. For example, today the climate of New England largely supports forests dominated by maples, beech, and birch. New England's climate in 75 years will be conducive instead to oak and hickory, like the current forests of Tennessee. But whether these tree species can successfully shift hundreds of miles north, to inhabit a whole region in a period of decades, is unlikely. Paleoecological data suggest that tree migration in response to natural climate variability in the distant past happened at a rate of around three miles per decade or possibly much slower.[97]. Estimates to complete the migration process and replace

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[94] GHG TSD at 117.
[95] GCRP Report at 80.
[96] *Id.* at 81.
[97] Soloman, A.M., and A.P. Kirilenko, *Climate Change and Terrestrial Biomass: What if Trees do not migrate?*, Global Ecology and Biogeography Letters 6(2):139-148 (1997).

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fully functioning old-growth forests could range from 400 to almost 2000 years. These data suggest that while forests are already on the move today, they probably cannot retreat fast enough to achieve anything like replacement of the forests that will be lost to a warming climate.

Unfortunately, some species ranges aren't shifting; their ranges are just contracting. Plants and animals in these locations are simply dying, not moving to new locations. Sometimes this occurs very slowly, almost imperceptibly. For example, researchers spent 20 years following the growth of tens of thousands of individual trees on several old-growth forest sites in California's Sierra Mountains.[98] Tree mortality rates during the 20-year period nearly doubled, but new tree recruitment showed no increase. In other words, these old forests are very slowly dying off. The detailed nature of the study allowed researchers to rule out all possible causes of the die-off save one. Soil moisture content had decreased due to subtle temperature increases, and the drier soils killed more trees.[99]

Sometimes though, climate driven die-off happens much quicker and more obviously. Piñon pine, the key overstory species in the widespread piñon-juniper ecosystems found throughout the Interior West, provides a bleak example. Piñon pine is well adapted to arid conditions. Still, drought-driven piñon pine dieback has frequently occurred down through the ages, including during the severe Southwest drought years of the 1950s.

By comparison, the reduction in precipitation that occurred from 2000-2003 was not as extreme, but piñon pine die-off was significantly more severe. Forty to 80 percent of piñon pines of all ages are believed to have perished across more than 3 million acres during that period.[100] Researchers believe that this widespread, rapid die-off was due to slight but significant increases in daily maximum and minimum temperatures. Those temperature increases reduced soil moisture content while simultaneously increasing trees' water needs. The resulting stress made trees vulnerable to insect attack. Just a small shift in climate produced this profound change.

Once overstory trees, like piñon pine, are gone, effects reverberate throughout the affected ecosystem. Ground-level sunlight and microclimates are altered, affecting understory species. Soil composition and erosion patterns can be altered. And in the case of piñon pine, a critical food source for birds, small mammals and local people has all but disappeared from many landscapes. All of this resulted from a slight increase in temperatures.

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[98] Van Mantgem, P.J., and N.L. Stephenson, *Apparent climatically induced increase of tree mortality rates in a temperate forest*, Ecology Letters 10:909-916 (2007).

[99] The die-off during the 20-year period was not dramatic. A casual observer walking through one of these forests would be hard-pressed to pick up on a change of this magnitude. Nonetheless, for forests characterized by trees that are hundreds of years old at maturity, such changes will, after decades, doom the forest to profound transformation. In the absence of widespread, meticulous study, we are undoubtedly not recognizing such changes slowly happening to ecosystems throughout the U.S.

[100] Breshears, D.D., N. S. Cobb, P.M. Rich, K.P. Price, C.D. Allen, R.G. Balice, W.H. Romme, J.H. Kastens, M.L. Floyd, J. Belnap, J.J. Anderson, O.B. Myers, and C.W. Meyer, *Regional vegetation die-off in response to global-change-type drought*, Proceedings of the National Academy of Sciences, 102:15144-15148 (2005).

b. Altered timing of natural events

Anthropogenic-related climate change has already altered the timing of the first day of spring, which arrives about 10-14 days earlier in the U.S. than it did just 20 years ago.[101] Many species have tracked this change by flowering, hatching, or migrating earlier. Migrating birds in the Northeast are arriving earlier.[102] Butterflies in California are hatching earlier.[103] Marmots in the Colorado Rockies are emerging from hibernation well before previous dates.[104]

But not all species are responding by shifting the timing of important natural events at the same rates. This can mean disaster for some species. For example, if migrating birds arrive before local insects hatch, it can lead to hungry birds that must then leave the area in search of food sources. When the insects do hatch, there are fewer birds present to eat them, meaning more insects survive to attack trees and other plants. Climate-driven changes cascade through ecosystems.

As another example, Rocky Mountain alpine and subalpine plants are flowering earlier than in the past, driven by earlier snowmelt. While the snows are melting earlier, the timing of late frosts has not shifted in equal measure.[105] Ironically, perennial plants that exist for more than half the year dormant under many feet of snow are now blooming early and then unexpectedly being destroyed by frost. Delphinium and helianthella species, glacier lilies and even conifer trees are being affected by this break in nature's synchronicity. Numerous additional examples, including plants and animals from around the country can be cited.[106] 6

c. Bigger and more frequent wildfires

Earlier snowmelt and longer summers are drying wildland fuels, and the lowered moisture content is leading to easier wildfire ignitions and faster fire spread.[107] Longer summers, drier fuels, and drier soils have also led to a longer western fire season, now running about two and one-half months longer than it did just 30 years ago. Big fires are also burning far longer – five times longer in the last three decades. Almost seven times as much area burned in the western United States from 1987 to 2003, as compared to the 16 previous years.[108] While wildfire is a natural process in many forested ecosystems, the climate-driven increase in fire behavior is not.

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[101] GCRP Report at 80.

[102] Butler, C., *The disproportionate effect of climate change on the arrival dates of short- distance migrant birds*, Ibis, 45:484-495 (2003).

[103] Forister, M.L. and A.M. Shapiro, *Climatic trends and advancing spring flight of butterflies in lowland California*, Global Change Biology 9:1130-1135 (2003).

[104] Inouye, D.W., B. Barr, K.B. Armitage, and B.D. Inouye, *Climate change is affecting altitudinal migrants and hibernating species*, Proceedings of the National Academy of Sciences 97:1630-1633 (2000).

[105] Inouye, D.W. 2008, *Effects of climate change on phenology, frost damage, and floral abundance of montane wildflowers*, Ecology 89(2):353-362 (2008).

[106] *See, e.g.*, Parmesan, C. and G. Yohe, *A globally coherent fingerprint of climate change impacts across natural system*, Nature 421:37 (2003).

[107] Running, S.W., *Is global warming causing more larger wildfires?*, Science 313:927-928 (2006).

[108] Westerling, A.L., H.G. Hidalgo, D.R. Cayan, and T.W. Swetnam, *Warming and earlier spring increase western U.S. forest wildfire activity*, Science 313:940-943 (2006).

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Also experiencing a huge increase in fire is the boreal forest of Alaska and Canada. More than twice as much boreal forest acreage burned in the 1980s and 1990s as did during the previous two decades.[109] Again, a rise in temperature seems to be driving the increase.

On top of increased forest fire activity, it appears that the new regime of increased fire behavior, in combination with the current public lands management response of salvage logging and plantation establishment after fire, is self-reinforcing. In a large area in Oregon where forest fires had burned twice in 20 years, the portions that were salvage logged and planted after the first fire experienced higher fire severity and higher tree mortality during the second fire, when compared to immediately adjacent burned areas that were allowed after the first fire, to naturally regenerate.[110] When human-generated stressors on ecosystems become self-reinforcing like this, ecosystem types can shift completely. Usually such shifts are to less-favored types, for example, from forests to brush fields.

Grasslands and arid areas present another example of possible ecosystem conversion. Due to nitrogen deposition and human disturbance, primarily from cattle ranching, non-native grasses are replacing native species. In many instances, non-native grasses provide a larger and more continuous fuel load, potentially leading to bigger and more comprehensive grassland and desert fires. Combined with climate change, there is a concern that in some areas more frequent and more intense fires may be allowing fire-tolerant non-native species to completely replace original prairie and desert ecosystems.[111]

Prehistoric evidence shows warmer periods associated with more fire activity.[112] Longer growing seasons and drier soils will very likely lead to more frequent and more intense wildfires.[113] Low humidity days correctly predict increased fire activity and climate models predict significantly more low humidity summer days in the West during the next two decades.[114] The newest predictions on wildfire expect a climate-driven average increase in acres burned in the West to be about 75 percent higher than today's already-elevated levels.[115] Many areas will see the number of predicted acres burned more than double by 2050. Predictions in

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[109] Duffy, P.A., J.E. Walsh, J.M. Graham, D.H. Mann, and T.S. Rupp, *Impacts of large-scale atmospheric-ocean variability on Alaskan fire season severity*, Ecological Applications 15:1317-1330 (2005).

[110] Thompson, J.R., T.A. Spies, and L.M. Ganio, *Reburn severity in managed and unmanaged vegetation in a large wildfire*, Proceedings of the National Academy of the Sciences 104(25):10743-10748 (2007).

[111] Ryan, M.G., S.R. Archer, R.A. Birdsey, C.N. Dahm, L.S. Heath, J.A. Hicke, D.Y. Hollinger, T.E. Huxman, G.S. Okin, R. Oren, J.T. Randerson, and W.H. Schlesinger, (2008) Land resources. In: *The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity. Synthesis and Assessment Product 4.3 by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research, Washington, DC.*

[112] *Id.*

[113] Intergovernmental Panel on Climate Change (IPCC) Climate Change 2007: Impacts, Adaptation and Vulnerability, *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Parry, M.L., O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA (2007).

[114] Flannigan, M.D., B.J. Stocks, and B.M. Wotton, *Climate change and forest fires*, Science of the Total Environment 262:221-229 (2000).

[115] Spracklen, D. V., L. J. Mickley, J. A. Logan, R. C. Hudman, R. Yevich, M. D. Flannigan, and A. L. Westerling, *Impacts of climate change from 2000 to 2050 on wildfire activity and carbonaceous aerosol concentrations in the western United States. J. Geophys. Res.* (June 18, 2009).

out years find significant increased fire activity in the Northeast, and, especially, in the Southeast, possibly completely converting much closed-canopy Southeast forest to open savannah.[116]

d. Rising insect epidemics

Climate change can amplify the threat of insects in a number of ways. As with the dispersal of other species, warming temperatures mean insects can travel northward and upslope to areas where they were not able to survive previously.[117] In many areas, cold winters used to kill off dormant insects or insect eggs, providing natural northern and upslope boundaries to insect spread.[118] Warmer winters drop those natural barriers and allow such spread. In addition, longer summers mean longer periods of attack for many species, like the mountain pine beetle.[119]

Mountain pine beetles have damaged about 1.5 million acres in Colorado, affecting over half of Colorado's forested acres.[120] (In British Columbia, the figure is an absolutely devastating 33 million acres.[121]) In Yellowstone National Park, 170,000 acres of whitebark pine have been damaged.[122] Whitebark pine nuts provide an important source of late-summer, pre-hibernation food for Yellowstone grizzly bears, which may now be negatively affected by the insect outbreak. Spruce beetles in southern Alaska and Canada have damaged 3.7 million acres of forest.[123] Because of warming temperatures, some insects are able now to go through two life cycles in one year.[124]

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Climate change can also stress tree species in ways that make them more susceptible to insect or disease attack. The most obvious example would be trees stressed by reduced soil moisture. Stressed trees may not be able to produce as many natural chemicals used to fight off attack.[125] And there are other unique ways in which insects can take advantage of a warming world. Insect

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[116] Bachelet, D., R.P. Neilson, J.M. Lenihan, and R.J. Drapek, *Climate change effects on vegetation distribution and carbon budget in the United States*, Ecosystems 4:164-185 (2001).

[117] Blacklund, P., A. Janetos, and D. Schimel, *The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity. Synthesis and Assessment Product 4.3* by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research, Washington, DC (2008).

[118] Harvell, C.D., C.E. Mitchell, J.R. Ward, S. Alitzer, A.P. Dobson, R.S. Ostfeld, and M.D. Samuel, *Climate Warming and Disease Risks for Terrestrial and Marine Biota*, Science 296(5576):2158-2162 (2002).

[119] IPCC (2007).

[120] GCRP Report at 82.

[121] *Id.*

[122] Gibson, K.E., Mountain Pine Beetle Conditions in Whitebark Pine Stands in the Greater Yellowstone Ecosystem, R1Pub06-03, Forest Health Protection Report, USDA Forest Service, Northern Region, Missoula, MT, USA (2006).

[123] Berg, E.E., J.D. Henry, C.L. Fastie, A.D. De Volder, and S.M. Matsuoka, *Spruce beetle outbreaks on the Kenai Peninsula, Alaska, and Kluane National Park and Reserve, Yukon Territory: Relationship to summer temperatures and regional differences in disturbance regimes*, Forest Ecology and Management 227:219-232 (2006).

[124] Volney, W.J.A. and R.A. Fleming, *Climate change and impacts of boreal forest insects*, Agriculture, Ecosystems & Environment 82:283-294 (2000). Recently in Alaska, warm summers have grown so long that spruce budworm was able to complete both stages of its lifecycle in a single year, thereby greatly increasing its threat to Alaskan trees.

[125] Logan, J.A., J. Régnière, and J.A. Powell, *Assessing the impacts of global warming on forest pest dynamics*, Frontiers in Ecology and Environment 1(3):130-137 (2003).

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reproduction, population growth and even biting behavior can all increase with increased temperatures.[126]

e. Hotter and more acidic oceans with rising sea levels 18

One of the most dramatic impacts to ocean ecosystems is the bleaching of coral that results from increased water temperatures. Bleaching is the last step in the destruction of coral ecosystems before the final death of the coral itself. In 1998, which at the time was the warmest year on record, bleaching occurred in every ocean, ultimately resulting in the death of 10 to 16 percent of the world's living coral.[127] In 2005, which eclipsed 1998 as the warmest year on record, a major bleaching event swept through the Caribbean, bleaching more than 90 percent of live coral in some areas and resulting in the ultimate death of about 20 percent of living coral region-wide.[128] In the U.S. Virgin Islands National Park, one half of corals have already died from overheated waters.[129] It may not take many more episodes like the 2005 bleaching event before living coral reefs in the Caribbean disappear entirely. The world's ocean temperatures in June 2009 set a monthly record for warmth, easily outpacing the previous 2005 mark.[130]

Corals and other sea life are also affected directly by the dissolution of increasing concentrations of carbon dioxide in seawater. As atmospheric carbon dioxide is dissolved in surface seawater, seawater becomes more acidic, shifting the balance away from carbonate ions and toward bicarbonate. This shift decreases the ability of corals and other sea life to calcify because corals use carbonate, not bicarbonate, to build their skeletons. This process could also affect phytoplankton, the primary building blocks of ocean ecosystems. Once ocean acidification occurs, it is essentially irreversible for centuries.[131]

Sea level rise might also directly affect corals, and it is certain to destroy many low-lying tidal ecosystems. In this century, rising seas could cause our nation to lose two-thirds of its remaining coastal wetlands.[132] Together, coral reefs and coastal wetlands represent some of our biologically richest saltwater ecosystems. They are the nursing grounds for many fish and other species and provide important ecosystem functions like filtering water and supporting key links in food webs. 6

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[126] Harvell, C.D., C.E. Mitchell, J.R. Ward, S. Alitzer, A.P. Dobson, R.S. Ostfeld, and M.D. Samuel, *Climate Warming and Disease Risks for Terrestrial and Marine Biota*, Science 296(5576):2158-2162 (2002).
[127] Hoegh-Guldberg, O. 2005. Marine Ecosystems and Climate Change. Climate Change & Biodiversity, [Lovejoy, T.E., L. Hannah (eds.)].
[128] Hansen, J., M. Sato, R. Ruedy, K. Lo, D. W. Lea, M. Medina-Elizade. 2006. *Global temperature change*, Proceedings of the National Academy of Sciences (PNAS) Published online September 25, 2006, doi:10.1073/pnas.0606291103; Federal Response to the 2005 Caribbean Bleaching event, available at http://coralreefwatch.noaa.gov/caribbean2005/docs/2005_bleaching_federal_response.pdf (last accessed Jan. 29, 2008).
[129] GCRP report at 84.
[130] National Climatic Data Center, *Climate of 2009 – June in Historical Perspective* (July 16, 2009) available at http://www.ncdc.noaa.gov/oa/climate/research/2009/jun/global.html.
[131] *Id.* at 17.
[132] *Id.* at 84.

f. Polar ecosystem impacts

The polar regions are melting quickly, both sea ice and permafrost, threatening whole ecosystem types with extinction. Arctic sea ice extent during the summer months has been dropping more than 6 percent per decade.[133] Retreats since 2007 have been especially dramatic. This is a threat to the foundational building block of Arctic ecosystems: sea ice algae.[134] And could mean the loss of species all the way up the food chain, including the loss of the top predator, polar bears, from all of Alaska, during this century.[135] For this reason, the polar bear has now been formally listed under the Endangered Species Act as a threatened species.

The diverse tundra ecosystem is also under threat. With increased warming and the melting of the permafrost, tundra is being replaced by encroaching lower latitude forests. And as mentioned previously, as ecosystems move north, those at the top of the world, like tundra, have nowhere else to go.

8. Rising costs

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The full economic impact of climate change cannot be accurately estimated. In some cases, dollar amounts can be given for known impacts. In other cases, impacts to economic activity can only be qualitatively described.

The 1998 heat wave killed 5,000 to 10,000 people in the U.S. That one heat wave is estimated to have cost the U.S. $70 billion in lost lives, health care costs, and lost productivity.[136] Air quality problems provide another example; California alone spends over a billion dollars a year on air pollution-related health problems.[137] That number is expected to increase with future warming, and does not even account for degradations in air quality due to increased forest fires. For example, Red Alert days – days when experts say the air is unhealthy for everyone to breathe – are expected to increase across the U.S. by 68 percent due to global warming.[138] When multiplied across 50 states and added up across decades, climate change driven air quality problems represent a significant toll on the economy.

In 2005, people suffering from airborne allergies in the U.S. spent $11.2 billion to address the problem, not counting money spent on over-the-counter medications.[139] This figure also does not count days missed at work or other losses of productivity. The figure was almost double what was spent in 2000. If ragweed and other allergic pollen producers increase pollen production even further, society could face losses of additional billions. These figures just hint

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[133] For historical and up-to-date sea ice reports, see National Snow and Ice Data Center, *Arctic Sea Ice News and Analysis*, available at http://nsidc.org/arcticseaicenews/.
[134] GCRP Report at 85.
[135] *Id.*
[136] GCRP Report at 102.
[137] *Id.* at 93.
[138] *Id.* at 94.
[139] Soni, A., *Allergic Rhinitis: Trends in Use and Expenditures, 2000 and 2005*, Agency for Healthcare Research and Quality (May 2008).

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at the magnitude of the public health costs the U.S. will face in coming years due to climate change.[140]

Hurricane Katrina alone cost the U.S. economy some $134 billion dollars.[141] Current scientific consensus predicts that tropical cyclones of the future will become even more intense as sea surface temperatures continue to rise.[142]

In 2008, the U.S. government spent about $1.5 billion in forest fire suppression efforts.[143] Since 2000, the government has spent an average of $1 billion per year on suppression efforts.[144] As explained above, forest fires are expected to increase throughout the West with an average of 75 percent more acres burned per year. But fire suppression costs represent just a fraction of the costs to society of wildfires. When damage to resources, degradation of air quality, closed roads, lost tourism and other factors are included, estimates of the true costs of wildfires can far more than double the costs of suppression efforts.[145]

Unlike wildfire and hurricanes, drought is a disaster in slow motion. Increased drought is predicted in subtropical latitudes, the lower tier of states in the U.S. Severe, multiple-year droughts can devastate regional economies. The most recent example in the U.S. is the ongoing drought in South Texas. During the last nine months alone, crop and live stock losses in the region total $3.6 billion.[146] That drought is expected to persist and possibly intensify in the next several months.[147] Economic losses could climb much higher. Southern states can expect so-called 50 and 100-year droughts to occur with increasing frequency.

The biggest climate disaster of all, sea level rise, looms. While the degree of sea level rise and how fast it will strike remain open questions, this much is clear: seas are rising, and rising quicker than at any time in history.[148] The amount of sea level rise certain to occur will be enough, combined with storm surges to cause serious, and very costly problems for many coastal cities.[149] Communities in the Southeast and in Alaska are especially vulnerable in the short term, but it is important to note that 53 percent of the U.S. population lives in a coastal county, so the extent of impacts will eventually be quite widespread.[150] The area of the country with the

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[140] For example, estimates are not available for the wide range of infectious diseases that could increase from global warming.
[141] *Id.* at 68.
[142] GHG TSD at ES-4.
[143] Western Forestry Leadership Coalition, *The True Cost of Wildfire in the Western U.S.* (Apr. 13, 2009), available at http://www.wflcweb.org/infomaterials/reports.php ("True Cost").
[144] Nevada Division of Forestry, *The True Costs of Wildfires Revealed* (May 12, 2009), available at http://forestry.nv.gov/?p=2155.
[145] *Id.* at 16.
[146] Benning, T., *Texas Scorched By Worst Drought in 50 Years*, Wall Street Journal (July 28, 2009) available at http://online.wsj.com/article/SB124872939604384837.html.
[147] Climate Prediction Center, *U.S. Seasonal Drought Outlook* (July 16, 2009) available at http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html.
[148] GHG TSD at 30.
[149] GCRP Report at 10.
[150] GHG TSD at 100.

greatest concentration of people living near the coast, the Northeast, is also expected to bear the brunt of the greatest level of rise, perhaps a foot and one-half greater than the world average.[151]

9. Earlier snow melt and threatened water supplies

Drinking water quality and quantity can be harmed by climate change in at least three principle ways. As described above, water quality can be harmed by too much water, when flooding overwhelms treatment systems and sewage flows into drinking water sources. Drought can lead to water quality and quantity problems as has happened recently in the Southeast and in the many Western states that rely upon the Colorado River.[152] A third problem can occur when precipitation quantities remain similar to those in the past, but early melting snow in the spring leaves late season water shortages. This problem is exacerbated when winter precipitation falls more often as rain instead of snow.

Significantly lower levels of snow are accumulating already in Washington and Oregon.[153] Throughout much of this region, mountain snow accumulation at the end of winter has fallen about 25 percent in the last half century.[154] The decrease in snowpack is also a major concern.[155] This phenomenon, combined with the problem of greater evaporation due to higher temperatures, has caused end of summer drought to increase during the last 50 years in most of the Northwest and much of the rest of the Mountain West.[156] The decline in snowpack is expected to worsen from global warming.[157] 6

When water supplies dwindle, users compete for constrained supplies. Some users can be driven out of business by reduced water supply or by increased water costs in a highly constrained market. Development is curtailed. Agricultural and industrial users can be shut down. In an attempt to replace the inexpensive lost storage of mountain snowpack, expensive storage and conservation measures must be employed.

The value of the water supply in the nation as a whole probably runs to at least trillions of dollars.[158] A substantial and potentially permanent loss of supply, even to just a single region of the country, could cost society hundreds of billions of dollars.

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[151] Hu, A., Meehl, G.A., Han, W., Yin, J., *Transient Response of the MOC and Climate to the Potential Melting of the Greenland Ice Sheet in the 21st Century*, Geophysical Research Letters, 36:L10707 (May 29, 2009).
[152] *See* GCRP Report at 51.
[153] *Id.* at 42.
[154] *Id.* at 135.
[155] GHG TSD at 95.
[156] GCRP Report at 43.
[157] GHG TSD at 95.
[158] *See* Army Corps of Engineers Institute for Water Resources, *Water Supply: Value to the Nation*, available at http://74.125.93.132/search?q=cache:Jk8GNY-FpJQJ:www.spn.usace.army.mil/value_to_the_nation/WaterSupply.pdf+value+of+water+supply&cd=1&hl=en&ct=clnk&gl=us&client=firefox-a.

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10. Unstable farming conditions

Agricultural operations benefit from stable and predictable weather. While weather has always been uncertain to a degree, unprecedented changes in climate could lead to decreases in productivity and severe financial hardship for farmers. Increased drought means an increased need for irrigation water. Global warming means longer warm seasons and increased evaporation. In total, these effects by 2030 are expected to increase irrigation needs nationwide by a staggering 35 percent.[159]

Like drought, climate-driven flooding can also mean billion dollar losses for farmers. In 2008, insurance companies paid farmers a record $8.6 billion for crop losses, primarily due to Midwest flooding.[160] The economic loss to farmers and farming communities from last year's flooding was even higher.

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Less drastic climate-driven factors are also of concern on farms. Warmer winters allow insects, parasites, and other pathogens to successfully survive the winter season, leading to increased crop losses in the following years.[161] Heavy spring rains, already being experienced, can push back planting dates and affect productivity.[162]

In addition, the increase in CO_2 concentrations themselves can directly cause problems. Different types of plants respond differently to increased CO_2. Unfortunately, many aggressive weeds benefit greatly from increased concentrations, whereas the benefits to cash crops that must compete with these pumped up weeds are generally smaller.[163] Compounding that problem, the most commonly used herbicide in the nation loses effectiveness when weeds are grown amidst higher CO_2 concentrations.[164]

Some researchers, looking across the next several decades, have explored the ways grains and other major crops respond to increased temperature and CO_2 levels and found that, when a wide range of crops are considered, initially the two factors tend to neutralize one another.[165] But if greenhouse gas concentrations continue to rise, impacts on farmers from these two factors will soon turn negative.[166] Apart from grains, horticultural crops, like fruits and vegetables, appear to be even more sensitive to climate change.[167]

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[159] GHG TSD at 85.
[160] Insurance Journal, *2008 Losses Lead to Record Insurance Payments for Midwest Farmers* (July 22, 2009) available at http://www.insurancejournal.com/news/midwest/2009/07/22/102419.htm.
[161] GHG TSD at 82.
[162] GCRP Report at 50.
[163] GHG TSD at 82.
[164] *Id.*
[165] *Id.* at 84.
[166] *Id.*
[167] *Id.* at 82.

11. Inequity of impacts

Climate impacts including economic impacts will not be distributed evenly throughout the world. People living in arid and semi-arid regions or low-lying areas, and people already living on the edge of economic survival, will likely be among those hardest hit. In a recent report issued by Former U.N. Secretary-General Kofi Annan and the Global Humanitarian Forum, climate change is estimated to cost the world $125 billion per year currently, and to rise to $340 billion by 2030.[168] A global loss of trillions of dollars per decade is difficult to imagine. The economic dislocation, death, and mass migration are projected to lead to increased global insecurity and thereby create a further threat to U.S. economic interests.[169]

Climate impacts will not be spread equally throughout the U.S. either. Unfortunately, analysts predict that the most vulnerable in our society will be those hardest hit by global warming: kids, seniors, the poor, and future generations.[170] Native Americans, especially those living in Alaska, are already bearing the greatest impacts from climate change, including the need to relocate entire communities from rising seas and eroding shores.[171]

Still greater impacts are predicted for other species. In an already degraded world, climate change may be the final blow for perhaps a million different kinds of plants and animals. And extinction is not just death; it is the end of birth. Once gone, these species will not come back. Ever.

It is a sad irony that those who have done the least to pollute the atmosphere will often bear the greatest burden of dealing with a warming world. Such knowledge places an extra burden of responsibility on those who have the power to make a difference.

6

12. The social cost of carbon

Economists have attempted to estimate how much total economic damage is done through the emissions of a set amount of carbon, usually a metric ton. This estimated value has become known as the social cost of carbon. These measurements can be used to estimate just how serious climate change is in economic terms, and to compare the costs of policies to address climate change with the often forgotten costs of inaction.

Estimates of the social cost of carbon are admittedly incomplete. Costs from certain sectors, or costs from more dire predictions of climate change are often not even evaluated. Estimates of the social cost of carbon are sensitive to the discount rate employed. Depending on how much society values the economic impacts that will be felt by future generations, the estimated social

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[168] Global Humanitarian Forum, *The Anatomy of a Silent Crisis* (May 29, 2009) at 20, available at http://www.ghfgeneva.org/OurWork/RaisingAwareness/HumanImpactReport/tabid/180/Default.aspx.
[169] Broder, J., *Climate Change Seen as Threat to U.S. Security*, New York Times (August 8, 2009) available at http://www.nytimes.com/2009/08/09/science/earth/09climate.html.
[170] GHG TSD at 101.
[171] *Id.*

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cost of carbon can rise or fall by an order of magnitude or more. But despite such variability and uncertainty, a short review of various estimates of the social cost of carbon can be instructive.

The most widely known estimate of the social cost of carbon was reported in "The Stern Review: The Economics of Climate Change."[172] This analysis found that continuing on a business-as-usual path would lead to a social cost of carbon of $85 per ton of CO_2.[173] The authors of this estimate admit to omitting several factors that could raise costs significantly. For example, non-market factors are not included, positive feedback loops that could amplify warming are ignored, and equity issues are not treated.[174] If such factors were included, the social cost of carbon might increase by a factor of four, to well over $300 per ton.[175]

While The Stern Review might be the most well-known estimate of the social cost of carbon, hundreds of similar studies have been published.[176] As mentioned above, results vary greatly between studies based on factors ignored, and even within studies based on assumptions made. Researchers have performed statistical analysis on the results of more than 200 such studies and found a median price for the social cost of carbon varying from $15 to $74 per ton of CO_2.[177]

There are several important conclusions that can be drawn from looking at numerous studies with such a wide variety of assumptions. Perhaps the most important conclusion is that even with the most conservative set of assumptions, the social cost of carbon emissions is not zero.[178] Or in other words, looking at the whole body of climate change economic analysis, it is clear that there are economic benefits to society as a whole in placing a significant charge on the most carbon-intensive practices in the economy, for example, the burning of coal.

How high such a charge should be is in dispute. But there are close to 50 published studies that find that the social cost of carbon is above $100 per ton of carbon dioxide and could range to well over $1000 per ton.[179] It is worth noting that none of these economic studies account for the latest climate science that suggests that both emissions and impact levels are exceeding recent predictions on many fronts.[180] Further, even studies with results suggesting a high social cost of carbon do not include analysis of the most dire predictions about the possible impacts of global warming, because to do so would find impacts beyond any possible dollar-per-ton figure.

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[172] Stern, N., *The Stern Review: The Economics of Climate Change*, HM Treasury, London (2006), available at http://www.hm-treasury.gov.uk/sternreview_index.htm.
[173] *Id.* at xvi.
[174] *Id.* at x.
[175] *Id.*
[176] Tol, Richard S.J., *The Social Cost of Carbon: Trends, Outliers and Catastrophes*, Economics: The Open-Access, Open-Assessment E-Journal, Vol. 2, 2008-25 available at http://www.economics-ejournal.org/economics/journalarticles/2008-25.
[177] *Id.* at 6. Note, because some studies find that the social cost of carbon is very high, mean values for the distribution of social cost of carbon values range much higher than median values, from $127 to $188 per ton.
[178] *Id.* at 9.
[179] *See id.* at 11-16.
[180] *See, e.g.*, Copenhagen Report.

13. Runaway climate change

In the recent report of the U.S. Global Change Research Program, global temperatures in the year 2100 are predicted to be 2 to 11.5°F higher than they are today.[181] Temperatures in the U.S. will rise still higher than global averages.[182] As catastrophic as such increase in one century would be, temperatures could actually change much more quickly than that.

Ice core data from Greenland reveal that the end of the last ice age was triggered by a rapid and intense warming. Air circulation patterns over the planet shifted within a year or two. The warming that followed raised planetary temperatures 22°F in just 50 years.[183] That amounts to a total warming almost double the IPCC's and the GCRP's worst-case predictions, occurring in about half the time. Runaway climate change can happen, and it did, as recently as just before the dawn of agriculture and civilization, when humans still lived as tribal hunters and gatherers.

The climate system includes numerous positive, amplifying feedback loops and no one can say for certain what their full impact on climate change will be. For example, as reflective snow and ice cover melt, darker water and land revealed below absorb more heat from the sun, thereby leading to greater melting of snow and ice. As permafrost areas melt, CO_2 and methane previously trapped in soils leak into the atmosphere leading to further warming. Higher temperatures dry out forest soils, which increases forest fires, leading to greater emissions. Acidic oceans may produce less carbon trapping plankton. Desertification may cause soils to release stored carbon and plants to reduce their sequestration. 6

Few climate modelers have attempted to build such feedback loops into their models. Therefore, it is possible that these amplifying effects may prove all climate model estimates to be too low. Like at the end of the last ice age, climate change could happen very quickly and to a far greater degree than generally predicted. In the present case, though, the warming would not come during an ice age, but on top of a world climate already abnormally warmed – that is, at a time when the Earth is as hot as it has been in thousands of years.

The destruction from business-as-usual climate change that is outlined above could be catastrophic. But the effect of runaway climate change would be an existential threat to human civilization itself. Clearly it is the first responsibility of political leaders in this age to do everything in their power to avoid such an outcome. Best estimates of top scientists should figure prominently when setting policy that affects climate. But when judgment is called for, it would be foolish to ignore the distinct possibility that the climate problem might get very much worse, very quickly. Erring on the side of caution when setting climate and energy policy is clearly warranted.

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[181] GCRP Report at 9.

[182] *Id.*

[183] Steffensen, J.P., K.K. Andersen, M. Bigler, H. B. Clausen, D. Dahl-Jensen, H. Fischer, K. Goto-Azuma, M. Hansson, S. J. Johnsen, J. Jouzel, V. Masson-Delmotte, T. Popp, S. O. Rasmussen, R. Rothlisberger, U. Ruth, B. Stauffer, M.-L. Siggaard-Andersen, A. E. Sveinbjörnsdóttir, A. Svensson, J. W. C. White, *High-Resolution Greenland Ice Core Data Show Abrupt Climate Change Happens in Few Years*, Science DOI: 10.1126/science.1157707 (2008).

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D. The DEIS Fails to Disclose or Consider Coal Mining's Non-Climate Impacts.

The impacts of global climate change and coal's central role in producing those impacts create an overwhelming mandate to rapidly phase out the use of coal in America. But even before the impacts of climate change were as well understood, the case for phasing out the use of coal was strong. Coal, when analyzed comprehensively, has been an unjustifiable drain on society for many decades. These impacts are omitted from the DEIS but present further reasons that BLM should select the No Action alternative.

1. Human health impacts

Coal mining and coal burning are associated with a wide variety of air pollution problems that degrade public health. For example, as the DEIS notes, coal is responsible for the release of large amounts of volatile organic compounds ("VOC") and nitrogen oxides ("NOx"). These compounds are precursors to ozone formation. As discussed above, ozone health problems are expected to worsen if global warming is left unchecked. But even without global warming, people are dying from coal-generated ozone today. Long-term exposure to ozone in regions with high concentrations increases risk of death from respiratory disease by 25 to 30 percent compared to people in low ozone areas of the U.S.[184] And while previously considered an urban problem, rural areas of the West are now exceeding federal ozone pollution limits, primarily because of fossil fuel development.[185] Impacts are being seen in States where coal is surface mined on public lands, like Wyoming, New Mexico, and Colorado. 19

In the West, ozone is no longer just a summertime problem. According to a scientist from the National Oceanic and Atmospheric Administration, methane releases and machinery at Western coal mines might be responsible for degrading otherwise clean, winter air with unhealthy ozone levels.[186] Contrary to the letter and intent of NEPA, there appears to be a complete lack of analysis of coal-bed natural gas releases and their cumulative effects on ozone pollution.

We know there is a great deal of natural gas in the coal. The best estimate given in the DEIS seems to be 6.8 standard cubic feet of natural gas per ton of coal.[187] If 2.5 billion tons of coal were to release its methane content, about 238,000 tons of methane would be released.[188] Even more gas would be released when nearby areas are dewatered to allow coal mining, and gas is subsequently released.

Particulate matter is another coal-related air pollution problem. Fine particles lofted into the air, known as $PM_{2.5}$ or PM_{10}, can lead to a variety of respiratory ailments, heart attacks and even

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[184] Jerrett, M., Burnett, R. T., Pope, C. A., Ito, K., Thurston, G., Krewski, D., Shi, Y., Calle, E., Thun, M., *Long-Term Ozone Exposure and Mortality*. New England Journal of Medicine (March 12, 2009) 360: 1085-1095.
[185] Jaffe, M., *From Calif. To Denver: Ozone woes become regional*, Denver Post (November 2, 2008) available at http://www.denverpost.com/newsheadlines/ci_10878107.
[186] Jaffe, M., *The cold truth about ozone*, Denver Post (March 4, 2009) available at http://www.denverpost.com/breakingnews/ci_11829606.
[187] *See* DEIS at 3-29.
[188] DEIS Abstract.

premature death.[189] Thirty percent of American live in counties where particulate concentrations are too high for healthy air.[190] Approximately 24,000 Americans suffer premature death from coal-fired power plant particulate emissions, their lives ending an average of 14 years early.[191] Coal operations emit particulate matter during mining, from machinery, during transport by train, and when burning. Concentrations of particulate matter in many public lands coal mining areas have increased over the last several years.[192]

This project is required to be in conformity with federal and state environmental laws, including air pollution laws. The annual Wyoming Ambient Air Quality Standard ("WAAQS") for PM_{10} is 50 $\mu g/m^3$.[193] The modeled concentration of PM_{10} for the Black Thunder Mine in 2017 is 49.96 $\mu g/m^3$.[194] The modeled concentration of PM_{10} for the Jacobs Ranch Mine in 2015 is 49.61 $\mu g/m^3$.[195] These numbers are incredibly close to the legal limit for PM_{10}, yet just miss being a violation. Given that much of the input data to these models was provided by the mining companies, BLM should further investigate whether approval of this project will, in fact, lead to violations of the Wyoming air standard. 3

Indeed, it turns out that these mines are already violating that standard. In an effort to dismiss concerns about those violations, while not doing anything to actually make air around the mines safe to breathe, the State of Wyoming and the mines are working on a plan that would blame mine dust on the wind, not the mines. The "Natural Events Action Plan" has not been approved by EPA.[196] The mines are in violation of particulate standards. Approval of this project would lead to a significant deterioration of air quality already out of compliance. This is made readily apparent by Table ES-13.[197]

Perhaps the most destructive air pollutant from coal though is mercury. Mercury has two qualities that make it such a vicious pollutant; it is persistent and it accumulates in the food chain.[198] Mercury's most devastating effect is to kill brain cells in infants and in children that are still developing in the womb.[199] An estimated 300,000 to 630,000 babies are born every year in the U.S. with enough mercury in their bloodstream to be considered at risk.[200] The largest

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[189] EPA, *Particle Pollution and Your Health* (Sep. 2003) EPA-425 F-03-001 available at http://www.airnow.gov/index.cfm?action=particle.cover.
[190] *State of the Air: 2009.*
[191] Abt Associates, Inc., *Power Plant Emissions: Particulate Matter-Related Health Damages and the Benefits of Alternative Emissions Reduction Scenarios*, (June 2004) at 6-1, 5-6, available at http://www.catf.us/publications/ ("*Power Plant Emissions*").
[192] *See* EPA, *National Air Quality – Status and Trends through 2007: Particle Pollution* (2008) at 24, available at http://www.epa.gov/air/airtrends/2008/.
[193] DEIS at 3-44.
[194] *Id.* at 3-47.
[195] *Id.* at 3-50.
[196] *Id.* at 3-63.
[197] *Id.* at ES-58.
[198] EPA, *Clean Air Mercury Rule: Basic Information* (Mar. 15, 2005) ("*Clean Air Mercury Rule*") available at http://www.epa.gov/mercuryrule/basic.htm.
[199] *Id.*
[200] Mahaffey, K., *Update on Recent Epidemiologic Mercury Studies*, in Proceedings in the 2004 National Forum on Contaminants in Fish (January 2004) available at http://nepis.epa.gov/Exe/ZyNET.exe/901T0200.txt?ZyActionD=ZyDocument&Client=EPA&Index=2000%20Thru

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sources of mercury in the U.S. are coal-fired power plants.[201] The EPA recently acknowledged that current standards for mercury pollution from coal-fired power plants are not protective of health and additional steps to curtail such pollution from coal must be mandated.[202]

The U.S. Geological Service has just published a comprehensive review of mercury deposition in the U.S.[203] Fish in 291 streams were sampled for mercury across the country and more than one-quarter were found to have mercury levels making them unsafe to eat. Fish-eating mammals will get sick eating two-thirds of the fish sampled.

In response to this health tragedy, and in the name of a cumulative impacts analysis, BLM seeks to excuse PRB coal mining.[204] To say that mercury is emitted by volcanoes or China is not a substitute for analyzing the cumulative impacts of mercury that will be emitted by the proposed project and describing the impacts those emissions will have on children and wildlife. 20

Coal makes people ill throughout the country, but one target group bears the greatest brunt of coal's deadly effects – coal miners. Mine workers experience a wide variety of work-related health issues, including mine accidents and widespread hearing loss, but the most deadly health issue remains black lung disease. While sometimes thought of as a thing of the past, black lung is a continuing health problem, with today's miners still developing the disease, and over 10,000 miners dying from black lung disease in the last decade alone.[205] Both underground and surface mine operators are required to pay into a Black Lung Disability Trust Fund.[206] Through the end of the 2004 fiscal year, that fund has paid out over $41 billion to sick coal miners and their surviving family members to address this tragedy.[207] Unfortunately, those payments by no means cover the full costs to society of this crippling effect of coal.

While not a health concern *per se*, visibility is an air quality issue that was also incompletely analyzed in the DEIS. This is especially true with regard to its environmental justice impacts. 3

%202005|Hardcopy%20Publications&Docs=&Query=asbestos%20risk%20&Time=&EndTime=&SearchMethod=2&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A\ZYFILES\INDEX%20DATA\00THRU05\TXT\00000011\901T0200.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|-&MaximumDocuments=10&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page.

[201] *Clean Air Mercury Rule*; DEIS at 4-126.

[202] *Id.*

[203] U.S. Geological Service, *Mercury in Fish, Bed Sediment, and Water from Streams across the United States 1998-2005* (Aug. 2009) Scientific Investigative Report 2009-5109 available at http://pubs.usgs.gov/sir/2009/5109/.

[204] *See* DEIS § 4.2.14.2.

[205] Attfield, M., Wolfe, A., Petsonk, E., *Faces of Black Lung*, National Institute of Occupational Safety and Health, Centers for Disease Control (August 18, 2008) available at http://www.cdc.gov/niosh/blog/nsb081808_blacklung.html.

[206] U.S. Department of Labor, *Employment Law Guide: Black Lung Compensation* available at http://www.dol.gov/compliance/guide/blklung.htm.

[207] Government Accountability Office, *Federal Compensation Programs: Perspectives on Four Programs*, GAO-06-230 (November 2005) available at http://www.gao.gov/products/GAO-06-230.

The DEIS makes quick work of environmental justice issues by simply claiming that there aren't any.[208] A review of Table ES-14 shows that this claim is simply untrue.[209] Among Class I Areas, the North Cheyenne and Fort Peck Indian Reservations stand out as some of the most highly impacted areas for visibility. They further stand out as two of the most highly impacted areas in terms of degradation from this project. Clearly this is an environmental justice area that was not analyzed by BLM.

A further, previously-hidden public health and safety threat from coal came to light in December 2008, when 300 million gallons of coal ash sludge burst from a dam and spilled into the homes of fifteen families in Tennessee.[210] Kingston is not the only community with its safety threatened by coal ash dumps. There are 1300 such dumps spread across the country, filled with coal ash, arsenic, lead, mercury and selenium.[211] More than one hundred million tons of such ash are being dumped every year with no federal regulatory oversight.[212] These dumps have already polluted drinking water in dozens of states, and there is no comprehensive plan to arrest the problem.[213] Lead, cadmium, chromium, arsenic, nickel, zinc and copper are all found to be over safe levels in drinking water near ash dumps.[214]

2. Ecosystem impacts

As with human health, impacts to ecosystems from coal mining and burning have also been occurring for more than a century. Despite attempts to clean up the coal industry, habitat continues to be degraded and species continue to suffer. The most direct impact to ecosystems is direct destruction by surface mining. Not only is every living being in the path of a strip mine destroyed, the zone of impact can extend over large distances beyond the mine itself. 9

According to a large, national coal company, more than two million acres of land, an area larger than the State of Delaware, has been "reclaimed" after coal mining in the last fifteen years alone.[215] Of course, before being reclaimed more than two million acres of native ecosystems first had to be completely annihilated by strip mining. Many species in these areas will never return. Reclaimed areas, while better than abandoned strip mines, are highly degraded habitats, far from containing those species that originally populated the land. Outside the actual strip mine itself, water far downstream is often filled with sediment and sometimes toxic mine run-off, a further threat to sensitive species.

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[208] DEIS at ES-55.
[209] *Id.* at ES-59.
[210] Dewan, S., *Coal Ash Spill Revives Issues of Its Hazards*, New York Times (December 24, 2008) available at http://www.nytimes.com/2008/12/25/us/25sludge.html.
[211] Dewan, S., *Hundreds of Coal Ash Dumps Lack Regulation*, New York Times (January 6, 2009) available at http://www.nytimes.com/2009/01/07/us/07sludge.html.
[212] *Id.*
[213] *Id.*
[214] *See, e.g.*, Clean Air Task Force, *Impacts to Water Quality from Placement of Coal Combustion Waste in Pennsylvania Coal Mines*, available at http://www.catf.us/publications/.
[215] Powder River Coal Company, *Environmental Issues*, available at http://www.ccsd.k12.wy.us/mines/PR/Environment.html.

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In addition, coal mines use tremendous amounts of water during mining operations. Nearby streams are often degraded or completely dewatered, with all of the attendant losses to aquatic life. Excessive groundwater pumping for coal mining and coal washing can destroy seeps and springs that wildlife relies on for survival. The DEIS lacks adequate analysis of these impacts. 10

A similar destruction of habitat occurs for coal-fired power plants, coal washing facilities, and the extensive infrastructure necessary to move a billion tons of coal hundreds and thousands of miles around the country. Coal-fired power plants are also users of tremendous amounts of water for cooling, with the added problem that water that is returned to streams and rivers after use is often at an abnormally high temperature that can kill or otherwise negatively impact aquatic life.

As discussed above, coal-fired power plants are also responsible for hundreds of coal ash slurry ponds that can be several hundred acres in size each. These slurry ponds destroy habitat and poison wildlife unfortunate enough to come into contact with them. Many of these ponds leak or leach toxic metals into downstream water sources, further impacting species. The DEIS lacks adequate analysis of these impacts.

Toxic metals are also deposited in streams via the air. Emissions can travel many miles from a power plant before naturally settling or being washed from the air by precipitation. Metals like mercury and selenium are persistent toxic pollutants that accumulate in living tissue, with the highest concentrations found at the top of the food chain. Aquatic species are often especially sensitive to these toxic metals. The DEIS lack adequate analysis of these impacts.

Yet another impact on ecosystems from coal is from acid rain. Two-thirds of all U.S. sulfur oxide ("Sox") emissions and one-quarter of all NOx emissions come from burning coal.[216] The impacts of these acidic emissions on sensitive species and other wildlife is horrendous. Three quarters of lakes and one-half of streams surveyed in the U.S. have been acidified by these types of emissions.[217] Acidification is detrimental to aquatic life and frequently responsible for fish kills, especially in the Mid-Atlantic and Northeast States.[218] In many lakes, every single fish species has been completely killed off.[219] This then leads to fish-eating birds like loons, and mammals, like otters, abandoning lakes that no longer provide food. 21

Acid rain also affects forest ecosystems. Slower growth, brown needles and dead trees are legacies of acid rain left along mountain ridges from Maine to Georgia.[220] In addition to killing leaves and needles directly, acid rain is absorbed into forest soils, changing soil chemistry. Unfortunately, soil nutrients can be dissolved by acid rainwater and then washed away.[221] Other, toxic chemicals can be released from minerals by acid rain, further damaging trees.[222]

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[216] EPA, *What is Acid Rain?* (June 8, 2007) available at http://www.epa.gov/acidrain/what/index.html.
[217] EPA, *Effects of Acid Rain – Surface Waters and Aquatic Animals* (Dec. 1, 2008) available at http://www.epa.gov/acidrain/effects/surface_water.html.
[218] *Id.*
[219] *Id.*
[220] EPA, *Effects of Acid Rain – Forests* (June 8, 2007) available at http://www.epa.gov/acidrain/effects/forests.html.
[221] *Id.*
[222] *Id.*

Air pollution presents a multi-billion dollar per year health crisis driven to a large extent by coal-fired power and mining. These billions are in addition to the economic loss associated with the tragedy of millions of children who are slow learners or mentally retarded because of pre-natal or infant exposure to coal-fired mercury emissions. Such impacts are not offset by a handful of local coal mining jobs. The DEIS lack adequate analysis of externalized economic costs.

There is an estimate of lost workdays associated with particulate emissions from coal-fired power plants. More than 3,000,000 days of worker productivity are lost in this country each year due to this single pollutant from coal.[223] On top of the health costs and lost productivity in the workforce, coal-fired air pollution is also responsible for lost crop and forest productivity due to ozone, particulates and acid rain.

4. Groundwater impacts

10

Both mining and CBNG drilling require dewatering of the area of interest. It appears that past NEPA analysis did not consider cumulative impacts on groundwater. Because of these combined activities, groundwater levels have now dropped much further than was predicted, in places up to 350 feet. The DEIS fails to analyze how much of this drawdown was due to mining. Twenty years after mining, water tables in reclaimed areas do not appear to be increasing significantly.[224] In some places BLM hasn't even bothered to measure groundwater reclamation efforts.[225]

As with other water-related issues described below, BLM kicks the analysis can down the road to the mine permit stage. Full impacts on groundwater of the project might only be analyzed after a Record of Decision has been issued.[226] It appears that no timely comprehensive analysis of groundwater has been undertaken in quite some time. The Cumulative Hydrologic Impact Analysis ("CHIA") that is quoted in the DEIS dates more than 20 years back to 1988.[227] That analysis appears to have predicted a total mining drawdown of 5 feet, far from the 350 feet that has occurred in some places.[228] It is not possible to complete NEPA legal requirements before an updated CHIA is completed and made available to the public for comment and to the decision maker for review.

In the absence of an updated CHIA, there appears to be no estimate of groundwater drawdown.[229] Likewise the total amount of groundwater drawdown and its effect on municipal supplies is not analyzed.[230] Impacts on groundwater quality also are not analyzed.[231] All of that analysis will presumably come later, after a decision to irretrievably commit federal resources

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[223] *Power Plant Emissions* at 6-2.
[224] *See id.* at 3-106.
[225] *Id.* at 3-110.
[226] *Id.* at 4-50.
[227] *Id.* at 4-52.
[228] *Id.* at 4-53.
[229] *Id.* at 4-55.
[230] *Id.* at 4-56.
[231] *Id.* at 4-58.

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has been made. Such impacts should be instead analyzed now and revealed to the public for comment before a ROD is issued.

5. Impacts to alluvial valley floors

Mining is prohibited on most alluvial valley floors and mining cannot affect alluvial valley floors downstream. This is mostly to protect flood irrigation agriculture. The DEIS approach to the issue is to declare that AVFs are not affected as far as BLM can tell so far, but BLM will look at the issue closely when mine permitting takes place. However, BLM must complete its analysis of AVF and provide that analysis to the public for comment in the DEIS. 22

6. Impacts to wetlands

The DEIS admits to not having conducted a formal delineation survey of wetlands. BLM claims that it is the Corps of Engineers job to perform such analysis and it will be done only when a mining permit is being reviewed. In other words, there will be thorough analysis of the issue but not before a Record of Decision is issued. About six hundred acres of wetlands within the lease tracts will be affected. As with the groundwater and AVF analysis above, BLM must complete its analysis of wetlands and OWUS and provide that analysis to the public for comment before a ROD is issued. 23

E. The DEIS Fails to Disclose and Adequately Analyze Impacts to Threatened, Endangered, and Sensitive Species.

1. Ute Ladies'-Tresses Orchid

Ute ladies'-tresses orchids (ULTO) are listed as threatened, and identified as possibly being in the area. This wetlands orchid can survive underground without blooming for many years, so surveying must be done multiple times to assure that the orchids do not exist in an area. It will generally not flower in drought years or years that start wet or cold.[232] It blooms in late July to early September. It cannot be properly identified without the flower being present.[233] It has been observed on Antelope Creek at 5100 feet.[234] 24

In preparing the DEIS, BLM has not performed adequate surveys to confirm or deny the presence of this threatened flower. According to the ULTO Bi-Op for the Modified Idaho Roadless rule, "[b]ecause different plants come into bloom at different times within a population, a population must be visited several times during the growing season for an accurate count."[235] Not much is known about ULTO, but similar species can live up to 50 years and bloom only once every 20 years.[236]

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[232] *Id.* at G1-13.
[233] *Id.*
[234] *Id.*
[235] Fish and Wildlife Service, Biological Opinion – Modified Idaho Roadless Rule 14420-2008-F-0586 at 235.
[236] *Id.*

According to the FWS Interim Survey Requirements for ULTO (1992), "the Service recommends that surveys be conducted annually for three consecutive years." The DEIS implies that multiple surveys must be conducted over a three-year period.

This threatened flower could be impacted by both direct habitat destruction from strip-mining or through the continued dewatering of the area as a cumulative result of CBNG drilling and mining. Yet, the decision to go ahead with these leases could be made well in advance of acquiring the data necessary to know whether this species will be impacted. These lease applications were generally submitted in late 2005 and early 2006, allowing for plenty of time to perform multiple surveys in 2006, 2007 and 2008. There is no excuse for not properly surveying.

In August 2008, when several key surveys were done, much of Wyoming was abnormally dry; in August 2007, it was even worse. At the same time, it is possible that there were very wet springs during survey years. Absence of the ULTO flowers during surveys may have been the result of weather conditions.

The DEIS specifically notes that "[d]ormant Ute ladies'-tresses plants typically persist underground for one to many years and can only be reliably documented after several years of repeated surveys."[237] A Record of Decision is not possible until proper surveys for this threatened flower have been completed according to FWS protocol. Once proper surveys have been completed, an SEIS should be issued with the new information, available for public comment.

2. Greater sage-grouse

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There is an existing petition to list the greater sage-grouse as an endangered species under the Endangered Species Act. The greater sage-grouse is currently a sensitive species. The DEIS notes that "potential sage-grouse habitat is scarce throughout the general Wright analysis area." But before PRB mining, such habitat was not scarce at all.[238] Greater sage-grouse, as per their name, rely on sage for nearly every facet of their existence.[239]

More than 18,000 acres of habitat, most of it containing sage will be destroyed by this proposal.[240] The DEIS estimates that after decades of mining and reclamation, perhaps a century would be needed to restore sage habitat.[241] It is likely though that failed reclamation efforts and post reclamation grazing activities might mean most of this habitat is never restored to a quality that could again support greater sage-grouse. This project will effectively extirpate this bird from the lease and surrounding areas. This is yet another reason arguing that the best use of this public land is to select the No Action alternative.

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[237] DEIS at 50.
[238] *See* Center for Biological Diversity, *Map of Rare Species Occurrences in the Vicinity of the Wright Area Coal Leases* (Aug. 2009) ("Map").
[239] *Id.* at ES-49.
[240] *Id.* at ES-46.
[241] *Id.* at ES-47.

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3. Other threatened and endangered species

Both Canada lynx and piping plover use lands in the PRB mining area.[242] Both species are listed under the ESA as "threatened" species. Neither of these species is discussed in the DEIS. Such discussion should be part of a recirculated DEIS or SEIS. 25

F. The DEIS Lacks Analysis of Reasonable Alternatives.

The range of alternatives given in this project makes it appear as though it were an insider sweetheart deal. In effect, the range of alternatives proposed is either to give the coal mining companies exactly what they asked for (Proposed Alternative), or to give them a whole lot more federal coal than they asked for (Alternative 2 and 3). In fact, the DEIS actually assumes that the companies that filed the applications to put these areas up for lease are the ones that get the bids. An alternative to analyze the possibility that another company might be high bidder on any one of these leases was rejected. Also, an alternative to wait a period to fully recover coal-bed natural gas ("CBNG") was rejected.[243] 2

The BLM Memorandum on maximizing resource recovery, BLM Instruction Memorandum 2006-153, suggests that waiting to mine only after CBNG is recovered is required on these tracts. As a minimum, this alternative should have been analyzed. Likewise, an alternative should have explored the possibility that the companies "winning" the "competitive" bidding process are not already known facts. 26

G. The DEIS Must be Recirculated to Incorporate Information from the PRB Coal Review. 27

The DEIS notes that "[c]urrently, BLM is completing a regional technical study, called the PRB Coal Review, to help evaluate the cumulative impacts of coal and other mineral development in the PRB."[244] Perhaps this explains why the DEIS was largely devoid of cumulative impacts analysis. Such analysis is being undertaken through another venue. While this may be a reason, it is not a legally defensible rationale.

Throughout the DEIS, the PRB Coal Review is referred to as partially complete, its release impending, and it is discussed as a complete review of impacts of mining in the PRB. In short, the PRB Coal Review will contain a wealth of information that belongs in this DEIS. No rationale is given as to why the DEIS was published before the Review was complete. Certainly information essential to the public and the decision maker will be made available with the PRB Coal Review's publication. The DEIS should be withdrawn until the PRB Coal Review is published, recirculated when it is complete, or incorporated into a SEIS.

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[242] *See* Map.
[243] DEIS at ES-27.
[244] *Id.* at ES-56.

CONCLUSION

For the reasons set forth above, the Center requests that BLM choose the No Action alternative, or at the very least, prepare a revised DEIS or a SEIS that complies with NEPA.

Sincerely,

Amy Atwood
Tim Ream

CENTER FOR BIOLOGICAL DIVERSITY
PO Box 11374
Portland, OR 97211-0374
503-283-5474 phone
atwood@biologicaldiversity.org

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August 25, 2009

Wyoming High Plains District Office
Bureau of Land Management
Attn: Sarah Bucklin
2987 Prospector Drive
Casper, WY 82604

Re: Wright Area Draft EIS Comments

Dear Ms. Bucklin:

WildEarth Guardians submits the following comments on the Wright Area Coal Draft Environmental Impact Statement ("DEIS"), which was prepared pursuant to the National Environmental Policy Act ("NEPA"). The DEIS analyzes the impacts of the Bureau of Land Management's ("BLM's") proposal to offer four lease-by-applications ("LBAs") that collectively would allow corporations to strip mine upward of 4.3 billion tons of coal from the Powder River Basin of northeastern Wyoming (hereafter "Wright LBAs"), leading to a number of environmental impacts, including the release of nearly 8.0 billion tons of carbon dioxide ("CO2") (based on an emission factor of 1.82922 tons of CO2/ton of coal), a heat trapping greenhouse gas that is fueling global warming, once the leased coal is mined and burned. *See* Table below.

Proposed LBAs, Acreage, Tonnage, CO2 Emissions, and Mine Company Proponent.[1]

Lease by Application	Acreage	Tons of Coal	Tons of Carbon Dioxide from Burning	Mine Company Proponent (Mine and Rank in U.S. Production)
North Highlight Field	2,613.50	669,300,000	1,224,296,946	Arch (Black Thunder, #2)
South Highlight Field	1,976.69	320,000,000	585,350,400	Arch (Black Thunder, #2)
West Highlight Field	2,370.52	1,056,100,000	1,931,839,242	Arch (Black Thunder, #2)
West Jacobs Ranch	5,944	1,142,100,000	2,089,152,162	Rio Tinto Energy America (Jacobs Ranch, #3)
North Porcupine	5,795	777,400,000	1,422,035,628	Peabody (North Antelope/Rochelle, #1)
South Porcupine	3,185.95	405,400,000	741,565,788	Peabody (North Antelope/Rochelle, #1)
TOTALS	21,866.44	4,370,300,000	7,994,224,166	

[1] Acreage and tonnage figures based on DEIS; CO2 emissions based on Energy Information Administration factor of 212.7 lbs/mmBtu of coal; production ranking from Energy Information Administration.

The proposed action is unprecedented. The BLM has never offered to lease such a large amount of coal through a single EIS for at least the last 20 years. What's more, the BLM is offering to lease such a large amount of coal in a day of age where scientific knowledge of human-caused global warming is more advanced than ever. This growing body of knowledge points to human-caused releases of greenhouse gases, like carbon dioxide, as key drivers of global warming. Global warming is dramatically changing the climate, threatening economic stability, national security, public health, and natural ecosystems. In recognition of the need to confront global warming, a number of states in the American West, including Colorado and New Mexico, have adopted ambitious greenhouse gas reduction goals.[2] Even the U.S. Environmental Protection Agency has recognized: 5

> [G]reenhouse gases in the atmosphere endanger the public health and welfare of current and future generations. Concentrations of greenhouse gases are at unprecedented levels compared to the recent and distant past. These high atmospheric levels are the unambiguous result of human emissions, and are very likely the cause of the observed increase in average temperatures and other climatic changes. The effects of climate change observed to date and projected to occur in the future—including but not limited to the increased likelihood of more frequent and intense heat waves, more wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems—are effects on public health and welfare[.]

74 Fed. Reg. 18886-18910.[3]

Not only that, but the BLM is offering to lease such a large amount of coal in a day of age where clean, renewable energy is becoming more affordable and widely available. Even Secretary of the Interior Ken Salazar has recognized this and directed that, "Encouraging the production, development, and delivery of renewable energy is one of the [Interior] Department's highest priorities." Secretarial Order No. 3285 (March 11, 2009).[4] In the State of Wyoming, this direction could not be more imperative. The wind energy potential in Wyoming along is estimated to be 883 million megawatt-hours/year ("MWh/y"), enough to more than meet the energy demands of the entire American West. *See* Figure below. Given that much of Wyoming's wind energy potential located on public lands managed by the BLM, it is unbelievable that the BLM would propose lease more than 4 billion tons of coal in the Powder River Basin. At the least, it is unclear how the agency is addressing the Interior Secretary's directive in Secretarial Order No. 3285 by proposing the Wright LBAs. 14

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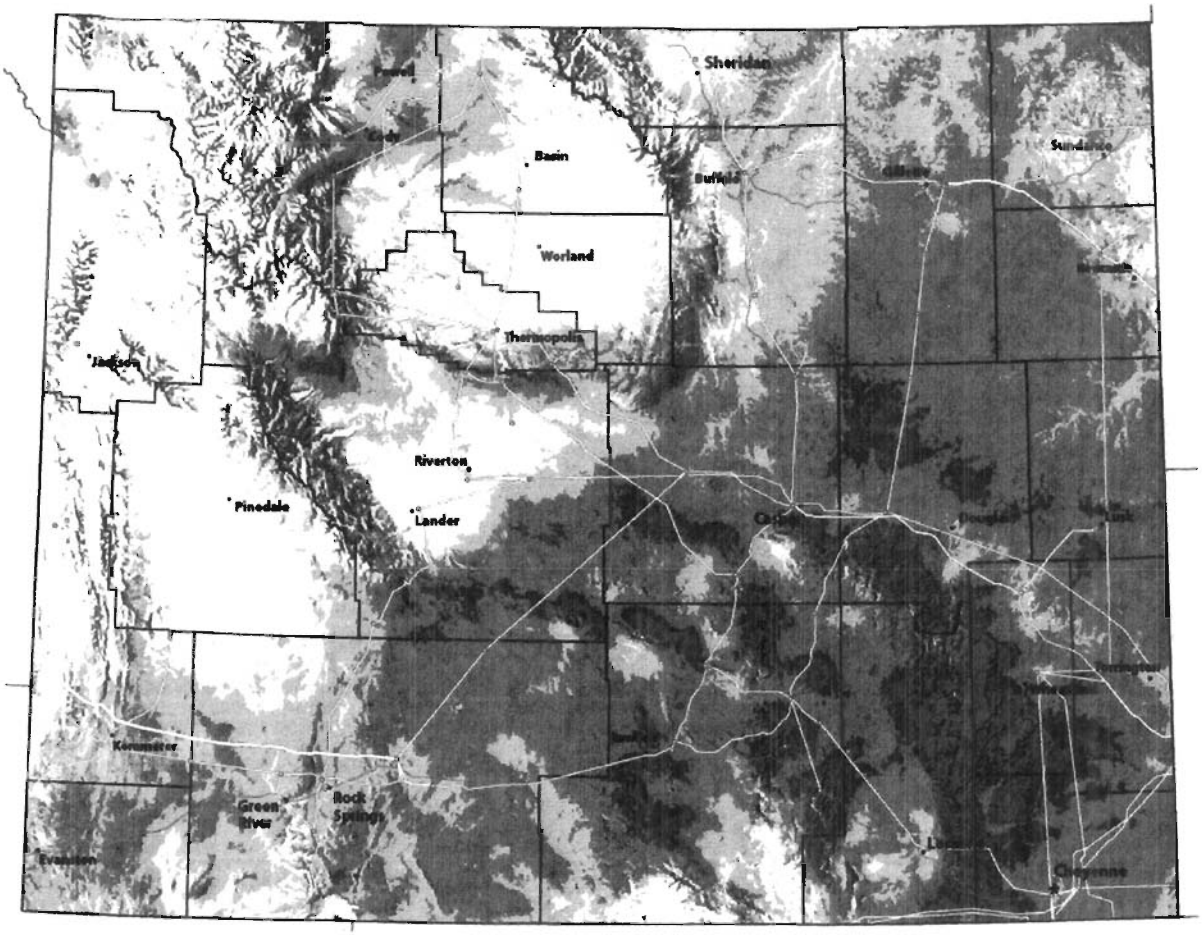
[2] *See* **Exhibit 1**, greenhouse gas reduction Executive Order signed by Colorado Governor Bill Ritter and **Exhibit 2**, greenhouse gas reduction Executive Order signed by New Mexico Governor Bill Richardson.

[3] *See* **Exhibit 3**.

[4] *See* **Exhibit 4**.



Wind Energy Potential in Wyoming. Blue is "Superb," red is "Outstanding," purple is "Excellent," pink is "Good," and orange is "Fair."[5]

The BLM's proposal appears wholly out-of-touch with the current state of science, the range of energy alternatives available, and with Interior Department policy. As such we do not support the proposed Wright LBAs and urge the BLM to reject offering the proposed leases. We are very concerned that the agency is not fully addressing the global warming impacts of the proposed Wright LBAs, nor is the agency addressing the need for renewable energy. Further, we have serious concerns that the BLM is illegally leasing coal under the LBA process, thereby preventing the agency from fully analyzing and assessing the environmental impacts of regional coal leasing in the Powder River Basin and from providing the public a full opportunity to comment on regional leasing levels. We are further concerned that the BLM has not addressed serious air quality impacts, has not analyzed a range of reasonable alternatives, and has failed to address other impacts associated with the Wright LBAs in the DEIS. These comments are timely submitted within 60 days of June 26, 2009, the date the notice of availability for the DEIS was published in the Federal Register. *See* 74 Fed. Reg. 30570.

[5] Map from Renewable Energy Atlas of the Western States. *See* **Exhibit 5**.

1. The Purpose and Need for the DEIS is Unclear and Appears too Narrow

An EIS is required to "briefly specify the underlying purpose and need to which the agency is responding in ***proposing the alternatives including the proposed action***." 40 CFR § 1502.13 (emphasis added). Thus, the purpose and need drives the development of alternatives in an EIS. Consequently, it is imperative under NEPA that a stated purpose and need in an EIS be clear, not be so narrow as to preclude reasonable alternatives, and above all ensure well-informed decisionmaking that ensures compliance with applicable laws and regulations and full consideration of environmental impacts. Unfortunately, in the case of the DEIS for the Wright LBAs, the purpose and need appears flawed in several regards.

a. The Purpose and Need is not Stated 1

The "Purpose and Need" section in the DEIS at pages 1-16—1-18 appears to fail to state the underlying purpose and need to which the BLM is responding in proposing the alternatives in the DEIS. The section is nearly two pages long and simply does not identify the actual purpose and need to which the BLM is responding the alternatives in the DEIS.

b. The BLM Appears to Have Inappropriately Limited the Scope of its Decisionmaking Authority

Notwithstanding the lack of a clearly defined "Purpose and Need" section, it appears the BLM may believe the purpose and need is to respond to the LBAs "for the purpose of generating electric power for the public." DEIS at 1-17. If this is the case, then the "Purpose and Need" is wholly inappropriate and illegally constrains the agency's decisionmaking authority. 2

Indeed, under BLM's coal leasing regulations dealing with LBAs, the agency first and foremost has a nondiscretionary duty to ensure that any LBA "is consistent with the applicable regulations," would not "compromise the regional leasing process defined in [43 CFR § 3420.3]," and, above all, "would not be contrary to the public interest" on the basis of environmental or other sufficient reasons. *See* 43 CFR §§ 3425.1-8(a)(1)—(3). Nowhere in the purpose and need are these overriding duties addressed. This raises serious concerns that the BLM has constrained its ability to reject the proposed LBAs in accordance with 43 CFR § 3425.1-8, or at least failed to retain the ability to develop alternatives in order to fulfill the agency's legal obligations.

We do understand that there is a general need to generate electric power for the public. However, there are a number of ways to generate electric power for the public, including through renewable energy development, through natural gas, through greater efficiencies, and through conservation of energy. By narrowing its focus on coal, the BLM has, limited its ability to consider these other energy alternatives. Furthermore, by narrowing its focus on coal, the BLM has constrained its ability to adequately analyze and assess more cost-effective alternatives for generating electricity. As will be explained further in these comments, the cost of the CO2 associated with burning the coal proposed to be leased through the Wright LBAs could be as

much as $165,161,001,829.56. **That's more than $165 billion.**[6] These potential costs indicate that if energy affordability is going to be a component of the BLM's purpose and need, the agency cannot limit itself solely to considering coal as a source of electricity.

Overall, if the BLM is going to develop a purpose and need that revolves around providing affordable and reliable electric power for the public, the agency cannot limit its consideration only to coal. Not does such a narrow purpose and need prevent the BLM from fulfilling its legal obligations under 43 CFR § 3425, but it constrains the ability of the agency to develop a range of reasonable alternatives. Particularly in the context of the impacts of the environmental impacts of the proposed Wright LBAs—including global warming, air quality, and other impacts—the agency must broaden the scope of its purpose and need and DEIS to ensure a range of alternatives is rigorously explored. As it stands, the only action alternatives proposed so far involve mining coal, a clear indication that the purpose and need is far too narrow. 14

2. The DEIS Fails to Adequately Analyze and Assess the Global Warming Impacts of the Wright LBAs in Accordance with NEPA 6

Although we are pleased to see the BLM disclose the greenhouse gas ("GHG") emissions associated with burning the coal that may be leased through the Wright LBAs, we are concerned that the BLM is not adequately analyzing all direct, indirect, and cumulative GHG emissions, nor analyzing and assessing the global warming impacts associated with these emissions.

a. The DEIS Fails to Assess the Significance of the Direct, Indirect, and Cumulative GHG Emissions Associated with the Wright LBAs

GHG emissions from burning the coal authorized by the Wright LBAs are a reasonably foreseeable consequence of this federal action, as the BLM has recognized. We appreciate the discussion of climate change in the EIS and the BLM's effort to disclose direct, indirect, and cumulative GHG emissions. However, the analysis is incomplete under NEPA and CEQ regulations because the BLM failed to assess the significance of the direct, indirect, and cumulative GHG emissions associated with the Wright LBAs.

The DEIS does disclose the GHGs expected to be released as a result of burning the coal leased under the Wright LBAs and also briefly discloses that global warming caused by human-released GHG emissions is contributing to a number of negative consequences, particularly in the American West. *See* DEIS at 4-112—4-115. Unfortunately, the DEIS ends there. Indeed, while the DEIS discloses the GHG emissions associated with burning the coal proposed to be leased through the Wright LBAs, the DEIS entirely fails to assess the significance of these emissions, or make any effort to analyze how such emissions are likely to contribute to the negative consequences of global warming. CEQ regulations clearly require that an EIS discuss

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[6] This dollar figure is based on the current price of carbon as established by the European Union (in U.S. dollars). As of August 6, 2009, the trading price of CO_2 in the European Union was 14.39 euros per ton, equivalent to US $20.66 per ton. *See* POINT CARBON EUA OTC ASSESSMENT, http://www.pointcarbon.com/.

"[d]irect effects and their significance," "[i]ndirect effects and their significance," as well as analyze and assess cumulative impacts. 40 CFR §§ 1502.16(a), (b) and (d).

In this case, it appears as if the GHG emissions associated with the Wright LBAs will be more than significant. The proposal will make available 4.370 billion tons of coal.[7] Over the life of the leases, some of which will extend mine operations for as long as 28.6 years, the coal, once burned, will emit nearly 8,000,000,000 tons of carbon dioxide.[8] This amount of GHGs is greater than the amount of total GHG emissions released in the United States in 2007.[9] If the BLM decided to withhold the Wright LBAs from leasing, the GHG reductions caused by that decision would be equivalent to stopping all GHG-emitting activity in the United States for an entire year, resulting in a global GHG emissions reduction of 18%.

Not only that, but the GHG emissions associated with the Wright LBAs appears significant just in terms of the magnitude of contribution to the United States' GHG emissions from this single BLM decision. Consider this:

- CO2 emissions make up more than 85% of the United State's total greenhouse gas emissions;[10]
- Coal-fired power plants release 32% of total CO2 emissions, more than any other source in the nation;[11]
- The Powder River Basin produces 42% of all coal burned in coal-fired power plants in the United States, more than any other region of the country (*see* DEIS at 4-115);
- When burned, coal from the Powder River Basin produce 13.9% of all CO2 emissions in the United States, more than any other region of the country (*Id.*); and
- The Wright LBAs, in proposing to mine upwards of 4.3 billion tons of coal from the Powder River Basin, would release nearly 8 billion tons of GHGs and represent the largest coal leasing proposal currently pending before the BLM (and likely the largest coal leasing proposal ever issued by the agency).

To sum it all up, the Wright LBAs would open the door for the largest coal mining proposal in the biggest coal production region, which is responsible for the largest amount of coal-fired power plant CO2 emissions, which are the largest source of carbon dioxide emissions in the United States, within which CO2 comprises the vast majority of all GHGs released. In all likelihood, the BLM's decision regarding the Wright LBAs will represent the single largest impact to GHG emissions in the United States ever before made.

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[7] This is the amount of recoverable coal from all 6 tracts under a high development scenario.

[8] Based on the BLM's emission factor of 212.7 lbs of CO2/MMBtu and BLM's estimated Btu content of 8,600/pound of coal. *See* DEIS at 4-118.

[9] In 2007, the United States emitted 7,150.1 million metric tons of CO_2 equivalent, which made up 18.7 percent of the world's GHG emissions. *See* **Exhibit 6**, EPA, 2009 U.S. GREENHOUSE GAS INVENTORY REPORT.

[10] *See* **Exhibit 7**, U.S. Greenhouse Gas Emissions and Sinks Fast Facts, 2007. EPA.

[11] *Supra*. Note 9.

In accordance with NEPA, the BLM must assess the significance of the direct, indirect, and cumulative GHG emissions associated with the Wright LBAs and fully discuss climate change impacts to a degree commensurate with the very significant impact of these leases.

b. The DEIS Fails to Quantify the Cost of GHG Emissions

The NEPA requires that the BLM "identify and develop methods and procedures . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations." 42 USC § 4332(2)(B). The DEIS does not quantify the environmental effects of climate change, and in particular the cost of GHG emissions.

The Ninth Circuit held that it was arbitrary and capricious for a federal agency to not include a cost or benefit of carbon emissions in a NEPA document for car gas mileage standards. *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1203 (9th Cir. 2008). The Court ordered the agency to include a monetized value of carbon emissions in the NEPA document, reasoning in part that "the value of carbon emissions reduction is certainly not zero." *Id.* at 1200, 1203. Here, the BLM has made the same error: it has omitted any monetization of the costs of carbon emissions that will result from the burning of coal to be mined under the Wright LBAs. This omission is even worse here than the omission in *National Highway Traffic Safety Administration*, because the burning of Wright LBAs' coal will result in emissions greater than total U.S. GHG emissions from all sources in 2007. Therefore, the BLM must monetize carbon emissions associated with the Wright LBAs and include those numbers in any EIS. 6

In *National Highway Traffic Safety Administration*, the court listed a number of possible values in dollars per ton of CO_2 emissions that are mitigated (i.e., not emitted). The dollar amounts ranged from a low of $3 per ton to a high of $50 per ton CO_2. *See* 538 F.3d at 1199. As of August 6, 2009, the trading price of CO_2 in the European Union was 14.39 euros per ton, equivalent to US $20.66 per ton.[12] The BLM could easily use these per ton prices as a starting point for calculating the present-day cost of CO_2 emissions that it will cause by leasing the Wright LBAs. Using the above European Union carbon market price, the emissions from burnt WALBA coal have a mitigation value of $163,235,000,000.[13] In other words, if a carbon market were set up in the United States, carbon polluters would pay $163 billion to keep the Wright LBAs' coal in the ground. This is a significant cost that the EIS must at least attempt to disclose.

c. The DEIS Fails to Adequately Analyze and Assess Global Warming Impacts

Also of concern is that the DEIS fails to analyze and assess how the direct, indirect, and cumulative GHG emissions will influence global warming. As the BLM indicates in the DEIS, it can be assumed that the release of GHGs associated with the Wright LBAs will contribute to

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[12] *Supra.* Note 6.

[13] $20.66 per ton x 7,901 million tons = $163,235,000,000.

global warming. Yet the BLM makes no attempt to analyze and assess such impacts and the magnitude of contribution to global warming.

The BLM asserts that "Tools necessary to quantify incremental climatic changes...for the projected development activities in the PRB [Powder River Basin] are presently unavailable. As a consequence, impact assessments of specific anthropogenic activities cannot be performed." DEIS at 4-110. We are skeptical of this assertion, but nevertheless, even if the BLM is correct, the DEIS fails to comply with NEPA.

The CEQ regulations require that an agency "evaluate reasonably foreseeable significant environmental effects on the human environment," even where information relevant to making this evaluation is "incomplete or unavailable." 40 CFR § 1502.22. If this is the case, the agency must clearly show that the information is "lacking" by providing what credible scientific information it does have on these reasonably foreseeable impacts and making an effort to analyze these impacts based on this information. *Id.* What information the agency must provide depends upon the costs of obtaining the information. *Id.*

For example, the agency must include "information relevant to reasonably foreseeable adverse impacts" even if it is "incomplete," if it is "essential to a reasoned choice among alternatives and the overall costs of obtaining it aren't exorbitant." 40 CFR § 1502.22(a). Even where the costs are exorbitant, or the means of obtaining the information are unknown, the agency must still provide information on reasonably foreseeable adverse impacts. This information includes: 6

> (1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

40 CFR § 1502.22(b). Under this section, reasonably foreseeable "includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason." *Id.*

Despite the BLM's claim that tools are unavailable to analyze and assess the global warming impacts associated with the Wright LBAs, nowhere in the DEIS is it apparent that the requirements of 40 CFR § 1502.22 have been met. This is particularly troublesome given the apparent significance of the direct, indirect, and cumulative GHG emissions associated with the Wright LBAs, as well as the BLM's general disclosure regarding the catastrophic impacts of global warming. As it stands, the DEIS fails to comply with NEPA with regards to the analysis and assessment of the global warming impacts of the Wright LBAs.

d. The DEIS Fails to Adequately Analyze and Assess the Cumulative Impacts of Department of Interior-authorized Activities

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The DEIS fails to analyze and assess the cumulative impacts of other actions undertaken by the Department of Interior on global warming. We are especially concerned that the Department of Interior is not programmatically analyzing its GHG emissions and global warming impacts of its operations and activities. Because the BLM is an agency within the Department of Interior, it is imperative that the DEIS fully analyze and assess the cumulative impacts of other Interior Department activities.

In fact, there are a number of projects that release GHGs and cumulatively contribute to global warming, that are under control by the Department of Interior, and that therefore must be addressed pursuant to NEPA *See e.g.*, 40 CFR § 1502.16 (an EIS "will include the environmental impacts of the alternatives including the proposed action"); 40 CFR § 1508.8 (effects include "ecological (such as the effects on natural resources and on the components of, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative"); and 40 CFR § 1508.7 (cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions"). The projects authorized or proposed to be authorized by the Department of Interior and its agencies include:[14]

- Numerous other coal leases proposed in the Rocky Mountain West, including the Dakota Westmoreland coal lease modification proposed in March of 2009 by the BLM in North Dakota;[15]
- The Greens Hollow coal lease proposed in 2008 by the BLM in the Price Field Office of Utah;[16]
- The Peabody Twentymile Coal Company Application for Coal Lease approved in 2008 by the BLM in the Little Snake Field Office of Colorado;[17]
- The Absaloka Mine South Extension Coal Lease approved in 2008 by the Bureau of Indian Affairs on the Crow Indian Reservation in Montana;[18]
- The Red Cliff coal mine proposed in 2009 for authorization by the BLM in the Grand Junction Field Office of western Colorado;[19]

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[14] Due to the large size of the following documents, we are unable to submit the following documents as electronic attachments. We provide the weblinks for the BLM to reference and will submit hard copies as follow up via U.S. Mail to ensure the agency has full access to this data in order to adequately analyze and assess cumulative impacts.

[15] *See* Environmental Assessment available at http://www.blm.gov/pgdata/etc/medialib/blm/mt/field_offices/north_dakota.Par.96662.File.dat/DWCea.pdf.

[16] *See* EIS available at http://www.blm.gov/pgdata/etc/medialib/blm/ut/price_fo/Coal.Par.48515.File.dat/Greens%20Hollow%20DEIS.pdf.

[17] *See* Environmental Assessment available at http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/little_snake_field/2008_documents.Par.4735.File.dat/CO-100-2008-058EA.pdf.

[18] *See* Record of Decision available at www.deq.state.mt.us/eis/Absaloka/ROD.pdf.

[19] *See* DEIS available at http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/red_cliff_mine/documents.html.

- Tar sands and oil shale development proposed in 2008 by the BLM for Colorado, Utah, and Wyoming.[20]
- The Toquop coal-fired power plant in Nevada, which is proposed to be authorized by the BLM;[21] and
- The Desert Rock coal-fired power plant in New Mexico, which is proposed to be authorized by the Bureau of Indian Affairs.[22]

The BLM must consider the impacts of its proposal to authorize the Wright LBAs cumulatively with other Department of Interior authorized activities that also contribute to global warming. Until such time as BLM analyzes the cumulative impacts of greenhouse gas emissions from other Department of Interior authorized activities, BLM cannot move forward with the Wright LBAs in compliance with NEPA.

e. The DEIS Incorrectly Claims the No Action and Action Alternatives Will not Differ in Their Climate Change Impacts

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As already discussed, the quantity of recoverable coal that will be made available by the Wright LBAs is gigantic: 4.370 billion tons is almost four times the total U.S. coal production in 2007.[23] This is a greater amount than all of the coal reserves in Kentucky, West Virginia, and Illinois combined.[24] On an annual basis, coal production from the six tracts will reach a maximum of 270 million tons per year. DEIS 4-12, 4-14. 270 million tons per year is equal to 38.4% of annual production for all states excluding Wyoming, based on 2008 data.[25] Moreover, the Wright Area, including the LBAs at issue here, is projected to produce the majority of Wyoming coal through 2020 based on both lower and upper production scenarios. DEIS 4-10, 4-11.

The DEIS claims that "it is not likely that selection of the No Action Alternatives would result in a decrease of U.S. CO_2 emissions attributable to coal-burning power plants in the longer term," because if the Wright LBAs are not leased, other coal mines will produce the same quantity of coal as would have been produced by these 6 tracts to meet annual coal demand for electricity generation. DEIS 4-122. This conclusion is at best a gross oversimplification, and at worst entirely impossible. If the six tracts are not leased, it will be very difficult for domestic coal mines to provide an additional 38.4% of annual coal production. Further, if these tracts are never leased, other coal-producing states will not be able to replace the 4.370 billion tons made unavailable in Wyoming. Coal-fired power plants would have to import coal from other

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[20] *See* EIS available at http://ostseis.anl.gov/eis/guide/index.cfm.

[21] *See* DEIS available at http://www.blm.gov/nv/st/en/fo/ely_field_office/blm_programs/energy/toquop_energy/toquop_draft_eis.html.

[22] *See* DEIS available at http://www.desertrockenergyeis.com/.

[23] *See* ENERGY INFORMATION ADMINISTRATION (EIA), TABLE 1: COAL PRODUCTION AND NUMBER OF MINES BY STATE AND MINE TYPE, DOE/EIA 0584 (2007), http://www.eia.doe.gov/cneaf/coal/page/acr/table1.pdf.

[24] *See* EIA, TABLE 14: RECOVERABLE COAL RESERVES AND AVERAGE RECOVERY PERCENTAGE AT PRODUCING MINES BY STATE, 2007, 2006, DOE/EIA 0584 (2007), http://www.eia.doe.gov/cneaf/coal/reserves/table14_07.pdf.

[25] *See* EIA, TABLE 2. U.S. COAL PRODUCTION BY COAL-PRODUCING REGION AND STATE, 2004 – ATEN, (2008), http://www.eia.doe.gov/cneaf/coal/page/special/feature.html.

countries to make up the 38.4% percent annual production that the Wright LBAs represent. Large-scale coal importation is unlikely because of the nation's focus on energy independence and because of the political influence of coal industry lobbyists.

In light of the unlikelihood that other domestic coal mines could feasibly supply an additional 4.370 billion tons of recoverable coal to the market, the DEIS is incorrect in stating that the decision to lease or not lease would not have different effects on climate change. The authorize the Wright LBAs will in fact contribute significantly to national GHG emissions for a period of years.

Even if it were remotely possible that coal-producing regions outside Wyoming could provide an additional 4.370 billion tons of coal to the market, the national cost of coal per ton will likely rise because coal mining is more expensive in other regions. The DEIS recognizes that the PRB has cost advantages over other regions. DEIS 4-122. A higher per-ton price for coal would make coal-fired electricity more expensive, which in turn would make other sources of electricity—in particular renewable energy sources such as wind and solar—more competitive with coal. A shift to non-coal sources of electricity, whether it is natural gas, wind and solar, or nuclear, would result in a significant decrease in CO_2 emissions. Thus the no-lease alternative would likely result in lower climate change impacts even if other coal producing regions were capable of producing an equivalent quantity of coal, albeit at higher cost. As it stands, the BLM has not adequately analyze and assessed the potential global warming impacts associated with the proposed alternatives and the No Action Alternative, in accordance with NEPA. 14

Furthermore, the BLM's conclusion that carbon emissions will be the same regardless of the alternative chosen is also an abdication of the agency's responsibility to take a hard look under the NEPA. BLM cannot avoid discussing the global warming impacts of the proposed actions, and their significance, by assuming that emissions from other sources not under the agency's control will have an equal or greater impact on climate change than emissions from the Wright LBAs. If either alternative is chosen, the environmental consequence will be that CO_2 emissions will come from the Wright LBAs, and not from other coal mines in other regions. Thus, the DEIS must discuss this action's climate change impacts as if one of these action alternatives were chosen.

f. The DEIS Fails to Consider Reasonable Alternatives to Address the Global Warming Impacts of the Wright LBAs

The range of alternatives "is the heart of the environmental impact statement." 40 CFR § 1502.14. It is well understood that "NEPA requires that an agency 'rigorously explore and objectively evaluate all reasonable alternatives.'" *Utahns for Better Transp. v. Dept. of Transp.*, 305 F.3d 1152,1168 (10th Cir. 2002) *quoting* 40 C.F.R. § 1502.14(a), *modified on rehearing Utahns for Better Transp. v. Dept. of Transp.*, 319 F.3d 1207 (2003). The alternatives discussed should provide different choices from which decisionmakers and the public can make an informed choice after considering the environmental effects of the alternatives. *See Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853 (9th Cir. 2004). The range of alternatives should also "include reasonable alternatives not within the jurisdiction of the lead agency," and "include appropriate mitigation measures not already included in the proposed action or 2

alternatives." 40 CFR § 1502.14. The alternatives discussed in the DEIS do not meet these requirements in the context of addressing GHG emissions and global warming impacts.

The DEIS must consider a wider range of reasonable alternatives. Alternative 3 is practically identical to Alternative 2. Because of this similarity, the EIS effectively considers two alternatives that differ from the Proposed Action, hardly a "range" under NEPA. What's more, all of the alternatives are assumed to have practically identical environmental effects on global warming. *See* DEIS 4-122. Because identical effects are incorrectly assumed, the DEIS fails to discuss the specific environmental effects of each alternative as required by 40 CFR § 1502.16.

We strongly urge the BLM to rigorously explore and objectively evaluate the following alternatives in order to ensure to sharply define the issues and ensure a well-informed decision that mitigates significant environmental impacts:

- **The range of alternatives should include tonnage and acreage limits to leases so that changes can be made in the future to respond to GHG emissions regulation.** The DEIS discusses the relevance of potential GHG regulation under new legislation that may be enacted later this year. DEIS 4-116. Given the likelihood that some form of carbon regulation will be put in place before the coal from Wright LBAs is mined, it would be prudent for the BLM to include upper limits in the lease agreements. These limits will create flexibility for the BLM in the future to change or modify leases in response to shifts in national energy policy towards lower-carbon, renewable sources. While BLM cannot predict what legislation will be enacted, flexibility would leave the door open for unpredictable changes without compromising current coal production. Rather than writing-in tonnage or acreage limits to the leases, the same alternative could be achieved by presenting an alternative that contains a coal quantity *less than* the quantity in the Proposed Action. This alternative is especially reasonable in light of the fact that the DEIS discloses that all three mines seeking leases have a remaining life of more than 10 years. 5

- **The range of alternatives should include the establishment of a renewable energy fund to spur solar and wind development in Wyoming to mitigate carbon emissions and to create long-term jobs.** To mitigate climate change impacts without compromising the national power supply, a renewable energy fund should be established based on a per-ton tax on coal from the Wright LBAs. This fund should be used to spur development of wind and solar resources in the Powder River Basin and in Wyoming. It is a fact that Wyoming contains significant wind resources; significant solar potential exists, as well.[26] These resources have not been adequately developed, especially solar. DEIS 4-28, 4-29. Federal funding for wind and solar could help to diversify the local economies and create jobs that last indefinitely, because sun and wind will last forever. In contrast, coal mining jobs will disappear as soon as the coal runs out. 2

[26] *Supra*. Note 5.

This mitigation strategy may not be within the BLM's jurisdiction. However, NEPA regulations require consideration of alternatives that lie outside the lead agency's jurisdiction. *See* 40 CFR § 1502.14. Moreover, wind turbines could be sited on reclaimed mine sites; under this scenario the BLM would have jurisdiction over projects on BLM land.

- **The range of alternatives should include a requirement that the coal lessees purchase carbon offsets.** Carbon offsets are stocks or shares that represent a certain amount of CO_2 emissions that have been prevented or mitigated. The mining companies are not currently paying the price for externalities caused by CO_2 emissions from burning coal. A 2008 report estimated those externalities cost society $515 billion per year.[27] These externalities include all of the effects of climate change, as well as regional air and water pollution, and mining accidents. Mine companies can start to begin paying for the full cost of using coal for power generation by purchasing offsets to mitigate some of the damage that is being caused by emissions from coal.

- **The range of alternatives should include a requirement that all carbon emissions from Wright Area coal used for electricity generation be captured and sequestered geologically.** The vast majority of the coal to be mined as a result of the Wright LBAs will be burned for power generation and carbon emissions will be released into the atmosphere. To mitigate this very significant amount of emissions, the range of alternatives should include a plan to require carbon capture and sequestration ("CCS") of emissions equivalent to the amount produced by burning the Wright LBAs' coal. CCS could be required as a contract condition for all coal sold from the Wright Area mines. In the alternative, the BLM could set a per-ton tax on the coal and use the revenue to develop and implement a CCS project that captures an equivalent amount of carbon emissions as would be generated by burning the Wright LBAs' coal. BLM could site the CCS facility on BLM land, thus keeping the project within BLM jurisdiction. Even if the CCS project falls entirely outside BLM jurisdiction, that fact does not excuse the BLM from considering it as an alternative. *See* 40 CFR § 1502.14. 5

- **The range of alternatives should include a Renewable Energy Standard ("RES") for coal mine operators.** To reduce direct emissions from operations, the leases should include an RES that requires operators to rely on a certain percentage of renewable energy to power vehicles, machinery, and buildings. Many states will require that as much as 25 percent of all electricity is generated by renewable sources by 2025.[28] Taking some of this renewable power and using it to power the mines is a realistic and reasonable way to mitigate emissions without placing a large burden on the coal extraction industry. According to the DEIS, GHG emissions associated with electricity use at the three mines will amount to 296,166 tons of CO2e. *See* DEIS at 3-307. If

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[27] GREENPEACE INTERNATIONAL, THE TRUE COST OF COAL (2008), http://www.greenpeace.org/raw/content/international/press/reports/true-cost-coal.pdf. The report presents the cost as 360 billion euros. Converted to dollars as of August 14, 2009, that cost is $515 billion.

[28] *See* PEW CENTER ON GLOBAL CLIMATE CHANGE, RENEWABLE AND ALTERNATIVE ENERGY STANDARDS, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm.

renewable energy was used, these GHG emissions could be significantly mitigated. Additionally, employing renewable energy would improve local air quality.

- **The range of alternatives should include a requirement that all mine vehicles be run on alternative fuels.** Alternative fuels include hydrogen, biodiesel, natural gas, and electricity. Similar to the RES alternative above, an alternative fuels requirement for vehicles would reduce direct GHG emissions associated with mining activities, and simultaneously improve local air quality. 5

3. The DEIS Fails to Adequately Analyze and Assess PM Impacts

The DEIS fails to adequately analyze and assess the particulate matter impacts of the Wright LBAs. In particular, the DEIS fails to address the fact that National Ambient Air Quality Standards ("NAAQS") for PM-10 (particulate matter less than 10 microns in diameter) have been exceeded on numerous occasions, and fails to provide information and analysis demonstrating that PM-10 mitigation measures will effectively limit concentrations to ensure compliance with the NAAQS. 19

a. The DEIS Contains Misleading Information About Past PM-10 Exceedances

The DEIS at F-16 states there were 27 valid PM_{10} exceedances "in the group of mines located south and east of the town of Wright." The mines to the south and east of Wright are the mines that have applied for maintenance tracts here: Jacobs Ranch, Black Thunder, and North Antelope-Rochelle Mine. It is unclear why the DEIS would not state that the 27 valid exceedances occurred at the mines that have submitted applications for leases. Moreover, section 3.4.2.2 on "Environmental Consequences" does not even mention the 27 exceedances; rather, it states that there were twelve PM_{10} exceedances that the BLM asserts were almost all explained by elevated wind speeds. *See* DEIS at 3-45. The discrepancy between these two reported numbers of exceedances calls into question whether the BLM has taken a hard look at the air quality impacts of this leasing decision, and in particular the number of past exceedances. 55

Twenty-seven exceedances of the PM-10 NAAQS is significant evidence that the mines "south and east" of Wright are either failing to ensure compliance with the NAAQS. Despite this, the BLM does not explain in the DEIS how PM_{10} exceedances will be prevented and reduced in the future. Instead, the DEIS at 3-46 simply asserts that, "new air quality modeling would need to be conducted in support of that permit application demonstrating on-going compliance with all applicable ambient standards." This hardly serves to meet BLM's hard look responsibilities under NEPA. Particularly given that the Wyoming Department of Environmental Quality ("WYDEQ") does not actually model PM-10 impacts, and given that WYDEQ only assess the impacts to the NAAQS in the context of individual sources of air pollution, the BLM cannot rely on the WYDEQ to ensure that future NAAQS exceedances will be prevented, or that a violation of the NAAQS will be avoided. 34

What's more, although a formal "nonattainment" designation has not been made by EPA, the BLM has an independent duty under the Federal Land Policy and Management Act

("FLPMA") to assure compliance with federal air quality standards. *See* 43 USC § 1712(c)(8). This requirement applies, whether or not a formal "nonattainment" designation has been made by EPA. 42

b. It is Unclear how Background PM-10 Was Established and how it was Factored into the BLM's Analysis

The DEIS asserts that background 24-hour PM-10 concentrations are 54 micrograms/cubic meter in the Powder River Basin. *See* DEIS, Table F-1 at F-4. This background is apparently based on 2002 data gathered from the Eagle Butte Mine in Campbell County, WY.

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It is unclear how this background level of PM-10 was assessed. For one thing, it is unclear why the BLM utilized 2002 data when more recent monitoring data exists. For another thing, it is unclear why the BLM utilized data from the Eagle Butte Mine and not one of the mines in the Wright LBAs area. Monitoring occurs at the North Antelope-Rochelle, Black Thunder, and Jacobs Ranch Mines. Finally, it is unclear how the BLM assessed background concentrations. Under federal regulations, the PM-10 NAAQS are attained whenever the number of days in a calendar year with a 24-hour concentration of 150 micrograms/cubic meter exceeds one. It is unclear how the assessed background 24-hour PM-10 concentration in the context of the NAAQS.

Adding to this confusion, it is unclear how the BLM factored background PM-10 concentrations into the agency's analysis of PM-10 impacts. While background levels are noted, it does not appear that the DEIS actually assessed any potential PM-10 increases in order to assess whether PM-10 NAAQS will be fully protected.

We strongly urge the BLM to assess PM-10 impacts based on monitoring data from all sites within the Wright Area LBAs. According to the EPA, there are a number of PM-10 monitors at the North Antelope-Rochelle, Black Thunder, and Jacobs Ranch Mines Areas.[29] We request the BLM assess PM-10 impacts at each individual monitoring site to ensure compliance with the NAAQS across the area. 42

c. The BLM Cannot Rely on the Natural Events Action Plan as Currently Written and Enforced

The DEIS states on page F-12 that, "based on the EPA's Natural Events Policy, PM_{10} concentrations due to dust raised by unusually high winds will be treated as uncontrollable natural events under the following conditions: (1) the dust originated from non-anthropogenic sources, or *(2) the dust originated from anthropogenic sources controlled with BACM*" (emphasis added). Part (2) of this policy effectively nullifies the PM_{10} NAAQS because all exceedances will be excused as long as the mine operator is following the BACM. Yet, the state does not monitor BACM on a regular basis, so we have no assurance that operators are actually 57

[29] *See* **Exhibit 8**.

following BACM except for their own self-reporting. Further, the DEIS states at page F-11 that "these measures [BACM] are not current requirements in all of the mines' air quality permits."

Regardless, the DEIS fails to demonstrate how BACM requirements will be continuously met to ensure protection of the PM-10 NAAQS. No information or analysis is provided in the DEIS demonstrating that BACM requirements will be effectively implemented, enforced, and will effectively maintain compliance with the NAAQS.

d. The DEIS Fails to Provide Information and Analysis Supporting the Effectiveness of any PM-10 BACT Measures

Also of concern is that the DEIS does not provide information or analysis demonstrating that best available control technology requirements, or BACT, for PM-10 will be effective at protecting the NAAQS. According to the DEIS at page F-7, BACT are included in air pollution permits for all mines in Wyoming. All the mines have coal preparation and processing facilities (*see* DEIS 3-45), so the BACT for these parts of the mines are the requirements in 40 CFR Part 60 Subpart Y. The DEIS admits that the Subpart Y standards "are typically less stringent than state-level BACT limits." DEIS at F-7. If this is true, the DEIS must show how state BACT limits will protect air quality. Specifically, it should explain how 27 or more PM_{10} exceedances—which are an indication that the region is very capable of violating the NAAQS—will not be repeated in the future. Many of the work practices mentioned are voluntary, thus unenforceable, raising concerns that reliance upon these practices cannot serve to ensure an adequately analysis and assessment of impacts. And again, although WYDEQ may be addressing PM-10 impacts to some degree, this does not absolve the BLM of its responsibility under FLPMA ensure that its land management actions do not violate federal clean air standards. At a minimum, the DEIS must provide information and analysis necessary to demonstrate compliance with BLM FLPMA obligations.

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4. The DEIS Fails to Adequately Analyze and Assess Ozone Impacts

The DEIS fails to adequately analyze and assess ozone impacts to ensure compliance with the NAAQS.

a. The BLM is Inappropriately Assessing Impacts to the Ambient Air Quality Standards

The BLM mistakenly asserting that the new ozone NAAQS of 0.075 ppm is not applied retroactively. *See* DEIS at 3-66—3-67. In other words, the agency is asserting that prior to May 2008, when the new ozone NAAQS was promulgated, impacts and compliance are assessed in the context of the old ozone NAAQS of 0.080 ppm. As a result, BLM does not seem to be addressing exceedances of the current NAAQS that occurred prior to 2008 in the context of analyzing and assessing impacts.

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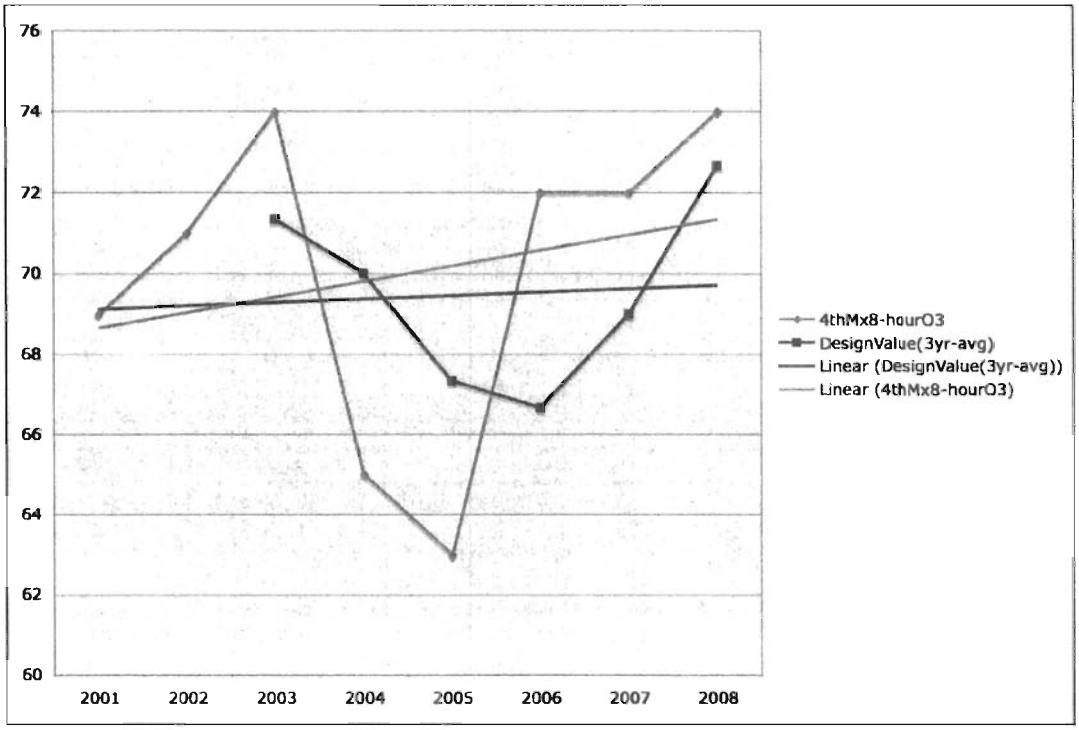
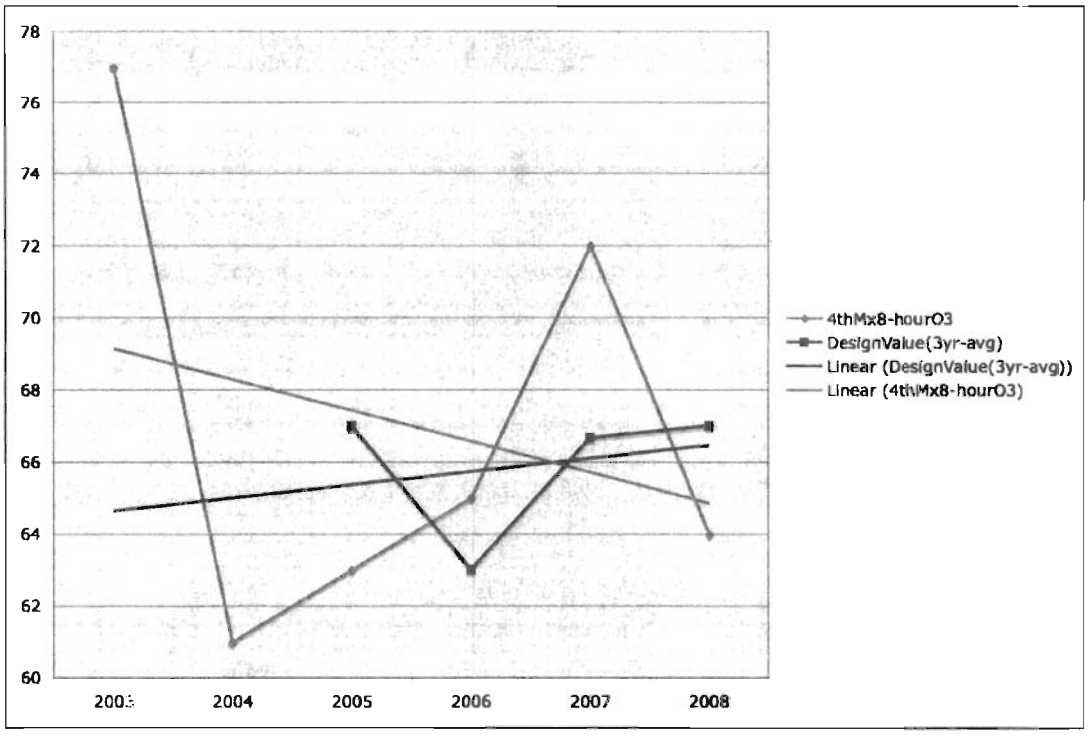
To begin with, this is not only contrary to how the NAAQS are applied, but troublesome in light of what monitoring data is showing in the Powder River Basin. Since 2001, ozone levels

have exceeded the 0.075 ppm standard on 16 days in Campbell County.[30] Not only that, but the three-year average of the 4th highest annual 8-hour readings, or the design value, at both Campbell County ozone monitors is trending upward. Although the Campbell County ozone monitors obviously have not been operating for very long, a trend seems to be emerging. Notwithstanding this, the BLM asserts that "no exceedances" of the current ozone NAAQS have occurred in the Powder River Basin. *See* DEIS at 3-67.

[30] *See* **Exhibit 9.** Contrary to BLM's assertion, an exceedance of the ozone NAAQS occurs anytime 8-hour concentrations exceed 0.075 parts per million. This is why the EPA monitoring data identifies 16 ozone exceedances at the Campbell County ozone monitors since 2001.



4th Maximum 8-hour Ozone Readings and Ozone Design Values (three year average of 4th max.) from Thunder Basin Ozone Monitor (above) and S. Campbell County Ozone Monitor (below) (data from EPA).



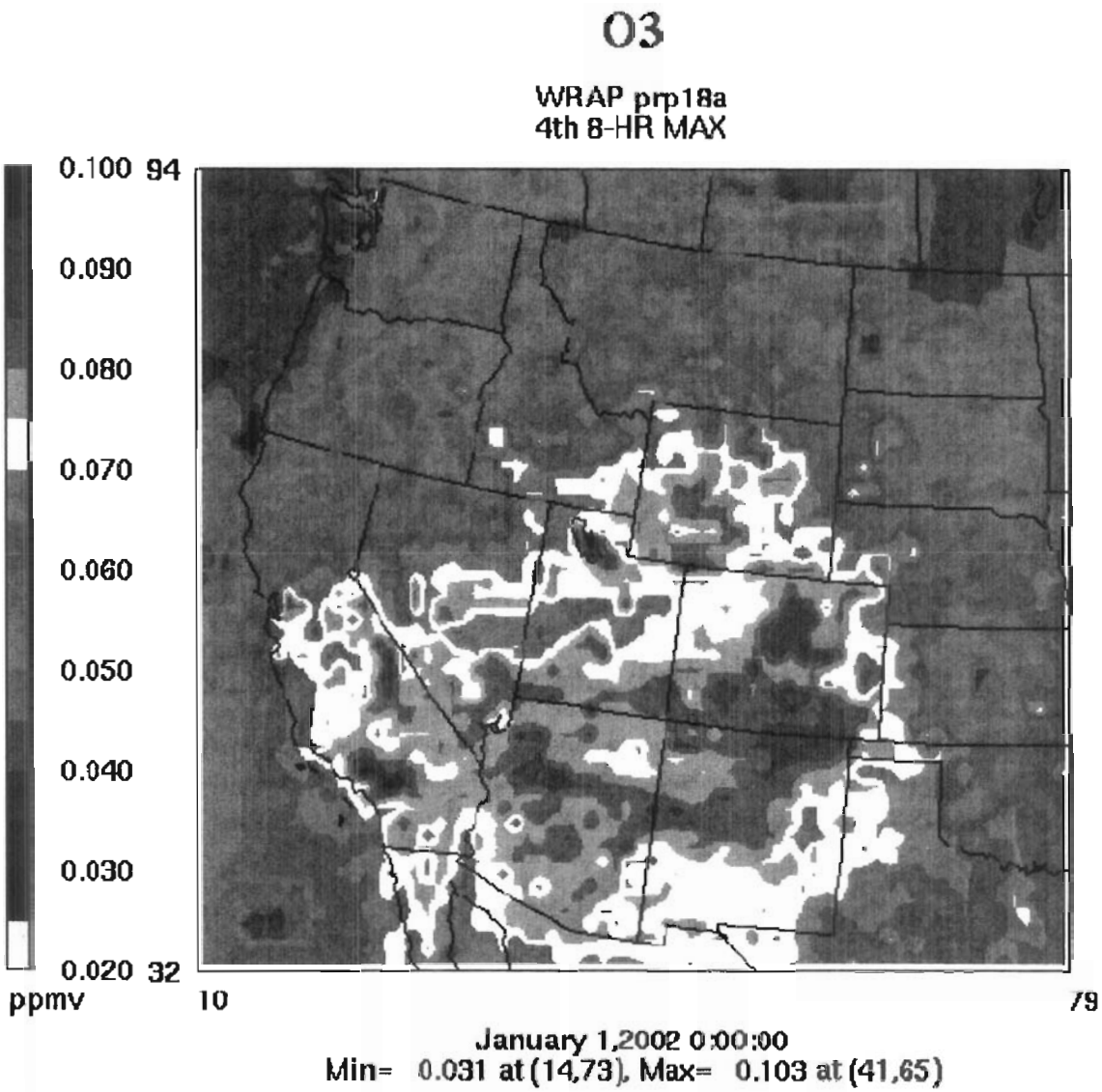
b. The DEIS Fails to Provide any Quantitative Assessment of Ozone Impacts

The DEIS does not quantitatively analyze impacts to the current ozone standards. While the DEIS recognizes ozone as a harmful air pollutant, there is no actual analysis of impacts to ambient ozone concentrations. This is of particular concern given the state of air quality in the Powder River Basin. The current design value at the Thunder Basin monitor in Campbell County is 0.072 ppm—96% of the NAAQS. This is the highest the design value has been since the monitor went online in 2001.

Unfortunately, the BLM is claiming background ozone levels in the Powder River Basin are 70 micrograms/cubic meter, which appears highly inaccurate. 70 micrograms/cubic meter amounts to only around 0.030 ppm. Although the DEIS claims that the background concentration was established using data from 2002-2008 at the Thunder Basin monitor, this does not seem to be the case. In any case, the accurate design value for the region appears to be 0.072 ppm. This means that if the fourth highest maximum 8-hour reading in 2009 is 0.082 ppm or higher, there will be an actual violation of the NAAQS. This seems more than possible, particularly given that 8-hour ozone concentrations have climbed as high as 0.088 ppm in Campbell County. The BLM must provide a quantitative assessment of ozone impacts in order to comply with NEPA and in order to ensure compliance with FLPMA. 60

Also of concern is that the DEIS fails to address the results of modeling prepared for the Western Regional Air Partnership, which strongly indicate that attainment and maintenance of the 8-hour ozone NAAQS is at risk throughout the Western States, including in the Powder River Basin of Wyoming.[31] This modeling in fact shows that the annual fourth maximum 8-hour ozone concentration will exceed 0.075 ppm throughout much of Wyoming. *See* Figure below.

[31] *See* **Exhibit 10**.



Projected 2018 annual fourth maximum ozone concentrations. Orange and red indicate exceedances and/or violations of the ozone NAAQS of 0.075 parts per million.

Clearly ozone is a serious problem in the Powder River Basin. Although a violation of the NAAQS has yet to occur, the BLM has an obligation to analyze and assess ozone impacts to ensure that violations do not occur in the future. The fact that exceedances are occurring, and that the current design value at the Thunder Basin monitor is within 96% of the NAAQS, strongly indicates the BLM cannot simply ignore the need to quantitatively analyze ozone impacts before authorizing the Wright LBAs. 3

c. The DEIS Provides no Quantitative Data Showing that any NOx Reductions Will Lead to any Ozone Reductions

The DEIS asserts that measures to reduce mine-related NOx emissions "should also" reduce the potential for the formation of ground level O3 in the PRB." DEIS at 3-75. There is 32

no quantitative support for this statement. What's more, even on a qualitative level, this statement is misleading and in accurate. The direct NO_X mitigation measures in Section 3.4.3.3 are designed primarily designed to keep the public away from clouds of NO_2, not as a means to reduce NOx emissions from the coal mines. DEIS at 3-74, 3-75. The only mitigation that might reduce emissions is to reduce blast size, but that measure is voluntary and thus not enforceable and cannot be relied upon to demonstrate any NOx reductions will occur. *Id.* All of the other measures listed are voluntary, thus not enforceable even if a mine is causing an exceedance. Also, the DEIS does not mention any measures to reduce NO_X emissions from vehicles and machinery on the mines. All of these NO_X sources have the potential to lead to increased regional ozone concentrations. 35 61

5. The DEIS Fails to Address the Environmental Justice Implications of the Air Quality Impacts of the Wright Area LBAs

According to Table 4-13 on page 4-45, the North Cheyenne Indian Reservation would suffer the largest increase in visibility-impaired days, while the Wind River Indian Reservation, the Fort Belknap Indian Reservation, and the Crow Indian Reservation would suffer increases in visibility impairment under both lower and upper coal development scenarios. These visibility impacts raise a concern about the environmental justice component of this leasing action because air pollution will have a particularly bad impact on Native American populations. 62

The Environmental Justice Section at 3.17.7 fails to mention the air quality impacts on the above-mentioned reservations. Further, this section arbitrarily limits the scope of the environmental justice discussion to effects within Campbell County only. Table 4-13 demonstrates that air pollution from these mines will unequally affect Native Americans because their reservations happen to be located near the Powder River Basin. For these reasons, the DEIS fails to take a hard look at the environmental justice consequences of leasing the Wright LBAs.

6. The BLM Fails to Demonstrate Compliance with FLPMA With Regards to Air Quality Impacts 3

As explained, the BLM has a duty to ensure compliance with the NAAQS in accordance with FLPMA. *See* 43 USC § 1712(c)(8). The DEIS unfortunately fails to demonstrate that the PM-10 and ozone NAAQS in particular will be protected as a result of the Wright LBAs, thereby indicating that the BLM may not meet its responsibilities under FLPMA.

7. The Powder River Basin Was Erroneously Decertified as a Coal Production Region

The BLM has erroneously "decertified" the Powder River Basin as a coal production 28
Because of this, coal leasing is done based on an application filed by a private company. The LBA process allows private coal company, and not the federal government, to design the tract of land subject to leasing. Because the Powder River Basin remains a decertified coal production

region, leasing is done on an application filed by a private company. The LBA process allows private coal company, and not the federal government, to design the tract of land subject to leasing. In the Powder River Basin this has allowed each major coal producer in the area to submit applications for lease federal coal leases in areas and on tracts that they have designed. This raises significant concerns that coal companies are designing tracts in such a way as to preclude any meaningful competition. Indeed, in the last 20 years of coal leasing in the Powder River Basin, only 3 out of 21 leases have received more than one bid.

This raises concerns that the Federal government is failing to ensure fair market value of any privately designed and nominated lease tracts. Notwithstanding BLM's duty to ensure fair market value, the fact that so little competition occurs for coal leases in the Powder River Basin indicates that any fair market value assessment is skewed. Indeed, with no actual competition for coal leases, any fair market value price could not possibly be based on an appraisal comparable to a situation where actual competition occurs.

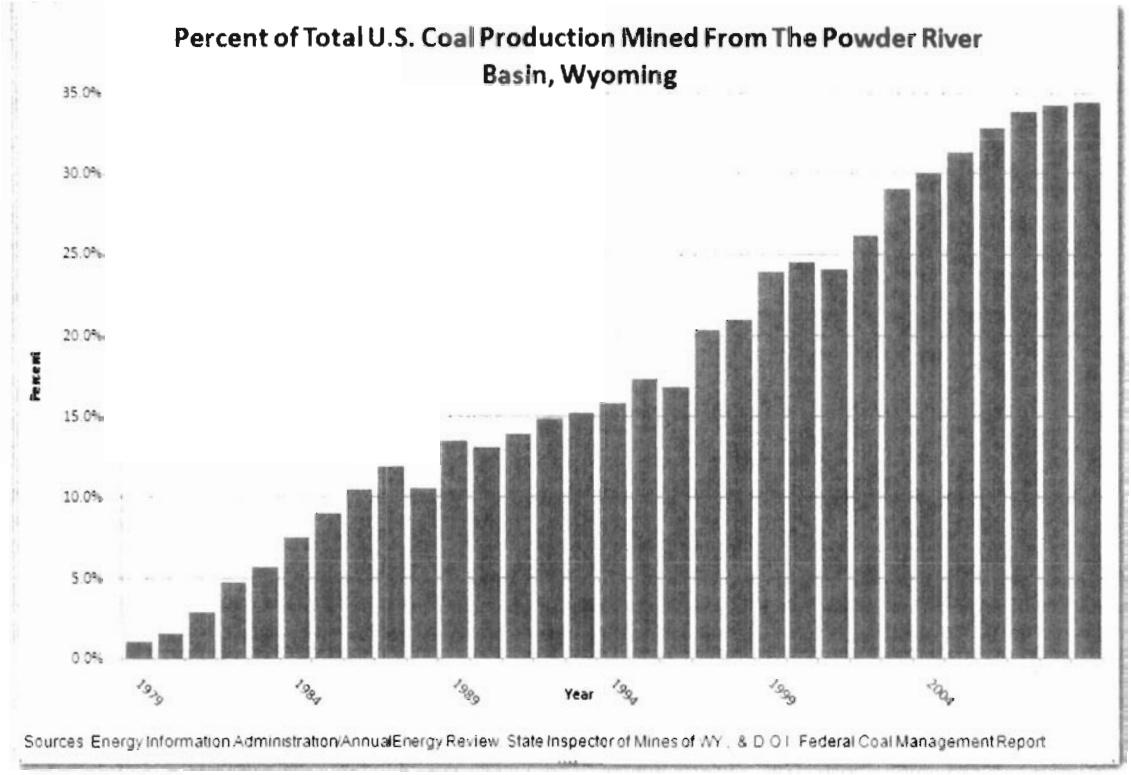
What's more, the "decertification" and the LBA process has allowed the BLM to avoid establishing regional leasing levels based on a regional analysis of environmental impacts and public comment. As will be explained further, the "decertification" is preventing the BLM from fully analyzing, assessing, and addressing the regional environmental impacts of coal leasing in the Powder River Basin. For the reasons explained below, the BLM cannot move forward with the Wright LBAs in light of the decertification.

a. The Decertification was Arbitrary and Capricious and Contrary to BLM's Coal Leasing Regulations 28

The Powder River Basin was "decertified" as a Federal coal production region coal production region in January of 1990. In other words, the BLM has asserted that the Powder River Basin is outside a coal production region in accordance with 43 CFR § 3400.5. This "decertification" was made on the recommendation of the Powder River Regional Coal Team in October of 1989. This decertification was arbitrary and capricious, and contrary to BLM coal leasing regulations. As applied in the context of the Wright LBAs, it is blatantly illegal.

Although there is no definition of "coal production region" in BLM's regulations, the common sense meaning of the word is that it refers to a region where coal is produced. This is exactly why the Powder River Basin was originally designated a "coal production region" in accordance with 43 CFR § 3400.5. Such a designation made sense, even in 1989. Indeed, even in 1989, the Powder River Basin produced nearly 15% of all coal produced in the United States. *See* chart below.[32] This hardly seems indicative of a region that was not producing coal, or that otherwise had no interest from the coal industry.

[32] This chart is available at www.blm.gov/pgdata/etc/medialib/blm/wy/programs/energy/coal/prb.Par.5321.Image.-1.-1.1.gif.



The BLM has responded that decertification was needed to spur interest in coal leasing in the Powder River Basin. This is not supported by the record of that decision. In response to a March 2009 Freedom of Information Act request submitted to both the Montana and Wyoming BLM offices by WildEarth Guardians seeking all records supporting the 1989 decision by the Regional Coal Team to decertify the Powder River Basin, we received no records indicating that coal leasing interest had been waning, that decertification would actually lead to increased leasing interest, or any other information suggesting that the Powder River Basin was not a coal production region.[33] What seems apparent is that the Powder River Regional Coal Team appeared to move to "decertify" the Powder River Coal Production Region so as to be able to utilize the LBA process. This is clearly an arbitrary and capricious reason to "decertify" the Powder River Basin as a coal production region.

Furthermore, although BLM may have discretion to "change" a coal production region or alter boundaries, the regulations are clear that coal production regions are to be used to identify, rank, analyze, select, and schedule lease tracts (i.e., activity planning) in accordance with 43 CFR § 3420.3-1. Logically, the only time the BLM would be allowed to "decertify" a coal production region is if activity planning was inappropriate, such as in areas that were determined to be unacceptable for further consideration for leasing through any land use planning prepared consistent with 43 CFR § 3420.1-4.

[33] Thus far we have only received records from the Montana State Office. However, the Montana FOIA Officer indicated that responsive records received by WildEarth Guardians from Montana would be largely the same as the responsive records from Wyoming.

Did the BLM make a determination that the entire Powder River Basin was unacceptable for further consideration for leasing through any land use planning prepared consistent with 43 CFR § 3420.1-4? The answer, based on data received through FOIA, appears to be no.

b. Even if the Decertification was Appropriate in 1989, it is Now Inappropriate in Light of Current Production and Leasing Levels in the Powder River Basin 28

Although it is seriously questionable whether the "decertification" of the Powder River Basin as a coal production region was appropriate in 1990, it is clear that it is inappropriate today. Indeed, coal production in the Powder River Basin region is significant and has increased substantially over the years. According to data from the BLM's own website, coal production just in the Wyoming portion of the Powder River Basin has increased from 293 million tons to more than 446 tons in 2008.[34] The region is currently producing record amounts of coal.

Furthermore, the Powder River Basin region produces more coal than any other region in the United States. Currently, the Powder River Basin provides 42% of the nation's coal, a figure that has grown substantially over the years. According to the Energy Information Administration, the Powder River Basin currently produces more coal than all the coal mines combined east of the Mississippi River. Indeed, in 2007, the entire Powder River Basin produced more than 479,000 tons of coal while mines east of the Mississippi produced 477,006.[35] This is a significant amount of coal to be produced from a single region.

Additionally, leasing interest has been very high in the Powder River Basin. Since 1990, 21 coal leases have been offered amounting to more than 5.8 billion tons of coal. Not only that, but the BLM has 12 coal leases pending—including the six leases that are part of the Wright LBAs—that collectively have the potential to lead to the leasing of an additional 5.8 billion tons of coal.[36]

What's more, in light of the fact that "decertification" has apparently spurred additional leasing interest in the Powder River Basin (as evidenced by the Wright LBAs), why hasn't the BLM taken steps to "recertify" the Powder River Basin. If "decertification" is warranted in light of low interest in leasing, then certainly "recertification" clearly is warranted in light of the current high interest in leasing. Clearly the Powder River Basin is a coal production region and must be recertified as such in light of current leasing and production levels.

c. The Decertification Means the BLM has Failed to Appropriately Assess Environmental Impacts and Appropriately Involve the Public in Regional Leasing 28

Although the decertification of the Powder River Basin as a coal production region raises well-founded concerns that the BLM is unable to ensure fair market value through the LBA

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[34] *See* **Exhibit 11**.

[35] *See* http://www.eia.doe.gov/cneaf/coal/page/acr/table1.html.

[36] Based on the high development scenario alternatives for the Hay Creek II, South Gillette, West Antelope II, and Wright LBAs.

process, we are most concerned with the fact that the decertification has prevented the BLM from appropriately analyzing and assessing the environmental impacts of leasing, from setting appropriate leasing, or activity, levels, and from appropriately involving the public in regional coal leasing decision.

Indeed, BLM's coal leasing regulations prescribe a number of requirements and procedures that are normally followed when leasing occurs in a "coal production region." For instance, 43 CFR § 4320.2 requires, among other things, that regional leasing levels be established, that a regional leasing environmental impact statement be prepared, and that the Secretary of the Interior take into account the environmental effects when setting regional leasing levels. Further, activity planning at 43 CFR § 3420.3-1 requires that alternative leasing levels be analyzed in the regional leasing EIS, and that the tract ranking process at 43 CFR § 3420.3-4(a)(1) also requires consideration of environmental effects when the regional coal team sets tract rankings. The regulation states, "Three major categories of consideration shall be used in tract ranking: coal economics; impacts on the natural environment; and socioeconomic impacts." If the Powder River Basin was a coal production region, the BLM would be required to prepare a regional lease sale EIS "on all tract combinations selected by the regional coal team for the various leasing levels" and consider "[t]he site-specific potential environmental impacts of each tract being considered for lease sale" and "[t]he intraregional cumulative environmental impacts of the proposed leasing action and alternatives, and other coal and noncoal development activities." 43 CFR § 3420.3-4(c).

In other words, if the Powder River Basin was a coal production region, the BLM would not only be required to set regional leasing levels based on consideration of environmental impacts, but would prepare a much more comprehensive EIS addressing the impacts of all lease tracts, both individually and cumulatively, before moving to lease coal in the Powder River Basin. 44

Not only would environmental impacts be appropriately considered, but the public would have numerous opportunities to submit input not only on regional coal leasing levels, but on the regional leasing EIS as well. *See* 43 CFR §§ 3420.2 and 3420.3-4. The regulations give the public an opportunity to consider the environmental effects of regional leasing levels and of tract selections for leasing. By "decertifying" the Powder River Basin as a coal production region, the BLM has shut the door on the ability of the public to influence regional leasing levels and the selection of regional tracts for leasing. Currently, the public is simply forced to respond to LBAs proffered by coal companies. 28

The inability of the BLM to fully address the environmental impacts of regional coal leasing in the Powder River Basin and to fully involve the public in accordance with the competitive leasing requirements of 43 CFR § 4320, is especially problematic in light of the global warming impacts of coal leasing in the Powder River Basin. Put simply, the BLM has failed to establish regional leasing levels accordingly based on consideration of global warming impacts and failed to address the regional global warming impacts of coal leasing in the Powder River Basin. The agency has also denied the public the ability to influence regional leasing levels based on their concerns over global warming. 5

d. The DEIS Cannot Serve as Functional Equivalent to a Regional Leasing EIS, Which Would Otherwise be Required

Although the BLM may claim that the Wright LBAs DEIS fulfills the agency's duties to consider regional leasing impacts and involve the public, this is not the case. Particularly in the context of global warming and GHG emissions, there is no possible way that the DEIS could serve as a functional equivalent. 6

While the DEIS presents some regional data regarding CO_2 emissions for the Powder River basin region, the public does not have an opportunity to comment on these regional impacts because the DEIS only deals with the question of leasing the Wright LBAs. Thus, this DEIS cannot be a "functional equivalent" of a regional EIS because the action considered, as well as the alternatives considered, are limited in size and scope to the Wright LBAs.

Moreover, the BLM emphasizes the limited scope of this NEPA analysis by asserting that the No Action Alternative would not result in fewer CO_2 emissions because other coal mines would supply just as much coal to the national market. Although this claim is spurious, to say the least, under a regional leasing level EIS, this would certainly not be true because the Powder River Basin is the United States' largest sources of coal. A decision not to lease any coal in the Basin would significantly impact the nation's coal supply and national CO_2 emissions. Under a regional EIS, the public would be able to comment on a No Action Alternative or various other action alternatives that could better address the need to reduce national CO_2 emissions in order to mitigate the impacts of global warming. Here, in contrast, the public may only submit comments on Alternatives that the BLM asserts will not impact climate change anyway. Thus, the LBA process does not provide the public with an opportunity to consider and comment upon the significant environmental effects caused by the tremendous amount of CO_2 emissions release by coal from the PRB region. 45

Regardless, the BLM cannot claim that the Wright LBAs DEIS fulfills the requirements of a regional leasing EIS, yet fail to adhere to other procedures under 40 CFR § 3420 regarding the establishment of regional leasing levels and activity planning, among other requirements. 28

e. The Powder River Regional Coal Team is Illegally Operating

We finally want to raise the concern that the Powder River Regional Coal Team appears to be operating illegally. Under BLM regulation, Regional Coal Teams are established only for coal production regions. *See* 43 CFR § 3400.4(a). Because the Powder River Basin has been "decertified" as a coal production region, the Regional Coal Team is not legally allowed to exist or function in any of the capacities set forth under BLM's coal leasing regulations at 43 CFR §§ 3400 and 3420. 28

8. Even if the Decertification of the Powder River Basin Remains Appropriate, the BLM Must Still Assess Whether the Wright LBAs Would be Contrary to the Public Interest 14

Under the LBA regulations, the BLM must reject any application that, on the basis of environmental or other sufficient reasons, would be contrary to the public interest. *See* 43 CFR § 3425.1-8. In this case, even if the BLM determines that the "decertification" of the Powder River Basin was appropriate, the agency must still provide a full and thorough assessment as to whether the Wright LBAs are contrary to the public interest. 28

In this case, given the global warming impacts of the Wright LBAs, it appears apparent that it would be contrary to the public interest to approve the LBAs. It is undisputed that anthropogenically generated carbon dioxide and other greenhouse gases present a substantial endangerment to the health of persons and the environment and that denial of the Wright LBAs is necessary to protect the long-term health of the public, the environment, and the economy. As already discussed, and as the BLM has already disclosed, coal from the Wright LBAs will be burned, generating massive amounts of carbon dioxide, fueling global warming.

Climate change is the most-serious threat to public health and the environment facing the world today. The evidence is that climate change, including dangerous increases in temperature, primarily attributable to human emissions of carbon dioxide and other greenhouse gasses is occurring now, and has already caused harm to the health of persons and the environment. Unless effective measures to address climate change and its consequences are implemented in the immediate future, harm to human health and the environment of unprecedented severity and scope, including additional loss of human life and collapse of entire ecosystems may result. The need to act urgently to reverse global warming is especially apparent in light of recent findings by scientists indicating that "the pace of global warming is likely to be much faster than recent predictions, because industrial greenhouse gas emissions have increased more quickly than expected and higher temperatures are triggering self-reinforcing feedback mechanisms in global ecosystems[.]"[37]

WildEarth Guardians has submitted numerous pieces of scientific information and comments disclosing and discussing the effects of global warming and the need for the BLM to urgently address the problem. The BLM has similarly disclosed in the DEIS scientific information and analysis documenting the contribution of coal mining in the Powder River Basin and subsequent coal burning to greenhouse gas emissions and global warming. In light of the clear link between anthropogenic greenhouse gas emissions and global warming, as well as the massive impact Powder River Basin coal has on overall greenhouse gas emissions within the United States, the BLM has clear reason to reject the Wright LBAs pursuant to 43 CFR § 3425.1-8. 5

[37] *See* **Exhibit 12.**

Thank you for the opportunity to comment.

Sincerely,

Jeremy Nichols
Climate and Energy Program Director
WildEarth Guardians
1536 Wynkoop, Suite 301
Denver, CO 80202
(303) 573-4898 x 1303
jnichols@wildearthguardians.org

Clean Energy Consulting, LLC

4492 Burr Place, Boulder, CO 80303 303-245-8637

Bureau of Land Management
2987 Prospector Drive
Casper, Wyoming 82604

August 25, 2009

RE: The Wright Area Lease Applications Draft Environmental Impact Statement

Dear Ms. Bucklin,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the Wright Area Coal Lease Applications.

As always I appreciate the tremendous amount of work that goes into the Draft Environmental Impact Statements, but until formatting is changed as discussed below, the DEIS is so dense as to be almost useless to the public. Until this is changed, then the BLM is not meeting the goal of informing the public of the environmental impacts of the proposed leasing. While the impacts may be buried in the endless pages of text, they are not easily understood or reviewed by either the public or the decision maker and so the goal of the National Environmental Policy Act has not been achieved.

Do Not Proceed with the Lease by Application Process

28

The use of the "Lease by Application" ("LBA") process in 43 CFR 3425 was designed for unique situations involving mines outside of coal producing areas. Clearly the Powder River Basin is a very large coal producing area and the procedures of the "Lease by Application" process are inadequate and inappropriate. Reject the six "LBA" applications and use the appropriate full-fledged competitive leasing procedures spelled out in 43 CFR §§ 3420-3422.

All other comments are subsidiary to this one The entire DEIS needs to be withdrawn until the BLM has redesignated the Powder River Basin as a coal producing area and has complied fully with 43 CFR 3400 and other applicable laws and regulations. It is absurd to proceed as though the Powder River Basin is not a coal producing region when it is the largest coal producing region in the United States and perhaps in the world.

Please Provide an Additional 60 Days for the Comment Period

Given the fact that there are 6 different tracts being analyzed and the dense nature of the DEIS, please extend the public comment period by 60 days to October 25 2009. BLM has chosen to include six different tracts in this DEIS and it has led to a very lengthy, dense and confusing DEIS. In order to provide time for a proper public evaluation, please extend the deadline past the suggested 45 days by 15 days for each additional tract. This would lead to 45 + [(5) x (15)] = 120 days for review—or 60 days beyond the August 25, 2009 deadline. 45

Readability and Accesibility

To improve readability and accessibility of these very dense statements, essentially every page should have a subheading and each section should be introduced by a summary in bold to allow the reader to skim the report and assess the magnitude of the key environmental impacts. Additional tables and figures should be added. To illustrate, here are suggested formatting improvements for part of the Executive Summary. Similar improvements should be made throughout the entire document. 29

1) Begin the Executive Summary with a clear list of all significant environmental impacts so that the busy reader can know by the end of the first page what it is the BLM has learned. Citizens and taxpayers have a right to know what it is their government has learned and this should be readily accessible.

2) Create a table summarizing the information on the various lease applications (ES-1 and ES-6) so that the information on the applicant, the operator the proposed lease and the general characteristics of the lease area are readily accessible in table format.

3) Provide the cites to the Federal Register notices of the activities of the Powder River Regional Coal Team (ES-6)and indicate where on the internet the public can read the charter and the minutes of the PRRCT.

4) For the information on pages ES11-14, please title it something like "Road and Railway Right of Way Impacts on Coal Accessibility," and then provide a summary in bold type of the section and summarize the issues related to roads and railway right of ways for each lease area in a table.

5) Present the basic background information on unsuitability determinations and decisions about moving roads and including roads in the lease analysis areas once. Presently the basic information is repeated over and over and this slows the reader down.

6) Provide a sub-heading for each lease tract and then summarize the information unique to that tract.

6) For Footnotes 5 and 6 in Tables ES-1 through ES-12, please provide the information in a separate table with appropriate references so that it is easy to see the sources of the state and federal revenues. Please also indicate the reason to use $11.06 per ton as the average sales price for the coal.

7) Page ES-27, please note that by assuming that a certain company would be the successful bidder in a lease sale, the BLM is failing to recognize the potential benefits of lease sales designed by the BLM as provided for in 43 CFR 3420-3422.

8) For pages ES-28 through ES-60, first provide a one page summary of the significant environmental impacts using a bulleted list with a highlighted and underlined title for each bullet so that the reader can easily skim the list which might look something like:

- **Topography**
- **Geology**
- **Other Mineral Resources**
- **Paleontology**
- **Air Quality**
- **Groundwater**
- **Surface Water**
- **Alluvial Valley Floors**
- **Wetlands**
- **Soils**
- **Vegetation**
- **Wildlife (With several subheadings)**
- **Threatened and Endangered Species**
- **Land Use and Recreation**
- **Cultural Resources**
- **Visual Resources**
- **Noise**
- **Transportation**
- **Socioeconomics**
- **Environmental Justice**
- **Mitigation**
- **Cumulative Impacts**

The significant impacts in each of these areas should be summarized in a few succinct sentences and then discussed in further detail under each subsection of the same name—and each subsection should begin with a summary in bold. Irretrievable loss of resources (including the loss of relatively accessible coal resources) and cumulative impacts should also be highlighted.

9) Similar formatting and bold summaries should be included throughout the EIS. There should seldom be a page without a subtitle and bold summaries should appear every few pages to break up the stultifying monotony of the text of the present document.

10) Make the total amount of coal being discussed clear throughout the document. The total quantity (e.g. 2.4 to 3.9 billion tons) is not presently easy to find (See page 3-308).

Suspend the EIS Process Until the PRB Coal Review is Completed 27

Assessing cumlative impacts is critical and this cannot be done adequately until the PRB Coal Review (see e.g. ES-56) is completed. The EIS process should be suspended until the PRB Coal Review is completed and submitted for public review and comment. 44

Conduct More Surveys for the Ute Ladies Trusses and Finish USFWS Consultation Before Proceeding 24

The number of surveys for Ute Ladies' Tresses needs to be increased and all consultation with the USFWS needs to be completed before moving forward with the EIS process. Ute Ladies' Tresses are known to lie dormant for several years so there should be several surveys a year for several years in a row (e.g. 4 surveys per year times 5 years) before proceeding with the EIS process.

Highlight Visibility Impacts

There are already serious impacts on visibility in Class I areas as shown in Table ES-14, yet the significance of this data do not appear to be discussed in the Executive Summary; they are just mentioned on page ES-57. Table ES-14 should be cross referenced with the discussion of visibility on pages 3-78 to 3-82 and vice versa.The Badlands National Park violated the 10% impairment standard 218 days of the year or 60 % of the time. (218/365 x 100 = 60%) This is very significant impact on our nation's Class I lands. The federal government is supposed to be remedying existing impairments and preventing future ones rather than obscuring the issue. The graphs on page 3-80 are not informative as to the goals of the Clean Air Act. They only show how badly the standards are being violated over time. **They do not show that existing impairments are being remedied, as called for in the Clean Air Act.** While a statistical improvement is claimed for some of the data, it is modest at best. The data in the graphs on page 3-80 is a little like saying "Gee Officer—this week I was only going 55 in a 30 mile per hour zone and last week I was going 60 so shouldn't you let me off because I'm improving??" Clearly, the goal is not just to reduce how badly the standards are being violated, but to eliminate the violations. Also these graphs should be updated to include 2006 and 2007 data before making a decision about leasing more federal coal in the Powder River Basin. Also, high winds are a natural part of the Wyoming environment so violations of PM10 standards should not be excused under the "NEAP" process (e.g. ES-35). 39 3 34

Provide Updated Statistics on Mine Reclamation Before Continuing the Analysis 9

The status of each mine's reclamation status should be updated and clearly highlighted before continuing with the analysis. Also, the fraction of acres that will never be reclaimed should be clearly stated. This data needs to be provided on a mine-specific basis, not on an aggregated basis for the region. Assuming that the mine lands will be reclaimed when reclamation efforts are lagging way behind mining disturbance is inadequate analysis. This information should be provided in the DEIS—not just referred to as being available from the Wyoming Department of Environmental Quality

Update the Science on Climate Change and Ocean Acidification

6

The discussion of greenhouse gas emissions needs to be updated and expanded. Key scientific studies will be forwarded in separate e-mails. These should each be summarized in the DEIS and the citation included in the bibliography. Be sure to include impacts on species loss as a result of climate change. The impacts of mining coal and oxidizing it to CO2 are global and the EIS needs to clearly analyze these probable impacts. The unreferenced statement on page 4-112 regarding solar variability should be eliminated or replaced with the assessment of the role of solar variability given by the Intergovernmental Panel on Climate Change.

13

18

Include the Impacts of Climate Change, Mercury Emissions, Coal Ash in the Executive Summary

The Executive Summary should include a detailed discussion of the impacts of climate change and the emissions of mercury and other toxic substances from the burning of coal. These are discussed on pages 4-108 to 4-129 in the DEIS but are not discussed in any detail (if at all) in the Executive Summary.

30

Clarify and Update the Discussion of Alternatives

2

The DEIS assumes that because a large amount of US electrical generation comes from coal presently that that is the way it will always be. What if buggy whip makers and slide rule and typewriter companies and rotary land line phone companieshad been allowed to make the same assumptions? Clearly that is not how we make progress. We have numerous ways of making electricity and holding our country tied to this 19th century technology does untold damage to our planet—and to our economy. Coal is not cheap. It is not abundant and it is becoming increasingly unreliable as the easily accessed coal deposits are taken from the ground and turned into CO2. All of this needs to be discussed clearly in the DEIS. It is not BLM's job to act as an apologist for the coal industry—but to discuss and protect the public health and welfare.

14

Appendix B—Unsuitability Criteria

1) Please add the legal citation for the source of each suitability criteria . 31

2) Please cross-reference the Findings in Appendix B with the pertinent parts of the EIS.

3) For Bald and Golden Eagle nests please identify the number of nests in the analysis area (not just the Lease By Application area and identify the distance from any existing or former nest to both the Lease Area and the disturbed area. 46

4) Complete ALL consultation with the United States Fish and Wildlife Service **before** issuing the Final EIS and include the results of the consultation in the FEIS so that the public can review it. 13

Thank you for this opportunity to comment.

Leslie Glustrom, Principal
Clean Energy Consulting
4492 Burr Place
Boulder, CO 80303

From: Leslie Glustrom <lglustrom@gmail.com>
Recipients: Sarah_Bucklin@blm.gov
Subject: Wright Area DEIS Comments--#2--Letter with Overall Comments
Date: 04:31:56 PM Yesterday

Attached please find some comments on the Wright Area Draft EIS on Coal Lease Applications.

Thank you for all your work on this document. Additional documentation will follow in subsequent e-mails.

From: Leslie Glustrom <lglustrom@gmail.com>
Recipients: Sarah_Bucklin@blm.gov
Subject: Wright Area DEIS #3--Irretrievable Loss of Coal USGS 2008-1202
Date: 04:35:45 PM Yesterday

Hi Sarah--The Wright Area EIS must consider USGS 2008-1202 (Abstract and Link Below).

Most of the coal in the Powder River Basin is buried too deep to be economically recoverable. 14
Before leasing 2-3 billion tons of federally owned coal, the BLM must clearly discuss the irretrievable loss of this very valuable national resource and discuss (in detail) all the alternatives to burning coal to produce electricity in power plants that are less than 40% efficient. This is what the NEPA act is for--to make sure that we don't do something massively stupid--like burning all the coal in inefficient power plants before we've built the solar, wind, geothermal, 2
smart-grid and transmission infrastructure that will power our country in the 21st century.

The Easter Islanders are said to have cut down all the trees before they built the boats to get off the Island--As wild as it sounds, we also risk doing something that remarkably stupid if we don't soon pay attention to the very real geologic and economic constraints facing our country's coal supplies.

All of this should be thoroughly discussed and **highlighted** before moving forward with the leasing of federally owned coal.

Assessment of Coal Geology, Resources, and Reserves in the Gillette Coalfield, Powder River Basin, Wyoming

By James A. Luppens, David C. Scott, Jon E. Haacke, Lee M. Osmonson, Timothy J. Rohrbacher, and Margaret S. Ellis

ABSTRACT

The Gillette coalfield, within the Powder River Basin in east-central Wyoming, is the most prolific coalfield in the United States. In 2006, production from the coalfield totaled over 431 million short tons of coal, which represented over 37 percent of the Nation's total yearly production. The Anderson and Canyon coal beds in the Gillette coalfield contain some of the largest deposits of low-sulfur subbituminous coal in the world. By utilizing the abundance of new data from recent coalbed methane development in the Powder River Basin, this study represents the most comprehensive evaluation of coal resources and reserves in the Gillette coalfield to date. Eleven coal beds were evaluated to determine the in-place coal resources. Six of the eleven coal beds were evaluated for reserve potential given current technology, economic factors, and restrictions to mining. These restrictions included the presence of railroads, a Federal interstate highway, cities, a gas plant, and alluvial valley floors. Other restrictions, such as thickness of overburden, thickness of coal beds, and areas of burned coal were also considered.

The total original coal resource in the Gillette coalfield for all eleven coal beds assessed, and no restrictions applied, was calculated to be 201 billion short tons. Available coal resources, which are part of the original coal resource that is accessible for potential mine development after subtracting all restrictions, are about 164 billion short tons (81 percent of the original coal resource).

Recoverable coal, which is the portion of available coal remaining after subtracting mining and processing losses, was determined for a stripping ratio of 10:1 or less. After mining and processing losses were subtracted, a total of 77 billion short tons of coal were calculated (48 percent of the original coal resource).

Coal reserves are the portion of the recoverable coal that can be mined, processed, and marketed at a profit at the time of the economic evaluation. With a discounted cash flow at 8 percent rate of return, the coal reserves estimate for the Gillette coalfield is10.1 billion short tons of coal (6 percent of the original resource total) for the 6 coal beds evaluated.

Available Products

Download OFR 2008-1202 (92.3 MB) <http://pubs.usgs.gov/of/2008/1202/pdf/ofr2008-1202.pdf>

This report is available online in Portable Document Format (PDF). If you do not have the Adobe Acrobat PDF Reader <http://www.adobe.com/products/acrobat/readstep.html> , it is available for free download from Adobe Systems Incorporated.

Document Accessibility: Adobe Systems Incorporated has information about PDFs and the visually impaired. This information provides tools to help make PDF files accessible. These tools and the accessible reader may be obtained free from Adobe at **Adobe Access** <http://access.adobe.com/> .
The citation for this report, in USGS format, is as follows:

Luppens, J. A., Scott, D. C., Haacke, J. E., Osmonson, L. M., Rohrbacher, T. J., and Ellis, M. S., 2008, Assessment of Coal Geology, Resources, and Reserves in the Gillette Coalfield, Powder River Basin, Wyoming: U.S. Geological Survey Open-File Report 2008-1202, 127 p.

From: Leslie Glustrom <lglustrom@gmail.com>
Recipients: Sarah_Bucklin@blm.gov
Subject: Wright Area Coal Lease DEIS #4 Carbon Dioxide Persistence Articles
Date: 04:38:38 PM Yesterday

Hi Sarah—These are comments for the Wright Area DEIS.

It is critical to realize that once coal (highly reduced carbon) is taken out of the ground and oxidized into CO2 we've made a molecule that will be us for hundreds and thousands of years--trapping heat, warming the planet, contributing to extreme weather events and species extinction for such a long time that it might as well be considered "forever." In the process we will be irretrievably losing some of the assimilative capacity of the oceans and the atmosphere. These articles need to be cited, summarized in the EIS and the consequences **clearly highlighted** in both the Executive Summary and in the body of the EIS. 6

Carbon Dioxide stays in the atmosphere for a really long time. The attached pdfs talk about approx 25% staying for over a thousand years.

-Archer Journal of Geophys Research 110, C09S05 (2005)

- Montenegro Geo Physical Research Letters 34, L19707 (2007)

These are important to consider when we take coal out of the ground. Once the carbon becomes oxidized and turns into CO2 it will stay in the atmosphere essentially forever. Before we take coal out of the ground we have to give this the deepest of thought. 5

We have many ways of making electricity but once the CO2 is in the atmosphere it will be there essentially forever heating up our planet and accelerating feed back cycles. This is critical to think about before we take the coal out of the ground.

From: Leslie Glustrom <lglustrom@gmail.com>
Recipients: Sarah_Bucklin@blm.gov
Subject: Wright Area DEIS #5--Caldeira on CO2 Reductions
Date: 04:40:26 PM Yesterday

HI Sarah—These are comments for the Wright Area DEIS.

The attached paper from Caldeira

Geo Phys Res Letters 35 L04705 (2008)

discusses the need to essentially reduce CO2 emissions to zero to start stabilizing the climate of the planet. This is a paper which should be cited and summarized in the Final EIS and the implications **clearly highlighted** in the Executive Summary and in the body of the EIS. 5

From: Leslie Glustrom <lglustrom@gmail.com>
Recipients: Sarah_Bucklin@blm.gov
Subject: Wright Area DEIS #5--Accelerated Ice Melt--IPCC AR4 Too Conservative
Date: 04:42:40 PM Yesterday

Dear Sarah—These are comments on the Wright Area DEIS.

It is critical that the EIS discuss the strong evidence that, as dire as its predictions were, the IPCC Fourth Assessment was probably remarkably conservative when predicting the rate of climate change. While there will always be natural variability and cold winters to let us think that maybe all those scientists were wrong, but it is highly unscientific to think that a trend is made by one or two seasons. The climate scientists have carefully gathered and analyzed the actual data (not opinions of bloggers on the Internet...) and after 20 years of extensive scientific work (backed by the hundreds and hundreds of papers cited by the IPCC) they have concluded that global warming is "unequivocal." (See www.ipcc.ch) 6

Moreover, the rate of change is much faster than the most conservative IPCC models predicted--as shown by the rapid loss of Arctic sea ice in the summer.

As you probably know, it is now clear to the scientists that they underestimated the rate of loss of ice sheets in the IPCC Assessment 4. A few scientific articles (or their abstracts) are attached. These issues were generally not covered in the IPCC AR4. The articles are:

1) "Changes in the Velocity Structure of the Greenland Ice Sheet," Rignot and Kanagaratnam, Science 311, 986 (2006)

2) "Abrupt Increase in the Permafrost Degradation in Arctic Alaska," Jorgensen et. al. Geo Phys Res Letters 33, L02503 (2006)

3) "Permafrost and the Global Carbon Budget, " Zimov et.al. Science 312, 1612 (2006)

4) "Paleoclimatic Evidence for Future Ice-Sheet Instability and Rapid Sea-Level Rise," Overpeck et al. Science 311, 1747 (2006)

5) "Missing feedbacks, asymmetric uncertainties, and the underestimation of future warming," Margaret Torn, Geophys Res Letters 33, L10703 (2006)

All of this should be discussed in the Final EIS with the attached articles cited and summarized and the consequences **clearly highlighted** in the Executive Summary and the text of the EIS. The dynamic

melting processes that are beginning to occur are stunning the climate change scientists and I wish I was exaggerating when I say you can see, hear and feel the panic when these scientists speak about what is happening to the planet.

Before taking more coal out of the ground just to produce electricity when we have so many other good low- or non-carbon ways of producing the same electricity we need to carefully consider the impacts on the only planet we know of that supports life.

I'll send some of the data and articles from 2007 and 2008 when I next get a chance.

From:	Leslie Glustrom <lglustrom@gmail.com>
Recipients:	Sarah_Bucklin@blm.gov
Subject:	Wright Area DEIS #6- Risks to Species from CO2 Accumulation Plus Carbon Loss From Soils ar
Date:	04:45:22 PM Yesterday

Hi Sarah--These are coments on the Wright Area DEIS.

It is essential that the EIS discuss the fact that the CO2 that will be formed once the coal is taken out of the ground poses very serious risks to species all around the planet and this should be carefully analyzed and considered before issuing the Final EIS.

I've attached a few articles to get you going. They all contain many references that should also be discussed in the FEIS along with any scientific articles that appear before the FEIS is issued. I've added a couple of more on related subjects including the drying of the interior west and the increasing loss of carbon from the soils—one of the feedback loops that appears to be beginning. I've also included a classic Jim Hansen paper from 2005 on the energy imbalance on the planet. It is key to a thorough discussion of the science. 6

All of these articles should be cited and summarized in the EIS and the consequences **clearly highligted** in the Executive Summary and the text of the EIS.

The articles are:

1) "Past Peak Water," SW Hydrology (2006)

2) "Carbon Losses From All Soils Across England and Wales from 1978-2003," Nature 437, 245 (2005)

3) "Extinction Risk From Climate Change," Nature 427, 145 (2004)

4) "Climate Warming and Disease Risks for Terrestrial and Marine Biota," Science 296, 2158 (2002)

5) "Earth's Energy Imbalance: Confirmation and Implications," Science 308, 1431 (2005)

6) "Coral Reefs Under Rapid Climate Change and Ocean Acidification," 318, 1737 (2007)

Clearly, the threat to species is much broader than just what will happen in the vicinity of the mines in the Powder River Basin. This must all be discussed and carefully considered before approving a lease to take more coal out of the ground.
Also the EIS should thoroughly discuss the irretrievable loss of sequestered carbon contained in the soils that will be disturbed by mining. Once disturbed it is highly likely that the carbon contained in the soils will be lost to the atmoshpere as either CO2 or CH4, further accelerating the feedback cycles of global warming and increased loss of carbon from the soils, permafrost, vegetation and oceans. All of this should be quantified and discussed in the EIS and the consequences **clearly highlighted** in the Executive Summary and the text of the EIS.

From:	Leslie Glustrom <lglustrom@gmail.com>
Recipients:	Sarah_Bucklin@blm.gov
Subject:	Wright Area DEIS #7--Quantifying the Impacts of Mercury, Coal Combustion Waste, Particu
Date:	04:48:49 PM Yesterday

Dear Sarah--These are comments on the Wright Area DEIS.

It is critical that the EIS discuss and quantify the health impacts that will result from the mining and burning of the coal from the proposed lease areas.

The National Environmental Policy Act was intended to help the federal government look carefully at impacts that will result from an action. As a result, the EIS needs to quantify the amount of sulfur, nitrogen, mercury, arsenic, particulates and other pollutants that will be released from the burning of the coal that would be mined if the lease is granted and to quantify the impact of those pollutants on the health and the environment. 17 16
Testimony recently entered at the Colorado Public Utilities Commission gives an example of how these calculations might be done and I've attached the testimony of the following:

> Dr. Bruce Calonge MD, MPH, Chief Medical Officer, Colorado Department of Public Health and the Environment (Direct Testimony, Docket 07A-447E, Colorado Public Utilities Commission) on the health benefits of coal plant retirements. 20
>
> Paul Tourangeau, JD, Director, Air Pollution Control Division, Colorado Department of Public Health and the Environment (Direct Testimony, Docket 07A-447E, Colorado Public Utilities Commission) on the air quality benefits of coal plant retirements.
> Leland B. Deck, PhD, Stratus Consulting on behalf of Western Resource Advocates (Supplemental Answer Testimony, Docket 07A-447E, Colorado Public Utilities Commission) on the air pollution benefits of retiring coal plants.

These testimonies can be used to help the EIS team begin to assess the very real environmental and health impacts that will come from the mining and burning of the coal in the South Gillette area. Leasing over 700 million tons of coal will have very real and very serious environmental

and health impacts and these should be quantified and clearly highlighted in both the Executive Summary and the text of the EIS.

We have many cleaner ways of producing electricity and these should be clearly presented in the EIS. 2

From: Leslie Glustrom <lglustrom@gmail.com>
Recipients: Sarah_Bucklin@blm.gov
Subject: Wright Area DEIS #8--Recent Climate Science Underscores Urgency of Action
Date: 04:55:01 PM Yesterday

Hi Sarah--These are comments on the Wright Area DEIS.

I've attached two more recent articles on global climate change. They, once again, underscore the urgency of reducing emissions of CO2 as quickly as we can. Clearly leasing over 700 million tons of coal is a very large step in the wrong direction. 31

The articles are:

"Target Atmospheric CO2: Where Should Humanity Aim," James Hansen et al, The Open Atmospheric Science Journal 2, 217 (2008)
"On Avoiding Dangerous Anthropogenic Interference with the Climate System: Formidable Challenges Ahead," Ramanathan and Feng, Proceedings of the National Academy of Sciences 105, 14245 (2008)

The Hansen article makes the following statements:

"If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggst that CO2 will need to be redued from its current 385 ppm to at most 350 ppm, but likely less than that....An initial 350 ppm CO2 target may be achievable by pahsing out coal use except where CO2 is captured and adopting agricultural and forestry practices that sequester carbon. If the present overshoot of this target CO2 is not brief, there is a possibility of seeding irreversible catastrophic effects." (Abstract)

"Continued growth of greenhouse gas emissions, for just another decade, practically eliminates the possibility of near-term return of atmospheric composition beneath the tipping level for catastrophic effects." (page 229)

The Hansen article has 99 references to other scientific articles and is an example of the science that should be cited in the EIS for the coal leasing. To mix scientific findings with non-peer reviewed internet type arguments is inexcusable given the massive volume of peer reviewed

scientific literature that documents the existence and very real consequences of the emission of CO2.

The Ramanathan and Feng article notes that we are probably already committed to 2.4 degrees C of warming from greenhouse gases such as CO2 that have already been committed of which about 25% or 0.6 degrees C has been realized. That is--even without the CO2 that would come from the leasing of over 700 million tons of coal, the planet will be experiencing approximately 3 times as much warming as has already occurred. This speaks of almost unimaginable suffering and consequences for the only planet we know of that supports life. 5

These studies should be cited and summarized and the consequences should be **clearly highlighted** in the Executive Summary and the text of the EIS.

Leasing the coal in the proposed tracts will increase the amount of global warming experienced--beyond that already committed by previous emissions of greenhouse gases. We have fine alternatives for producing electricity--but we have no alternative what so ever for the planet and all of its systems which support humans and all the species we share the Earth with.

From:	Leslie Glustrom <lglustrom@gmail.com>
Recipients:	Sarah_Bucklin@blm.gov
Subject:	Wright Area DEIS Comments #8 --Socioeconomic Costs of Extreme Weather Events
Date:	04:58:59 PM Yesterday

Hi Sarah--These are comments on the Wright Area DEIS.

With respect to the South Gillette DEIS, the socioeconomic assessment should include the costs of extreme weather evernts. Leasing coal will invariably lead to higher levels of CO2 in the atmosphere which will warm the planet, intensify the water cycle and increase extreme weather events. These are extremely costly whether you are talking about hurricanes, tropical storms, floods, forest fires or blizzards. All of these costs should be included in a discussion of the economic impacts of leasing over 700 million tons of federally-owned coal. 6

Making these calculations is difficult, but they should be included nonetheless. A few ideas on how to begin to value these predictable outcomes of leasing coal include:

> Refer to the Summary for Policymakers of Working Group II report of the IPCC(attached) for a summary of the science on climate change and extreme weather events and what the IPCC refers to as the "Social Cost of Carbon." See for example Table SPM 1 for a summary of extreme weather events that are likely. **On page 17, the IPCC concludes that the social cost of carbon (in 2005 dollars) is about US $43 per ton of carbon with a range of $10-$350 per ton of carbon. These numbers should be used**

to calculate a range of socioeconomic costs for the proposed leasing of federally owned coal.
The Nature paper discussing the European heat wave of 2003 (In which over 30,000 excess deaths occurred) gives some sense of the magnitude of what we are dealing with. I've attached several charts and chronology of billion dollar weather disasters in the United States from 1980-2007

References on damages from the June 2008 Midwest floods are found at the end of the Wikipedia entry as follows:
http://en.wikipedia.org/wiki/June_2008_Midwest_floods

Similar efforts should be made to determine the costs of droughts and forest fires and the 2008 Hurricane season etc. etc. As we oxidize the carbon in coal, we will be increasing the likelihood of all of these events.

Finally, and most importantly, leasing of coal from the proposed area can be predicted to contribute to extreme weather events **all over the planet** since CO2 is a very persistent, global pollutant as detailed in the scientific papers I've previously forwarded to you.

All of this should be discussed and a range of values for the "Social Cost of Carbon" based on the IPCC numbers should be included in the discussion of socioeconomic impacts of leasing federally owned coal.

From:	Leslie Glustrom <lglustrom@gmail.com>
Recipients:	Sarah_Bucklin@blm.gov
Subject:	Wright Area DEIS #9-Alternatives--CSP
Date:	05:01:40 PM Yesterday

Dear Sarah—These are comments on the Wright Area DEIS.

2

Before finalizing the EIS it is imperative that alternative ways of generating electricity be discussed.

There is lots of information readily available on wind and geothermal. A key technology for replacing steam fired plants is Concentrating Solar Power. This e-mail provides the following papers:

1) David Mills conceptual paper on meeting most of our electric needs with CSP

2) The Black and Veatch study of CSP benefits for California.

These summaries should be cited and summarized as part of a discussion of alternatives to blindly going forward with the mining and burning of coal. The availability of a cost-competitive, semi-dispatchable steam technology that is ready to scale **now** must be thoroughly discussed in the EIS and **clearly highlighted** in the Executive Summary and the text of the EIS.

Technical information is available at www.nrel.gov/csp/troughnet

We can boil water with sunlight and mirrors—we don't need to burn coal just to boil water.

The key to making this work is to build national transmission and start shipping electrons around the country instead of shipping coal on mile long trains. The key is to ship the finished product (i.e. electricity) not shipping the fuel (i.e. coal.)

We have more than enough solar potential to run the country many times over—but we have to decide the planet is worth it and not keep burning coal just to boil water because that is how they did it 100 years ago!

From:	Leslie Glustrom <lglustrom@gmail.com>
Recipients:	Sarah_Bucklin@blm.gov
Subject:	Wright Area DEIS #10--Climate Summary from Copenhagen
Date:	05:08:09 PM Yesterday

Dear Sarah--These are comments for the Wright Area DEIS.

Attached is the synthesis report from the climate change conference in Copenhagen in March 2009. The synthesis report was released in June 2009.

The report summarizes thekey scientific findings since IPCC AR4 in 2007. It includes both a very readable summary and many key graphics summarizing the science. It represents the synthesis of the work of over 2000 scientists and should be summarized **and clearly highligted in the EIS and the Executive Summary.** 31

Thanks. Leslie

Email Template #1: Text from general email campaign

To: casper_wymail@blm.gov
Subject: Please protect our endangered grasslands

Dear Ms. Bucklin,

At a time when demand for coal is down, and climate change legislation is being debated, this is not the time to possibly sacrifice over 23,000 acres of Forest Service land to expanded strip mining. The prairie grassland is one of the most endangered ecosystems in the world. Wyoming's grasslands contain some of the most valuable prairie habitats remaining in the nation. At this time sacrificing these valuable public lands for expanded strip mining does not make sense for economic or environmental reasons. Please reject the Wright Area Coal Lease Application and protect the Thunder Basin National Grasslands. Thank you for hearing my concern.

Sincerely,

BLM received 111 emails that were nearly identical in content to the message above. Another 14 emails paralleled the message but also added the following statements, as condensed below:

- "…more eco-friendly wind farms, conservation and solar energy is the only viable direction we have to go in…" 7
- "…The Thunder Basin National Grasslands is a critically important patch for survival of the prairie dog and critically endangered black-footed ferret reintroductions…" 14
- "…One study cites that the entire electricity needs of this nation could be met utilizing solar mirror collecting stations…" 14
- "...Once an area has been strip-mined, we will never be able to restore it to it's original pristine beauty…"
- "…big energy companies ... are destroying our planet…" 9
- "…successful reclamation … must be completed before new lands can be disturbed…"
- "…the public interest does not include strip mining nor does it include oil shale extraction…"
- "…we are not some far away "moon" type colony to be mined of our resources…" 7
- "…public land is being taken away from the sport (of hunting)…please keep this land for our use…" 7
- "…Thunder Basin Grasslands are valuable habitat for not only sage grouse but also for prairie dogs and many other species…" 12
- "…the coal company's current production practices ruin the land to the point of the land looking like the moon and the land is destroyed for good…"

Email Template #2: Text from general e-mail campaign

To: casper_wymail@blm.gov
Subject: Wright Area Coal DEIS – Sarah Bucklin

Dear Ms. Bucklin,

I am writing to oppose the Bureau of Land Management's proposal to offer the Wright Area coal leases. Coal mining in the Powder River Basin of Wyoming is fueling global warming, leading to the release of 13 percent of the nation's greenhouse gases. The Wright Area coal leases threaten to mine more than 4 billion tons, potentially leading to the release of more than 10.5 billion tons of carbon dioxide.

Global warming threatens the wildlife, wild places, and wild rivers of the American West. It's time to shift away from coal. It's time for the Bureau of Land Management to be a leader in safeguarding the climate. 5

The health, sustainability, and prosperity of our future depends on clean energy. I call on the Bureau to take the first, big step by rejecting the Wright Area coal leases and embracing clean energy. Thank you. 14

Sincerely,

BLM received 369 emails that were nearly identical in content to the message above. Another 26 emails paralleled the message but also added the following statements, as condensed below:

- "…serious concerns about reclamation and impacts on hydrogeologic resources and endangered species as well as air pollution impacts…" 13
- "…the Powder River Basin needs to be designated as a coal production region and then the proper procedures followed…" 28
- "…federal land agencies should be finding areas that are suitable for renewable, non-polluting energy sources like solar and wind…"
- "seriously concerned with the BLM's inappropriate policy position ignoring the fact that coal is a major contributor to greenhouse gas pollution…" 6
- "…national security is energy security and there is no energy security or national security in any contribution to global climate destabilization…"
- "…with our economy on the rise, the power will shift towards clean energy…"
- "…we should exhaust other means of converting electricity from wind, solar, etc. before using more coal…" 14
- "…it is time the US set the example and pace needed to bring our world wide carbon dioxide levels down to 350 to avoid most of the disasters we are headed toward…"
- "…further exploitation of coal should be limited to very special circumstances…"
- "…our country bears a large responsibility for global warming by our decades of disproportional usage of fossil fuels, most especially coal…"
- "…the BLM should be taking the lead in requiring that new power sources be investigated…"

- "…we could easily cut back on our electricity consumption through some serious conservation methods…"
- "…the science clearly shows that more use of fossil fuels such as coal are destroying the earth's capacity to support life as we know it…"
- "…there is no excuse for continuing to mine and burn coal…"

6

14

"JHARRIGAN"
<JHARRIGAN3@nycap.rr.com
>

07/17/2009 02:00 PM

To <casper_wymail@blm.gov>
cc
bcc
Subject greenhouse gas emissions

6

Please DEMAND the BLM disclose the amount of greenhouse gas emissions from burning coal in the lease applications and also that it explore ways to mitigate these negative effects. !!!!!!! Nancy and John Harrigan

5

Joann Feist
<joannf34@gmail.com>
07/18/2009 02:29 PM

To casper_wymail@blm.gov
cc
bcc
Subject Please publish the facts

6

I am writing to ask BLM to disclose the greenhouse gas emissions form burning coal mined in the lease applications. Also, please consider ways to mitigate the global warming impacts of such emissions 5

With the promise of alternate ways to generate clean energy, what have we to gain by stepping up more use of coal and exempting present sites from responsibility for polluting?

Our planet just cannot absorb the continued use of coal as a significant producer of energy. 14

We haven't much time to lose. For Earth's sake, do the right thing!

Thank you.

Joann Feist
joannf34@gmail.com

bettyaharris @juno.com
08/19/2009 06:28 PM

To casper_wymail@blm.gov
cc
bcc
Subject Wright Area Coal DEIS - Sarah Bucklin

Sarah Bucklin

Dear Ms. Bucklin:

We can't continue to burn coal and keep a healthy planet. If you care about human survival you must put a stop to this.

5

You know that it is dangerous to continue to dig up the coal and put it into the air via burning it for electricity. When all the coal is gone we'll all be dead or most of the earth's species will any way.

Do the right thing and stop this. Please.

Sincerely, Betty Harris
313 W Lehow Ave Apt 24
Englewood, CO 80110

nward@cybermesa.com
08/19/2009 03:41 PM

To casper_wymail@blm.gov
cc
bcc
Subject Wright Area Coal DEIS - Sarah Bucklin

Sarah Bucklin

Dear Ms. Bucklin:

I am writing to support the Bureau of Land Management's proposal to offer the Wright Area coal leases. Coal mining in the Powder River Basin of Wyoming is necessary to reduce our reliance on foreign sources of energy.

31

Thank you

Sincerely yours,

Nelson Ward P.O. Box 1A Tererro, NM 8573

Sincerely, Nelson Ward
PO Box 1A
Tererro, NM 87573

August 21, 2009

BLM, Wyoming High Plains District Office
Attn: Sarah Bucklin
2987 Prospector Drive
Casper, WY 82604

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 AUG 24 A 8:42

Dear Ms. Bucklin,

As a lifelong resident of Wyoming I am extremely concerned about the current level of development on public lands. We are losing all that makes Wyoming a unique place to live. I have witnessed truly special places sacrificed to short-sighted development. The grasslands of Wyoming make up some of the most crucial prairie habitats left in the nation. Grasslands are some of the most endangered ecosystems in the world. 7

I ask the Bureau of Land Management to reject the Wright Area Coal Lease Application. This proposal sacrifices far too much public land. At a time when coal demand is down it makes no sense, environmentally or economically, to lease out so much Forest Service land. This land belongs to all of us. If this lease goes forward we will continue to make our public lands single purpose as opposed to multi-purpose use. According to your own Draft EIS (ES-60) the cumulative impact of all this development is causing a reduction in hunting opportunities. The sage grouse in particular is in serious danger of becoming endangered. What will the BLM do to mitigate the loss of this habitat? Reclamation is already falling far behind in comparison to newly leased lands. What is the BLM doing to speed up reclamation efforts in Wyoming? 14 12 9

As someone of Sioux heritage I am also deeply concerned that not enough is being done to ensure historical, cultural, and archeological sites are being preserved. Very little attention is paid to this in the EIS (4-86, 4-87, 4-88). How are you going to guarantee that blasting and draglines won't destroy valuable prehistoric sites? I am also concerned that all of the development in the Powder River Basin is having a significant negative impact on air and water quality in the Black Hills. 53

Sadly, Wyoming is being turned into an industrial wasteland. Please spare these public lands from destructive mining. It is time to work on preserving the remaining land in the Powder River Basin before it is all lost.

Thank you,

Lewis Poole

Lewis Poole
PO Box 7043
Sheridan, WY 82801

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: EPR-N

SEP 10 2009

Sarah Bucklin
Project Manager
Bureau of Land Management
Wyoming High Plains District Office
2987 Prospector Drive
Casper, WY 82604

Re: Draft EIS for Wright Area Coal Lease Applications
[CEQ# 20090209]

Dear Ms. Bucklin:

The U.S. Environmental Protection Agency (EPA) has reviewed the Bureau of Land Management's (BLM) Draft Environmental Impact Statement (EIS) for Wright Area Coal Lease Applications to assess the consequences of holding competitive sales for modified maintenance lease tracts on 18,000 acres of federally-owned solid minerals making available 2.570 billion tons of surface-minable coal in the Powder River Basin (PRB) of Wyoming. Our review and comments are provided pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(c) and Section 309 of the Clean Air Act, 42 U.S.C. Section 7609.

Air quality continues to be EPA's main concern for the energy activities in the PRB. Large surface coal mines have the potential to become particulate emission sources in the PRB contributing to air quality degradation. Although the Wyoming Department of Environmental Quality (WDEQ) has by statute, the authority and responsibility to require mitigation for air quality impacts, the Final EIS should propose additional mitigation measures for air quality impacts that are not directly related to the new leases such as additional dust suppression. During many recent years, air quality monitoring in the area has shown exceedances of the PM_{10} standards (particulate matter less than 10 micrometers in diameter, commonly referred to as fugitive dust). Air quality modeling results from the PRB Coal Review (cumulative air quality effects) also predict additional increases in PM_{10} emissions for this mining area, potentially causing exceedances of the air quality standard. Therefore, we are recommending that the Final EIS analyze more effective dust control measures than the current Best Available Control Technology (BACT) and Best Available Control Measure (BACM) practices and require additional mitigation to reduce fugitive dust from mining the lease tracts and the cumulative effects of mining in the surrounding area. 52

EPA also has concerns about the impacts of nitrogen dioxide emissions from cast blasting shots and whether the proposed mitigation is sufficient. Voluntary blasting restrictions to control public exposure to NO_x emissions have not always been implemented. Depending on the proximity of public exposure to the explosive fumes, it may be appropriate to incorporate the mitigation measures into the terms of the leases. The most successful control measure would be to eliminate cast blasting entirely as the Eagle Butte Mine has done; alternatively, smaller shots using reduced amounts of explosives could become the standard practice. 32

The existing PRB Coal Review studies were used effectively in the Draft EIS discussion of the cumulative environmental consequences. We understand that an update to the PRB Coal Review air quality analysis is currently under consideration by BLM. This update is a proactive action by BLM that we support and we are always willing to provide assistance or participate in air quality working groups, if needed. Such an analysis might inform an appropriate control measure strategy to be developed to avoid any adverse impacts.

Consistent with section 309 of the Clean Air Act, it is EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. In accordance with our policies and procedures for reviews under NEPA and Section 309 of the Clean Air Act, EPA is rating this Revised Draft EIS as EC-2 (EC - Environmental Concerns, 2 - Insufficient Information). This rating means that our review identified environmental impacts that should be avoided in order to fully protect the environment and the Draft EIS lacked sufficient information and analysis regarding impact mitigation and the analysis of the proposed action's impact on climate change. In addition to EPA's detailed comments on the Draft EIS, a full description of EPA's EIS rating system is enclosed.

Please see the following detailed comments for our specific environmental and informational concerns. If you have any questions regarding our comments or this rating, please contact me at (303) 312-6004, or you may contact James Hanley of my staff at (303) 312-6725.

Sincerely,

/s/ Robin Coursen (acting for)

Larry Svoboda
Director, NEPA Program

Enclosure

Wright Area Coal Lease Applications DEIS
Technical Comments

Air Quality Modeling

1. Near Field Impacts -- Direct project impacts using the air dispersion model ISCLT3 for annual PM_{10} and annual NO_x concentrations were disclosed in the Draft EIS for base case and maximum emission scenario years for each of the three mines. No $PM_{2.5}$ impact analysis was conducted in the near field for the Draft EIS. In all cases the modeling predicted compliance with the PM_{10} annual Wyoming Ambient Air Quality Standards (WAAQS). No 24-hour PM_{10} near field predictions were made for the Draft EIS in conformance with the 1994 Memorandum of Agreement between EPA and Wyoming Department of Environmental Quality (WDEQ) that involves comprehensive air monitoring conducted in the area in lieu of PM_{10} modeling. NO_x modeling results were compared against the NO_2 National Ambient Air Quality Standards (NAAQS) (assuming 100% NO_x to NO_2 conversion) and were generally lower than the NAAQS with one exception. For the Jacobs Ranch Mine year 2013, the NO_x prediction was 55 ug/m^3 which exceeds the NO_2 NAAQS by 2 ppb. 33

Recommendation: The Final EIS should present potential $PM_{2.5}$ near field impacts from the project and identify measures to reduce the NO_2 impacts from the Jacobs Ranch Mine.

2. Additional PM_{10} Mitigation -- Monitoring data in 2007 exceeded predictions of the WDEQ Permit Model. WDEQ approaches PM_{10} control in the Wyoming PRB coal mines through use of a conservative Fugitive Dust Model to determine coal production levels that will not exceed the annual NAAQS at any monitor when required BACM (Best Available Control Methods) are used; and with monitoring data (in the absence of accurate short term models) to show that at actual production levels, 24-hour PM_{10} NAAQS exceedances do not occur. 34

Recommendation: To ensure compliance with the PM_{10} standards, EPA believes that either mine emissions or emissions from other area sources must be reduced before PRB operations are expanded to realize the upper range of future coal production. We recommend that the Final EIS add additional mitigation measures to reduce fugitive dust emissions. These mitigation measures would be in addition to BACM and should be incorporated into the terms of the proposed leases. Through our discussions with BLM on air quality, it appears that it may be more efficient for the lessees to be obligated for mitigation for other activities on BLM land or private lands.

3. NO_x, NO_2 & Ozone - Many of the voluntary blasting (cast blasts) restriction measures implemented by the mines appear to be successful in reducing or eliminating public exposure to high NO_2 emissions. However, NO_2 emission rates described in Section 3.4.3.2.1, page 3-70 of over 4,500 tpy for the Black Thunder Mine alone are very high and may contribute to visibility impairment and the formation of ozone. EPA is 35

concerned with measured ozone concentrations in the surrounding area. For example, the WDEQ's Thunder Basin National Grassland site has a design value of 72 ppb (2006-2008), which is very near the NAAQS of 75 ppb. Also, on June 26, 2009, EPA published a proposed revision to the NO_2 NAAQS. EPA is considering a new NO_2 NAAQS over a 1-hour averaging period of between 80 and 110 ppb. The EPA plans on finalizing the rulemaking on January 22, 2010. Given the short-term nature of the cast blasts coupled with a very high emission rate of over 4,500 tpy, we are concerned that compliance with the proposed NO_2 1-hour NAAQS may be problematic.

Recommendation: Because of the high levels of existing ozone levels and our concerns with short-term NO_2 impacts, we recommend that the BLM and proponents should consider additional NO_x mitigation strategies that would reduce visibility impairment, ozone and NO_2 concentrations in the area.

4. (Draft EIS section 3.4.3.2.1) Mitigation for Nitrogen Dioxide Emissions. On page 3-66, the Draft EIS states that Wright Area Mines have already implemented voluntary measures to reduce NO_2 emissions. Because the measures are voluntary, the mine operators may choose not to implement the mitigation measures. It should also be noted that the measures for the mines do not include a prohibition of blasting when conditions are unfavorable (large blast, wet conditions, weather inversions, little wind, wind direction towards residences/road, etc.) The existing mitigation merely requires notification and monitoring. 32

Recommendation: We recommend that a condition of approval be added to the lease prohibiting blasting when conditions are unfavorable. The mines would then need to analyze the size of blasts in conjunction with weather conditions and potential public exposure to prevent exceedances of the EPA and NIOSH recommended toxicity levels. The Final EIS also needs to more fully describe the types and levels of mitigation and how the mitigation will be implemented to reduce exposure to nitrogen dioxide. For example we understand that several of the mines have reduced the sizes of blasts, changed the composition of the explosive agents used for blasting, and/or changed the placements of blasting agents.

Specific Air Quality Narrative Comments

5. The Executive Summary (ES) presents significance levels for fugitive dust and tailpipe particulates and includes a short discussion of other existing air pollutant sources. EPA recommends inclusion of a summary of the greenhouse gas emissions analyzed in Section 3 and 4 within the Executive Summary. 36

6. ES-36. It would be helpful to present the value for the annual NO_2 NAAQS within the text so that readers may make comparisons to the maximum modeled NO_x concentrations shown on Figures ES-8, ES-9, and ES-10. 37

7. Figure ES-11. Explain in the text why a 3-mile buffer was chosen to depict the potential for public exposure to emissions from surface mining operations. 38

8. Tables 4-11 through 4-14 of the Draft EIS disclose potential cumulative impacts that were tiered from the October 2008 PRB Coal Review Cumulative Air Quality Effects project. The PRB Coal Review disclosed cumulative adverse impacts from $PM_{2.5}$, PM_{10}, and visibility impairment at Class I areas under the three modeled scenarios. Specifically, for both the lower and upper coal development scenarios in 2015, the 24-hour $PM_{2.5}$ prediction is 179.5 $\mu g/m^3$ (NAAQS is 35 $\mu g/m^3$) and the annual $PM_{2.5}$ prediction is 18.7 $\mu g/m^3$ (NAAQS is 15 $\mu g/m^3$). For both the lower and upper coal development scenarios, the PM_{10} modeling predicted 24-hour impacts of 512.8 $\mu g/m^3$ (NAAQS is 150 $\mu g/m^3$). These predictions are all well over the NAAQS for $PM_{2.5}$ and PM_{10}. The 1994 Memorandum of Agreement between EPA and WDEQ does incorporate monitoring in lieu of short-term PM_{10} modeling. However, for planning purposes we believe the type and location(s) of the emissions contributing to these concentrations should be presented in the Final EIS. Since the PRB Coal Review modeling work is under consideration by BLM, we believe this updated analysis should capture all sources within a modeling domain large enough to determine cumulative impacts including PM_{10}, ozone and visibility. The analysis should also present source attribution contributions associated with the locations of predicted elevated pollutant levels. Such an analysis might inform an appropriate control measure strategy to be developed to avoid the predicted adverse impacts. 39

9. 3.4.1.1 (Table 3-8) Assumed Background Air Pollutant Concentrations. This table contains references to several air monitoring site data collected generally from 2002-2004. The Table units are presented as ug/m^3, however, for some of the parameters it appears that ppb units may be shown instead. We recommend using consistent units throughout the table. It also appears that some of the units are incorrect. Please ensure units are correct. In addition, there are much more recent data available from 2006 and 2007 that should also be incorporated into the table. 40

    a. The background concentration for NO_2 is listed for the Thunder Basin National Grassland Monitoring Site, which is located more than 20 miles north of Gillette. Please replace this location with the WDEQ site southwest of Gillette which generates NO_2 monitoring data and would be more representative of true background conditions. 41

    b. Data for SO_2 should be updated to include more recently measured concentrations at the Wyodak Site 4 monitoring station in Campbell County, Wyoming. 41

    c. It is unclear why data from Eagle Butte Mine was used for background PM_{10} in Table 3-8. There are numerous nearby PM_{10} monitoring sites in the southern PRB, including the WDEQ site southwest of Gillette. For air quality analysis purposes, data presented as Background Data should be data that represents base case ambient conditions near the proposed action. 41

    d. Page 4-42 references the Memorandum of Agreement between the WDEQ and EPA (January 24, 1994). A condition of the agreement is to continue PM_{10} 42

monitoring near the mine to ensure compliance with the 24-hour PM_{10} NAAQS. BLM should ensure that the mine operator(s) consult with the WDEQ on any monitoring site adjustments or additions due to the proposed expansion of the active mine area. Particular attention should be made to placement of monitors closer to the active mine areas in order to determine maximum impacts from the mines.

10. Section 3.4.2.3, Page 3-63, text states that "While PRB mining operators have already implemented these control measure in practice, formal approval of the NEAP [Natural Event Action Plan] for the mines in the PRB by EPA Region VIII is still pending". EPA Region VIII approved the WDEQ NEAP on March 13, 2007. 41

11. Section 3.4.2.3, Page 3-63, the full paragraph describes the NEAP for the mines in the PRB in the context of an Exceptional Event; this is no longer strictly applicable. The Exceptional Event Rule of March 22, 2007 no longer requires a NEAP. However, according to the preamble to the Exceptional Event Rule (Signed March 22, 2007, Effective May 21, 2007), "The EPA believes that it is advantageous for States to keep NEAPs in place that are currently being implemented in order to address the public health impacts associated with recurring natural events such as high wind events. However, following the promulgation of this rule, States will no longer be required to keep NEAPs in place that were not approved as a part of a SIP for an area". We believe the NEAP should be retained because it provides the flexibility to control other emission sources, like fugitive emission sources, that otherwise might not be controlled with BACT. We believe the BACM specified in the NEAP contains an appropriate and reasonable minimum level of control as required under the Exceptional Event Rule for the PRB coal mines. Additional mitigation of PM_{10} should be introduced if PM_{10} exceedances occur at Wright Area Coal Lease mines. 41

12. We recommend that the Final EIS disclose that emissions from coal combustion have been identified as a significant source of atmospheric mercury. EPA's web site at http://www.epa.gov/mercury/report.htm has several reports summarizing the environmental impacts of mercury, primarily bioaccumulation in the aquatic food web. Concentrations of mercury emitted as a result of combustion vary depending on the chemistry of coal deposits and the type of air pollution controls. 20

Recommendation: For purposes of the Final EIS, we recommend including any existing information on mercury emissions from power plants currently burning coal from the PRB mines.

Cumulative Environmental Consequences

13. Adverse visibility impairment impact days were also identified in the Draft EIS. These include 26 days at Badlands National Park, 32 days at the Northern Cheyenne Indian Reservation and 18 days at the Wind Cave National Park for the lower 2015 Coal Development scenario. 39

Recommendation: The Final EIS should add additional mitigation measures to reduce the days of visibility impairment in these Class 1 areas. Since the PRB Coal Review modeling work is under consideration by BLM, we believe this updated analysis should capture all sources within a modeling domain large enough to determine cumulative impacts including PM_{10}, ozone and visibility. The analysis should also present source attribution contributions associated with locations of predicted elevated pollutant levels. Such an analysis might inform an appropriate control measure strategy to be developed to avoid the predicted adverse impacts.

14. Section 4.2.14.1 presents an analysis regarding global climate change and Greenhouse Gas (GHG) emissions. EPA recommends the following updates and changes to this section:

    a. Greenhouse gas emissions from burning the coal should be calculated in the Final EIS and reported in millions of metric tons CO_2-equivalent per year or comparable units. Although the coal is sold as a commodity, the emissions can be calculated using coal production and emissions factors. For a more detailed analysis, the BLM may want to consider calculating the differences in CO_2 emissions from the combustion technologies described in the Draft EIS (standard combustion, IGCC, advanced pulverized coal, circulating fluidized bed). 43

    b. The Final EIS should disclose the measures the coal mines are using or plan to use to reduce or mitigate direct greenhouse gas emissions, including but not limited to reduction of coalbed methane and railroad locomotives' emission reductions. Mitigation measures designed to reduce the GHG emissions per unit of coal produced needs to be analyzed. 43

    c. The Final EIS should update the information regarding climate change modeling. For example, the last two paragraphs on page 4-110 of the Draft EIS, starting with "Tools necessary to quantify incremental climatic changes associated with those factors for the projected development activities in the PRB are presently unavailable" and the last paragraph on page 4-110 should be deleted or rewritten to describe current climate change prediction modeling. 43

    d. The last paragraph of Section 4.2.14 suggests that estimates of greenhouse gas emissions from the combined or cumulative mine operations can be found at Section 3.4.5, but the reference should be to Table 3-24 found in Section 3.18.2 on Page 3-307. 43

The broader cumulative impact analysis should also factor in the success of reclamation and mitigation plans for various resources. Mining reclamation works well for restoring some aspects of resources such as grazing livestock and wildlife, and visual aesthetics. Other resource values may take a longer time to return to full function or may not be restorable at all (e.g., wetlands, groundwater, and unique habitats). 44

Recommendation: We recommend that the impact sections for resources that are substantially impacted by cumulative impacts be reevaluated to determine how the impacts will overlap in time and for the resource as a whole. For example, does the timing of maximum impact from other activities (e.g., coalbed methane) coincide with the peak of impacts from coal mining? Are any resources impacted by coal mining approaching sustainability limits because of cumulative impact levels?

Wetlands

15. (Section 3.7.3) Wetlands Compliance, Mitigation and Monitoring. The wetlands mitigation plan needs to be amended to compensate for the long-term loss of wetland values during and following mining. The mitigation ratios may need to be increased to compensate for the temporal loss of wetlands. Wetlands obviously cease to function during the 10 to 20 years of mining. However, wetlands fed by groundwater will not regain function until the ground water table recovers. We recommend that additional mitigation be established to compensate for the long-term loss of wetland values. The mitigation plans for previous or current reclamation may provide good locations for increasing wetlands in the area. Alternatively, the mines may want to improve other wetlands damaged by overgrazing, poorly constructed roads, or off-road vehicle damage. 23

Wildlife

16. (Section 4.2.8.4) Special Status Species. The analysis for wildlife impacts should be based on the habitat needs of the species of concern, rather than the specific boundaries of the mines and lease tracts. There also needs to be sufficient analysis to understand the impacts of the Lease by Application (LBA) decisions. For example, on page 4-71, the Draft EIS states that no sage grouse leks occur within five miles of the Wright Area Coal LBA tract. It is unclear if the absence of nesting areas is important to the decline in sage grouse population or if there are sufficient numbers of leks nearby to sustain the population. In addition, this information does not appear to be consistent with the cumulative impacts discussion in the last paragraph of page H-67, which states that "Given the absence of grouse, and the limited quantity and marginal quality of potential grouse habitat in the area, US Department of Agriculture-Forest Service Management Direction guidelines for Management Indicator Species (MIS) do not apply to this project." By looking at sage grouse habitat on a component-by-component basis and mainly on LBA and mining properties, the impacts of the LBA decisions on the health and sustainability of the grouse population in this area are not presented . We note that a full biological assessment and evaluation document is being prepared for review in addition to the information in the Final EIS analysis. 12

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements
Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections: The Environmental Protection Agency (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 these impacts.

EO - - Environmental Objections: The EPA review has identified significant environmental impacts that should 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 public health or welfare or environmental quality. 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 recommended 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 of 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 National Environmental Policy Act 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. February, 1987.

All Paws Veterinary Hospital, Inc.
1732 Highway 71
Wall, New Jersey 07719

Dr. Thomas Kass,1732 HWY 71, Wall NJ, 07719 phone 732-449-8585, fax 732-449-8060, e-mail: allpawsvet@optonline.net August 24, 2009

To: Sarah Bucklin

Bureau of Land Management

Wyoming High Plains District Office

2987 Prospect Dr.

Casper, WY 82604

RE: EIS for Wright area coal lease applications.

To Whom it may concern: Due to a BLM shortage of EIS copies I only recieved the EIS and have yet to recieve the supplement and this has delayed my response.

The EIS is deeply flawed and it and the lease should be rejected: please consider each of the following points.

1.) Catastrophic Methane release as an outburst or incremental loss:

1.A.) The EIS does not consider the risk of an outburst of methane as has been recorded 16 times in coal mining history (Beamish and Crosdale, 1998). The EIS does recognize the PRB coalbed aquifers are not confined and are interconnected. No attention has been paid that once these connections or aquitards are dewatered that gas can flow up just as water flows down. CBN water drawdown is up to 625 feet with methane pressures up to 311 PSI (Clarey, 2009). Ground subsidence fracturing and dewatering will allow gas to flow into the highley conductive Wyodak aquifer and out the mines or surface. If the entire PRB methane reserve was vented it would equal ten years of entire US green house emission. 47

The EIS fails to realistically account for methane release through out. The EIS uses unpublished data from coal core samples taken "near the mine" (EIA page ES-29) and the DOE study of emmisions for 2006 {DOE/EIA-0638 (2006)(EIS page 4-122). That study (DOE page 50-51) states: "methane emissions from U.S. surface mines have not been systematically measured" and bases it's estimate on the premise on "methane has had ample opportunity to migrate to the surface before mining". Future PRB mining will have hundreds of feet of overburden and thus have more in common with the geology of underground mines. CBN operators do not mine coal to extract methane and the validity of using ambient temperature coal core samples to measure mine methane is fallacious. Kirchgessner et al (2000) developed methods for direct atmospheric measurement at mine surface. Total PRB CBN methane reserves are estimated at 10 trillion cubic feet in 10 billion tons of coal or 1,000 cubic feet per ton. Kirchgessner et al (2000) states 160 to 670 cubic feet of methane is liberated for each ton of coal mined. Kirchgesser is the only study to actually measure methane release in surface mines. The Powder River Basin coal reserve is currently the most productive methane source in the US. Methane liberation needs to be continously measured and monitored. If the methane in the proposed coal lease was released due to past lease activities as the EIS states then the proposed coal lease activity will simply

Dr. Thomas B Kass DVM
All Paws Veterinary Hospital, Inc.
1732 Highway 71
Wall, New Jersey 07719

liberate methane from more distant coal. We are facing a real global crisis and we need to measure and manage not speculate before making decisions involving such large portions of our national emissions. Methane must be measured continuously at each of the following: a.] migration directly of free gas into the mines; b.] release during excavation; c.] release during crushing; d.] loading; e.] transportation; and f.] at the end user. Methane has yet to be measured in CBM or mine water. With 174 billion gallons of of CBM water already pumped even at standard pressure, temperatures and solubility the equivalent of 60 million tons of CO_2 has been released as methane with the water at a minimum. It seems ridiculous that small public landfills in the US are required to collect methane and yet here where the magnitudes are thousands of time higher we do nothing but speculate. As PRB mining leaves the more exposed ancient burn or clinker zone and moves into deeper, wetter and pressurized coal: release will logically increase.

2.) EIS misrepresents PRB carbon footprint:

The EIS miscalculates PRB coal mine emissions on page, 3-307, 4-115 and 4-118. On page 4-115 the EIS's figure estimates CO_2 from coal combustion at power plants only and on page 4-118 it uses uncorrected DOE dry coal values (USDOE/EIA-0121,1994/Q1) for wet coal calculations. Vorres (1988) reports wet (as is)btu,oven dried btu, water and carbon for some Wyoming coals. PRB coal water consumes almost one third of the btu value and is principally why it has a low btu value. Simply put that's much more CO_2 for less energy and accounts for the low price of PRB coal compared to more efficient coals. The DOE has ongoing studies of coal drying as part of "clean coal" initatives but nothing has been implemented. In addition to this rather large mistake the EIS doesn't take into account mine diesel, mine explosives, mine electric use, railroad diesel and energy used to create materials and equipment for the mine, railroad and power plant. The EIS does infer it's inaccurate coal combustion figures can be compared to more comprehensive carbon footprints for non chemical power generation (nuclear, hydro, solar, geo and wind). Using SEC quarterly reports for Peabody and Union Pacific and the UP's depreciation schedule of 4.2% for durable equipment a more complete and accurate 2006 assesment is:

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790 million tons of CO_2 from coal (440 x 0.49 X 44/12) { "as is"coal wt.X Carbon content by wt.X CO_2 constant}

2.5 million tons of CO_2 from mine diesel {SEC report derived}

35.6 million tons of CO_2 from railroad diesel {SEC and railroad assoc derived}

2.1 million tons of CO_2 from mine explosives{SEC report derived}

2 million tons of CO_2 for annual steel usage for all {4.2% depreciation of total steel}

__ million tons of CO_2 for annual concrete usage {data unavailable to author}

__ million tons of CO_2 for mine electric earth moving drag lines {data unavailable to author}

150 million tons of CO_2 equivalence {until methane release is measured: assume Kirchgessner's high}

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978 million tons of CO_2 for the PRB coal mines {minus electric and concrete demand} verses EIA's 716 mt

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All Paws Veterinary Hospital, Inc.
1732 Highway 71
Wall, New Jersey 07719

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{ Calculations: Peabody coal reports consuming 130 million gallons of diesel to produce 255 million tons of coal, extrapolating from that data for the 440 million tons of coal produced in the PRB would be: 130 X 440/255 or 224 million gallons of diesel times 22.38 lbs CO2/ gal.converted to tons yields 2.5 million tons of CO2. The EIS estimate is 1/5 th of this. PRB coal companies move 1/2 a cubic mile of ground a year and the EIS values on page 3-307 are fictitious. The Ammerican Association of Railways publishes rail statistics for 2006 and more. Currently a train can move a ton 430 miles for one gallon of diesel, a wonderful accomplishment. A rail shipment of 100 tons of coal (the revenue portion) requires the movement of 100 additional tons (the wt. of hopper car etc) this is for the paid trip, hidden is the fact in the raw material business the rail cars must be transported back empty (actually uphill for an elevation change of over 4,000 feet) so to deliver a ton of coal a mile involves 3 tons to be moved a mile. The last data available for PRB coal was average one way trip of 1,037 miles (Gerking and Hamilton,2008). So 1,037 times 440 million tons of coal times the factor of 3 we get 1.37 trillion ton miles devided by 430 ton miles to gallon we get 3.18 billion gallons X 22.38 lbs CO2/gal devided by 2,000 lbs/ton we get 35.6 million tons of CO2. These calculations are the bare or minimal conversions of carbon in fuel and do no include the larger carbon imprint that would include energy used to explore, collect, transport and refine the deisel.}

The EIS fails to consider coal markets for 500 miles around the mine are saturated with cheap inefficient PRB coal and any increase in supply will involve long haul shipping to distant markets {i.e.; an even larger carbon footprint for each added ton}. That the power plants require more efficient coals to fire boilers at peak energy times. The EIS fails to consider that one of the most economical means of counter balancing the greenhouse gas problem is to simply increase sulfer emissions. It also fails to consider the risk of the nation being dependent on a single coal source if other coal mines are forced to close.

The race to use wasteful PRB coal may have more to do with gaining valuable carbon credits than simpley to use the cheapest fuel.

The coal industry has had a public relations victory with it's illusion: "clean coal technology". The Powder River Basin is the most ideal location in the nation and perhaps the world for "clean coal technology" yet the coal industry recently got approval to build a conventional power plant to service it's own needs (7,000 volt electric excavators). It's common in the region for various industries and mines to have their own power plants as a cost saving measure. The two principal clean coal technologies are: coal drying and CO2 sequestration. Power generation with it's massive waste heat and CO2 emissions located next to a wet coal mine and oil field is as good as it will ever get. Currently the Powder River Basin is a net consumer of mined CO2 piped in from hundreds of miles away. Drying PRB coal would make it competitive with coals costing four times as much. The two principal clean coal iniatives {coal drying and CO2 sequestration} located at one place would result in the smallest handling and transportation costs possible. So why isn't it being done? Unfortunately it's probabley fraud. The current author has worked in a technical capacity on pilot plants involving drying, calcining, slaking, coal fired turbines, and uranium milling. I know a full sized plant must be built and the remaining problems worked out by a complete spectrum of engineers and equipment fabricators on a full scale basis. A successful process would be worth billions of dollars to the developer in liscensing fees. The fact the coal industry is not doing so is as clear an indication they don't believe it will work. NO NEW CLEAN COAL PLANT: NO NEW COAL LEASE! 14

3.) Coal dust.

This is a simple problem. The arrogance of this industry to not solve this problem when any number of solutions would pay for themslves in a short amount of time. Covering the rail cars would increase fuel efficiencies by better aerodynamics and coal dust would be retained (stopping product coal loss). Wyoming's land scape should not be soiled by a black mark from coal dust 49

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Dr. Thomas B Kass D.V.M.
All Paws Veterinary Hospital, Inc.
1732 Highway 71
Wall, New Jersey 07719

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and the prairie fires caused by coal dust spontaneous combustion.

4.) Water, radium and radon.

The coal industry has intentionally violated the spirit and intent of the EIS process by buying CBM/CBN rights to aggressivelly draw down the aquifer prior to getting the permit. Any intentional act taken before a permit is issued in generally a serious violation of land use law. 26

Radium and Radon contamination of water has not been addressed. The involved water is likely to be contaminated or become contaminated by unnatural infiltration and perking in many localities in the PRB. Rice, Ellis and Bullock (2000) described PRB waters as high in iron, manganese, low sulfate water with a Ph around 8. Yet that study measured uranium and not radium and radon. The geochemistry and solubilities of radium and uranium are different and opposite (Zapecza and Szabo,1986). Zapecza and Szabo (1986) found a direct correlation for high radium in low uranium waters with high iron, high manganese, low sulfate water with a Ph around 8. Even if the CBM water's don't contain radium they must be considered a leachate for liberating radium and moving it down into the water table. Rain water leaches uranium from exposed igneous rock (Rocky Mountains) and the uranium can be concentrated in the sediments of waterways having specific conditions. This process yields very localized deposits which are abundant in the PRB. Ancient uranium deposits decay to high levels of radium and radon. Radon as a heavy gas difuses. Radium is either fixed or solubilized depending on geochemistry.CBM water will change the existing geochemistry and may liberate radium. These isotopes are abundant in the basin and the failure of our public agency to monitor them and the associated risks is unfortunate. Mine radon hopefully is being monitored as mining becomes deeper the flushing action of air movement will become impared. Aquifers for drinking must be monitored. 50

Sincerely:

Dr. Thomas Kass

PS: Feel free to contact me at the above. top of page phone, fax and e-mails

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MANAGEMENT
CASPER FIELD OFFICE
2009 AUG 31 P 1:39

DORSEY
DORSEY & WHITNEY LLP

MICHAEL DRYSDALE
(612) 340-5652
FAX (612) 340-8800
drysdale.michael@dorsey.com

August 25, 2009

VIA ELECTRONIC MAIL

Ms. Sarah Bucklin
Wyoming High Plains District Office
Bureau of Land Management
2987 Prospector Drive
Casper, WY 82604

Re: Wright Area Coal DEIS

Dear Ms. Bucklin:

On behalf of Ark Land Company ("Ark Land"). we respectfully submit these comments to the Draft Environmental Impact Statement (DEIS) for the Wright Area Coal project, as noticed in the Federal Register on June 26, 2009 (74 FR 30570). We comment on three specific areas – (1) global climate change; (2) Alternative 5; and (3) the Lease-by-Application Process.

1. Discussion of the Cumulative Environmental Consequences of Global Climate Change and Greenhouse Gas Emissions (Section 4.2.14.1)

Overall, the DEIS contains a thorough and balanced discussion of global climate change and greenhouse gas emissions. In particular, the science of climate modeling has not advanced to the point of reasonably forecasting the impacts of individual emission sources. However, the discussion of legislative developments at the federal level should be updated to reflect recent events in this fast moving policy area, such as the introduction and passage in the United States House of Representatives of the American Clean Energy and Security Act of 2009 (Waxman-Markey bill). In addition, the DEIS would benefit from an updated discussion of voluntary greenhouse gas reduction, crediting, and reporting programs, such as the Western Climate Initiative, as another mechanism encouraging market-rational management of greenhouse gases. 43

2. Alternative 5: Delaying the Sale

Section 2.7.2 of the DEIS discusses, but does not analyze in detail, the alternative of delaying the sale of one or more of the LBA tracts to obtain higher bonus and royalty payments and to allow CBNG resources to be more completely recovered prior to mining. Ark Land Company agrees with the BLM's decision not to analyze this alternative in detail. 31

Although the DEIS states that Powder River Basin coal prices have been steadily increasing since mid-2007, in fact there has been a downward trend in coal prices since the beginning of 2009. The recent price volatility underscores the difficulty in predicting the price of coal and, by extension, bonus and royalty payments to the government. Due to the lengthy

lease and permitting processes, predicting the price of coal at the time of sale is very difficult. Aside from the predictability of coal pricing, the LBA coal leasing process protects the federal coal sales process from price volatility by reserving to the BLM the right to reject bids that fail to reflect market value as determined by the BLM. Moreover, it not clear whether coal pricing reflects or results in any particular environmental issue appropriate for analysis under an environmental impact statement.

In addition, Ark Land Company agrees with the BLM's analysis of the development of coalbed natural gas resources (CBNG) on the tracts. Delaying the sale of the tracts would not result in the recovery of more CBNG because CBNG recovery is likely to continue post-sale. Moreover, it is likely that most CBNG has been, or will have been by the time coal mining operations commence, produced from the studied lands, and as discussed in the DEIS, there are ample mechanisms available to the BLM to balance any remaining CBNG production and coal development.

3. Lease By Application Process

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We are aware that commenters to other recent Environmental Impact Statements in the region have criticized the LBA process and called for a "recertification" of the Powder River Basin Coal Production Region. We do not believe a project-specific EIS is the appropriate place to consider recertification, which implicates broad policy concerns that reach beyond the specific tracts at issue in this DEIS. In any event, as the Wright Area Coal DEIS illustrates, the LBA process ensures that the federal government receives competitive bids for the coal. The LBA process is more efficient than the regional coal leasing process, with the result that the federal government receives federal and state royalties and taxes more quickly than it would through the regional coal leasing process. In addition, any claim that LBA applicants reduce competition by designating the tracts they wish to lease is undercut by the BLM's ability to reject bids or reconfigure the tracts, as is illustrated by Alternatives 2 and 3, the BLM's preferred alternatives in the Wright Area DEIS, which are different than the tracts proposed by the applicants.

Thank you for your consideration of these comments.

Sincerely,

Michael Drysdale

Michael Drysdale

cc: Doug Downing
Dave Finnerty
Mike Rowlands
B.J. Sturgill
William Prince

COPY

Williams.

Production RMT Company
300 North Works Avenue
Gillette, WY 82716-3043
307/686-1636
307/686-7574 fax

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August 11, 2009

Bureau of Land Management
Wyoming High Plains District Office
Attn: Sarah Bucklin
2987 Prospector Drive
Casper, WY 82604

RE: Wright Area Coal Lease Applications EIS:

Dear Ms Bucklin,

Williams Production RMT Company appreciates the opportunity to comment on the Wright Area Coal Lease Applications EIS.

Regarding 3.3.2.3 (p3-31)Regulatory Compliance, Mitigation and Monitoring:

The reservoir analyses conducted by the A&C (2008) indicate that most of the recoverable conventional oil and gas resources on the North Hilight Field, South Hilight Field, West Hilight Field, West Jacobs Ranch, North Porcupine, and South Porcupine LBA Tracts have been extracted by the existing wells. Reservoir analyses conducted by the BLM WSO-RMG indicate that most of the recoverable CBNG resources in the Wyodak-Anderson coal zone on these six LBA tracts have probably been produced by the existing wells. Potential does exist for conflicts between coal operations and CBNG and conventional oil and gas wells completed in formations and coal zones below the Wyodak-Anderson seam.

If the federal coal in the tracts is leased and conflicts do develop between the operators of the oil and gas wells and the surface coal mine operators, there are several mechanisms that can be used to facilitate recovery of the conventional oil and gas and CBNG resources prior to mining. These include:

- BLM will attach a Multiple Mineral Development stipulation to the federal coal lease, which states that BLM has the authority to withhold approval of coal mining operations

that would interfere with the development of mineral leases issued prior to the coal lease (see Appendix D).

- Conventional oil and gas wells must be abandoned while mining and reclamation operations are in progress but could be recompleted or redrilled following mining if the value of the remaining reserves would justify the expense of reestablishing production.

- BLM has a policy in place on CBNG-coal conflicts (BLM Instruction Memorandum No. 2006-153), which directs BLM decision-makers to optimize the recovery of both resources and ensure that the public receives a reasonable return (BLM 2006a). This memorandum offers royalty incentives to CBNG operators to accelerate production in order to recover the natural gas while simultaneously allowing uninterrupted coal mining operations. In addition, this memorandum also states that it is the policy of the BLM to encourage oil and gas and coal companies to resolve conflicts between themselves; when requested, the BLM will assist in facilitating agreements between the companies.

- Mining of these LBA tracts cannot occur until the coal lessee has a permit to mine the tract approved by the WDEQ/LQD and a MLA mining plan approved by the Secretary of the Interior. Before the MLA mining plan can be approved, BLM must approve the R2P2 for mining the tract. Prior to approving the R2P2, BLM can review the status of CBNG and conventional oil and gas development on the tracts and the mining sequence proposed by the coal lessee. The permit approval process generally takes the coal lessee several years, during which time CBNG resources can continue to be recovered.

- Prior to mining the federal coal, the coal lessee can negotiate an agreement with owners and operators of existing oil and gas facilities on the tract, including owners and operators of oil and gas well and pipeline facilities, regarding removal and relocation of those facilities prior to mining.

Comment:
Williams Production RMT Company (WPC) has interest in wells or operates wells within the Coal Lease Application Area. WPC feels that it is critical that the optimization and economic depletion of the CBNG resource be completed before mining is allowed to occur. Within the IM provided related to this issue, it is important as stated that the rights and lease obligations of the CBNG lessee are honored. 51

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2006 JUN 14 P 12: 5

Regarding Referenced Instruction Memorandum No. 2006-153 (3-31):

Comment:

- WPC understands that they will receive timely notice of development within the Conflict Administration Zones (CAZ) so that they have time to develop all applicable leases within the CAZ. Further, WPC understands that any permits to develop CBNG will be given priority within the CAZ. This will allow extraction of as much of the CBNG resource as possible before a conflict with the advancing mine. WPC or other lessees may show cause why they should not be required to produce the CBNG in such a manner that 51

will maximize recovery of the federal natural gas prior to the removal of the coal by supplying satisfactory proof supporting their assertion to the AO. This proof must factor in a royalty rate reduction of 50 percent (43 CFR 3103.4 and 43 CFR 3103.4-1)

WPC understands and considers the potential availability of incentives such as a royalty rate reduction to encourage development to be critical. WPC also considers it critical that in most cases, permanent reclamation of the well sites, access roads, pipeline rights of way, etc. may not be required, but only stabilized sufficiently to prevent erosion or other negative environmental impacts. 31

Thank you again for allowing WPC to provide comment on this EIS.

Sincerely,

Penny Bellah
Regulatory Team Lead
Williams Production RMT Company

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2000 AUG 14 P 12: 51

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 AUG 19 A

eog resources

EOG Resources, Inc.
600 Seventeenth Street
Suite 1100N
Denver, CO 80202
Tel: (303) 572-9000
Fax: (303) 824-5400

August 18, 2009

Bureau of Land Management
Casper Field Office
2986 Prospector Drive
Casper, WY 82604
Attention: Sarah Bucklin

Re: EOG Resources, Inc.'s Comments on the Wright Area Coal Lease Application Draft Environmental Impact Statement

Dear Ms. Bucklin:

EOG Resources, Inc. (EOG) is pleased to comment on the Draft Environmental Impact Statement for the Wright Area Coal Lease Applications (DEIS) released by the Bureau of Land Management (BLM) on July 8, 2009, but noticed by the Environmental Protection Agency (EPA) on June 26, 2009. 74 Fed. Reg. 30569 (June 26, 2009). EOG owns and operates federal, state, and fee oil and gas leases within the State of Wyoming, and in the potentially affected portions of the Powder River Basin, and asks the BLM to consider these comments on the Wright Area DEIS.

EOG has reviewed the Wright Area DEIS and believes the BLM has generally, adequately analyzed the potential environmental impacts of leasing the Wright Area Coal Lease Applications. EOG is concerned, however, because the BLM did not adequately analyze potential consequences that future coal leasing may have upon conventional oil and gas development in southern Campbell and northern Converse Counties, Wyoming. There is considerable existing and planned future oil and gas development directly east of the South Porcupine Lease by Application, BLM Serial Register WYW-176095. Additionally, significant conventional oil and gas development could take place directly east of the North Porcupine Lease by Application, BLM Serial Register WYW-173408. In general, the BLM's information regarding feasibility of future conventional oil and gas development in the vicinity of the Rochelle, North Antelope, and Antelope Mines is outdated and inaccurate. In recent years, the BLM's analyses has focused largely upon the potential impacts coal mining may have upon coal bed natural gas (CBNG) development and has not accurately considered the potential impacts of conventional oil and gas development. As technology continues to improve, oil and gas

72

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2009 AUG 19 A 9:33

operations have become possible in areas which have been previously undeveloped or currently underdeveloped. The BLM has an obligation to maximize the production of domestic oil and gas natural gas resources, as well as coal resources, and should not favor one type of development over another. When issuing the various leases analyzed in the Wright Area DEIS, the BLM should include appropriate stipulations and conditions for approval to allow coal and oil and gas development to co-exist to the maximum extent possible. This is particularly true in situations where the oil and gas leases predate the coal leases by years or even decades. 51

Section 3.3.2.1.1 – Conventional Oil and Gas

The BLM's analyses of potential impacts to conventional oil and gas in the Wright Area DEIS is outdated and does not accurately account for more recent conventional oil and gas development taking place within the region. In particular, the January 2008 reserve assessment prepared by Allen & Crouch Petroleum Engineers, Inc. (Allen & Crouch) of conventional oil and gas resources in the general Wright Analyses Area fails to mention or account for conventional oil and gas wells developed in the last several years. The BLM must analyze the potential impacts to more recent development in the area. Based on the sparse information contained in the Allen & Crouch report, it is difficult to discern how the BLM evaluated potential impacts to conventional oil and gas development. Additional information must be provided in order for oil and gas operators such as EOG to understand how the proposed coal leasing may impact its operations in the area and how future coal leasing and development may impact operations farther to the west. The Wright Area DEIS asserts on page 3-24 there has been a 15-year period of very little conventional oil and gas development activity in the Powder River Basin. This information is again, out-of-date, as increased oil and gas prices and advances in technology have made oil and gas development in the Powder River Basin more economic. Such continued oil and gas development will be far more likely in the future. The BLM must provide additional information regarding the potential impacts coal leasing may have upon oil and gas development in the Powder River Basin. 72

Section 3.3.2.3 – Regulatory Compliance, Mitigation and Monitoring

The BLM indicates on page 3-31 of the Wright Area DEIS it will attach a Multiple Mineral Development stipulation to federal coal leases stating that the BLM has the authority to withhold coal mining operations that would interfere with the development of mineral leases issued prior to coal leases. Given the increased potential for oil and gas development in the southern Powder River Basin it is imperative the BLM attach this stipulation to any and all coal leases issued in the area including the Wright Area Coal Lease Applications as well as the still pending West Antelope II Coal Lease Application. The BLM's policy to maximize the recovery of resources and value to the State of the Wyoming and the United States' Treasury demands that BLM maximize production of oil and gas development as long as possible. Doing so not only 51

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CASPER FIELD OFFICE
2009 AUG 19 A 9:33

provides much needed revenue to the State of Wyoming and the United States Treasury it also helps to achieve American energy independence. Although development of Wyoming's vast coal resources is important to the State and U.S. Treasury, the United States currently imports vast quantities of oil, as compared to coal, and the federal lands play an important part in correcting this dangerous imbalance. EOG strongly encourages the BLM to impose Multiple Mineral Development stipulations on any and all coal leases issued within the Powder River Basin. Such stipulations should clearly require BLM's long held policy first in time, first in right.

Section 3.11.1 – Affected Environment

As the BLM acknowledges on pages 3-236 and 3-238 of the Wright Area DEIS, the southern portion of the Powder River Basin contains an extensive and important network of oil and natural gas transportation pipelines that are critical to both conventional and CBNG production in the entire region. The BLM has not adequately analyzed the potential impacts of moving these facilities, and thus, disrupting production and transportation, may have upon oil and gas development in the region. The BLM's current analysis is inadequate and does not accurately analyze the potential consequences to oil and gas development if these important transportation pipelines and corridors are disrupted for a significant period of time. 8

Section 4.1.2.1 – Conventional Oil and Gas

The BLM also suggests on page 4-20 of the Wright Area DEIS that conventional oil and gas production is expected to peak in 2010 in the Powder River Basin and decline thereafter. Given recent advances in technology and different development techniques, this information is likely inaccurate. Significant quantities of conventional oil and gas can be developed from the Powder River Basin making it very unlikely that peak production in the area will occur in 2010. In fact, based on recent developments, conventional oil and gas development in the Powder River Basin may be entering a new and productive era. The BLM must update the information analyses in the Wright Area DEIS. 72

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Conclusion

Please place EOG on the mailing list for the Final Environmental Impact Statement and the Record of Decision for the Wright Area Coal Leasing Applications and please develop appropriate stipulations to ensure that coal operations are not advanced to the detriment of past or potential future conventional oil and gas operations in the Powder River Basin. If you have any questions please contact Eric Dillé, Government Relations Director, at 303-824-5542 or eric_dille@eogresources.com 31

Sincerely,

EOG RESOURCES, INC.

Eric A. Dillé, P.G., R.E.M.
Government Relations Director

COPY

CHEYENNE RIVER SIOUX TRIBE
Cultural Preservation Office
P.O. Box 590
Eagle Butte, SD 57625

MNICOUJOU ITAZIPCO CHEYENNE RIVER SIOUX TRIBE 1868 SIHA SAPA OOHENUMPA

July 6, 2009

BUREAU OF LAND MANAGEMENT CASPER FIELD OFFICE 2009 JUL 13 A 7 57

Bureau of Land Management
Wyoming High Plains District Office
Att: Sarah Bucklin
2987 Prospector Drive
Casper, WY 82604

RE: 3425 (LBA)
WY922 (Love)
WYW164812 (North Hilight Field)
WYW174596 (South Hilight Field)
WYW172388 (West Hilight Field)
WYW172685 (West Jacobs Ranch)
WYW173408 (North Porcupine)
WYW176095 (South Porcupine)
Wright Area Coal EIS

Dear Sarah:

In response to the request for comment, this is central to the "Section 106 Review CFR 800.2 *Consultation on Historic Properties of significance to Indian Tribes and Native Hawaiian's.* The Cheyenne River Sioux Tribe (CRST) would like to be further involved in this process.

In the Wright Area Coal Lease Application EIS stated, "No Native American heritage, special interest, or sacred sites have been formally identified and recorded to date..." However, the CRST has a vested interested in those Cultural Resources (CR) and Traditional Cultural Properties (TCPs) that may have an area of potential effect (APE), however it is not clearly stated in Volume 1 of 2 under 4.211.1- 4 *Cultural Resources and Native American Concerns,"* what cultural resources may be affected?

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As part of the 36 CFR 800.4 *Determine the identification of effects* that when identifying cultural sites, the CRST Cultural Preservation (CP) Field Technician is involved, and that other Tribes may be present during the surveys at these APE's to ensure the best practices for

identifying TCPs. The TCP's should be carefully researched, through ethnography and oral history interviews, or identified in the research and appropriately conducted, reviewed and that these TCP's are identified appropriately.

While our consultation should not end here, we expect to be involved in this process. The best practices and guidance between the Bureau of Land Management Wyoming State Offices, the WY District-Wide Field Offices and the CRST will agree to recommend the best practices to respond to the APEs. Although cultural preservation processes vary greatly among the many Tribal nations that you encounter, we hope that your agency will carry-out appropriate identification and protocol with our interests in mind.

Sherry Means

Pilamayaye (Thank You),
Sherry Means
Tribal Historical Preservation Officer (Acting)
CC: File (2)

Telephone: 605-964-7553 605-964-7554 Fax: 605-964-7552

Donald A. Simpson
State Director
Bureau of Land Management
Box 1828
Cheyenne, Wyoming 82003-1828

RECEIVED
JUL 29 2009
Bureau of Land Management
Casper Field Office

Mr. Simpson:

I would like to comment on the Environmental Impact Statement for the Wright Area Coal Leases.

I am a member of the Board of Directors of the Rockpile Museum in Gillette, Wyoming. It is the county owned museum and reflects in our collections the history of Campbell County and a large part of the Powder River Basin.

We know that there are a large number of archaeological and historical sites in the area that has been taken by coal mining and we have heard of several fossil sites that were located on the mines. The draft environmental statement makes reference to sites that will be destroyed by the process of the mining.

We have a very hard time even finding out that a site has been found and excavated, let alone getting information or reports of the site. At times the finding of a site has been totally denied. We feel that the Rockpile Museum should have access to this material and reports. They are dealing with a large part of Campbell County history and we feel that the artifacts should be exhibited here. The museum is also an educational facility and we should have copies of the reports for the finds that have been excavated in the county.

63

It is not our intention to compromise the integrity of a site but for those sites that are in the mine area, we fail to see how our obtaining information on the site can compromise anything. After the site is destroyed, there can be nothing left of the original finding and all that is left is a small historical record and that belongs in Campbell County at the Rockpile Museum.

May I request that the Rockpile museum be added to the distribution list for all future studies in Campbell County?

Thank you,

Leland (LJ) Turner
605 Turnercrest Road
Gillette, Wyoming 82718

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 JUL 31 A 11: 34

BUREAU OF LAND MANAGEMENT
WYOMING HIGH PLAINS DISTRICT OFFICE
Attention: Sarah Bucklin
2987 Prospector Drive, Casper, Wyoming 82604

MS. BUCKLIN:

I would like to submit this commentary to the Draft Environmental Impact Statement for the Wright Area Coal Lease Applications.

Our ranch is located in the five feet drawdown of water area and we have lost a number of National Grassland grazing permits to the mining area so I feel that we are definitely impacted by the development in the area. I was surprised to find out that we have been deleted from the BLM's list and request that we be added to the notification list for all statements in the future. I have submitted written comment on other draft studies.

Our ranch was homesteaded by my family here in 1918. In the 1930's when the area now known as the Thunder Basin National Grassland was first put together, my family obtained grazing rights in the Thunder Basin. Since that time we have used and depended on summer grazing in the Basin as an integral part of our ranch program. Our use in the Thunder Basin was only as permit holders on grazing leases as the deeded portion of our ranch is some 15 miles to the west. For me personally, my first experience with trailing cattle back and forth to the Thunder Basin came in 1941 as a baby in a cradle.

In 1991, after my mother's death the ranch was probated, appraised by the IRS and eventually passed on to my children. In the IRS appraisal the Thunder Basin grazing permits were appraised as an integral and necessary part of the ranch with a tax bill that had to be paid for the value placed on these permits. We have never received a penny in compensation for the loss of these permits, nor have we asked for reimbursement with the thought that when the mining was reclaimed, we would get the pastures back.

54

This year our grazing allotment has shrunk to some thirty head of cattle and according to the draft impact statement, our grazing will be completely gone if the mine expansion goes through. The draft statement alludes to ...."a temporary reduction of livestock grazing....." on page ES-51.

Since the coal mining has started in the Porcupine- North Antelope area we have had to disperse a good number of our cattle and of the remainder, we now feed out our bulls in Colorado, our heifers in Nebraska and our older cows in the Black Hills of Wyoming. Prior to the mining we were able to operate everything from this ranch and we did not have a couple hundred mile drive to manage our cattle.

It appears to me that the claim of "reclamation" is questionable, if our pastures are being reclaimed, why then are we losing all of our summer grazing over there? It

would seem to me that if there was any reclamation that there should be some place there that we could use to run more than these thirty cattle that we are now allowed.

As damaging and costly to us as the loss of our pastures is, that cost is dwarfed by the loss of our water. We are in the "five feet drawdown" area and we are losing our springs and seeps and our wells. Without water we simply can not exist as an operating ranch.

On page ES 36 and E- 137, mention is made that, ..."the rate and extent of the actual drawdown in the coal is much greater than the predicted life of mine drawdown..."

We are seeing this everyday. Our ranch is on Bates Creek, a tributary of Antelope Creek. We used to have a number of spring holes with fish in them, a good "swimming hole" and a large spring that my parents and neighbors depended on to get their supply of ice each winter for the coming year. That is all gone now for "5 feet" of drawdown wipes out many of the springs in this entire area or reduces them to a weed choked mud hole that is often hazardous to livestock or wildlife. The page 3-127, mentions that ..."springs are uncommon....". Has anyone from the coal mines or the BLM ever looked? Perhaps these spring holes on the creek do not fit the concept of Rocky Mountain spring water that the coal mines prefer to use?

Since the mining has started, we do not have a fish on the ranch today, there is no place to swim unless mud wrestling is your thing and we have no place on the ranch where I can take our grandchildren to cut a block of ice to make a freezer full of ice cream.

On 3-115, it mentions that ... ."28 wells are being monitored....", and I see by your map in Figure 3-22 that a well is being monitored and it is listed as PRCC-21B. That is in what remains of our allotment and there is a well there although I do not know if your monitored well is our windmill.

64

I do know that I attempted to find and obtain records on our well there for my own information and future plans. I requested information on this well from the office of the Wyoming State Engineer. My request for this information was refused because our name was not on the water right filing even though we had paid a share of the cost of the well. I also pointed out that the well was on Forest Service Land and that the information should be a matter of public record. They continued to refuse to divulge the requested information.

I then approached the Forest Service and the Thunder Basin Grazing Association for their assistance in obtaining this information and was told by both entities that I had ..."no need for the information...".

I feel that it is essential for all information on the water in the area to be available, whether it is good or bad for either the coal company or the people that live here. How

BUREAU OF LA... MANAGEMENT ... FIELD ... JUL 31 A 11:

can people make an intelligent appraisal of the situation if they are not able to obtain full information to make their decision on?

We have had a problem with access crossing the railroad ever since the railroad was built. I believe that the crossing was designed with several cattleguards for the access road along the track and a fence to direct the livestock into the crossing tunnel. It has never been built. At the curve where the railroad crosses Porcupine Creek there have been a number of derailments that have destroyed the fence. In the past we have attempted to maintain the fence and at the railroad crossing have finally started building wings of portable corral panels when we cross to keep the livestock off of the railroad itself. Since Campbell County is moving the county road to run along the railroad through our pasture, I hope that we will be able to have a fence that will not be torn up regularly and perhaps the county will help us get a crossing for livestock.

Usually about once a year we will see a fire smoldering along the railroad right of way that is in the coal dust that has blown off the trains. 49

An observation on Air Quality would be that at our ranch some 15 miles west of the mine, we can regularly look 150 miles to the south to see Laramie Peak and we can look 150 miles to the northwest to see Cloud Peak in the Big Horn Mountains and when we go over to check on cattle, there are many days that we can not see across the mine sites, a distance of possibly 5 miles. 42

I would urge that a NO ACTION status be applied to this proposed expansion at this time. I get the sense that across our nation more and more people are concerned with global warming and clean energy and at this time we are facing an economic slowdown in the energy industry. Why try continue the "boom" forever? If the coal has been there for a million years or so, why the frantic hurry to mine it in the next few years? Why should we destroy a way of life for ranchers in Wyoming with the added loss of clean air and the loss of our water adding an incalculable cost to the price of the coal. 14

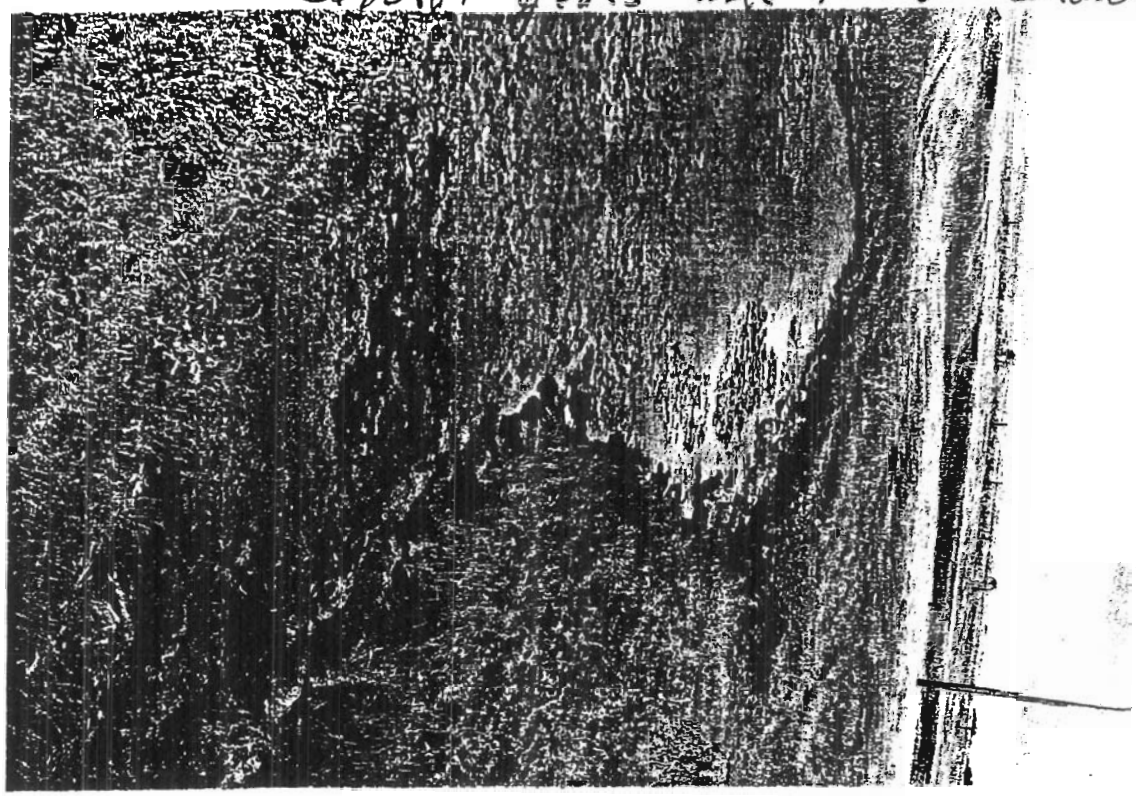
One thing I did not find in the draft environmental impact statement was any mention of where our water will come from if industry is successful at dewatering the Powder River Basin. Everywhere I look in the west the lack of water is a problem so how can it be ignored here?

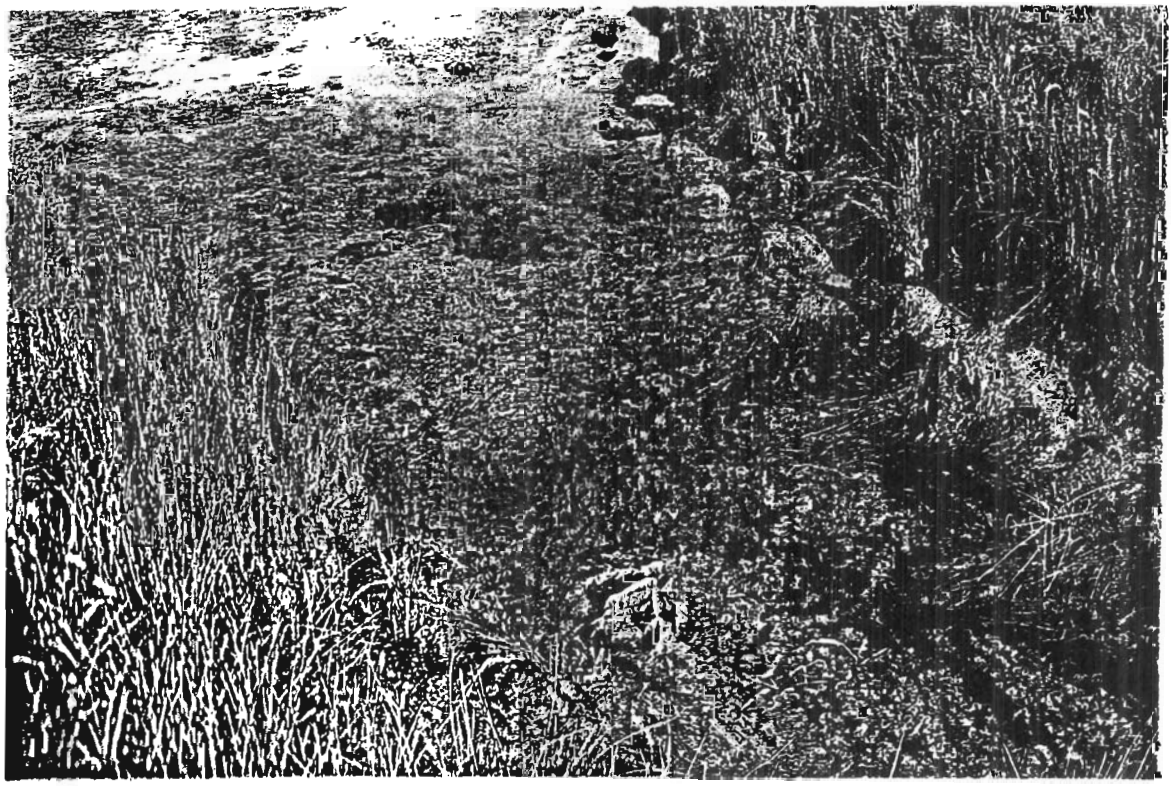
Thank you for the opportunity to file this statement.

Leland (LJ) Turner
605 Turnercrest Road
Gillette, Wyoming 82718

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 JUL 31 A 11: 34

What a spring looks like after several years and Ft of drawdown





2009 JUL 31 A 11:

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 OCT 15 P 1:24

Bureau of Land Management
Wyoming High Plains District Office
ATTENTION: SARAH BUCKLIN
2987 Prospector Drive
Casper, Wyoming 83604

MS Bucklin

I am aware that it is very late to submit anything for inclusion in the Draft Environmental Impact Statement for the Southern Campbell County Coal Mine Expansion but I just had an encounter with Peabody Coal Company that I feel should be included.

Our ranch is west of the primary coal mine area and we had some hunters back at the ranch this fall that had first hunted with us over fifty years ago. They accompanied us in moving our cattle from our Forest Service Grazing Permit east of Teckla back to the main ranch in the 1950's and in addition they had hunted in the area that has been consumed by the coal mines.

Some of the people expressed a desire to see the coal mine area and as I had to go over there, I offered to show it to them. We drove down the Matheson road to where it crosses under the railroad and into the first of our Forest Service Allotments on Porcupine Creek. There is heavy construction work there building a new road for the coal mines' access. We continued on past the site of the old Teckla Post Office and along the Antelope Road where our Honeymoon Draw Forest Service allotment is. They wanted to see the main mine facility so we went down the road, through our allotment and approached the Peabody mine facility and stopped on the road prior to getting to the guard shack so they could shoot a picture.. At that point we were intercepted by a Peabody employee that ordered us off of the property.

I introduced myself and explained what we wanted but was told that Peabody owned all of the land east of the Antelope Road, that we were trespassing on their private property, that we could not take pictures. He informed me that I did not have a grazing permit on Honeymoon Draw and left no doubt that we were to get the hell off of there immediately. We did.

In the past I worked at the Jacob's Ranch and Black Thunder Mines during the construction phase and openly carried a camera and was never questioned or challenged for doing so at those mines. In the past I have checked in at some of the mines and was able to get people a brief tour of the facilities and was met with courtesy and answers to people's questions.

In approaching the Peabody facility I did not expect anything else and was totally surprised by the arrogant display of authority that we were met with. I had felt that we had a reasonable relationship with the mine and their employees as we will get several calls a year from them when they find cattle out on the road right of way. We have always thanked them for calling us and checked to see what needed to be done to remedy the situation.

I have always assumed that the paved roads into the mine sites were at least, "public" roads and I feel that the coal mine's need for portions of our grazing permit for their access should at least earn me the right to drive down the damned road. After we

were run off by the Peabody employee I checked on the way out for any sign that identified the road as solely Peabody's property. There was none.

With our loss of grazing land and surface water to the coal mine I questioned the need for an enlargement of the mine area. Today, after seeing their attitude first hand I do not feel that this is the Wyoming that I knew or that I care to see develop in our state.

I do not know what Peabody is afraid of or is trying to hide at their mine site. The Wyodak mine east of Gillette used to have an overlook so tourists could see the mine and you could even buy a postcard of the facility. I feel that was more a part of the area and a better example of Wyoming than this arrogance exhibited by Peabody. If this is an example of coal mine expansion and what we can expect here, I don't want any part of it.

I would like to suggest that if Peabody or other mine companies can legally ban public access on the mine roads around and through the mine area that the fact should be prominently and publicly displayed. If they can legally prohibit photography in the mine area, that fact should also be prominently displayed. If Peabody wishes to develop some sort of Nevada test site, "Area 51" they no doubt have the right to do so but the fact should be evident. When people take a drive to do some sightseeing, they are not looking for a confrontation.

Perhaps I overlooked the item in reading through the draft environmental statement but I recall NO mention that access and photography would be denied in the mine area. I see now that the coal mine is polluting the air, depleting the water, destroying the pasture and now they are denying access and prohibiting photography, Just what else do they demand? They do not need to expand. 7

Thank you.

Leland (LJ) Turner
605 Turnercrest Road,
Gillette, Wyoming 82718

Lj/cc:
United States Forest Service
Thunder Basin Grazing Association
Campbell County Board of Commissioners
Harold Shriner, Peabody Coal

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2009 OCT 15 P 1:24

August 24, 2009

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CASPER FIELD OFFICE

2009 AUG 26 P 2:58

Bureau of Land Management
High Plains District Office
Attn: Sarah Bucklin
2987 Prospector Drive
Casper, WY 82604

Dear Ms. Bucklin,

Thank you for the opportunity to comment on the Black Thunder West Hilight Field LBA/Study Area Environmental Impact Statement. As private people, we would appreciate any effort to keep our names and address confidential.

As long time active members of our community, we have strived to be what is held in highest Wyoming esteem: Good Land Stewards and Good Neighbors. As such, we were disappointed in the 1 page out of 554 on the original EIS, and the 1 paragraph on the supplement handed out at the July 29, 2009 meeting, being devoted to agriculture. We were further dismayed to have our and our neighbor's livelihood, cultural contributions and community activities reduced to AUMs lost.

Our family ranch goes back many years in this area. Some of our deeded land in Sections 21 and 34 has been included in the Study Area. We also own land bordering the LBA in Sections 7 and 18. But, the glue that has enabled this ranch to survive in the livestock/grass business is our Forest Service leases in Sections 8,9,17,18,19,20,21,22,27 and our State of Wyoming lease of Section 16. 54

The loss of these grazing leases will be devastating to our ranching operation. Our deeded land will not sustain a viable livelihood in the livestock/grass business in even the best of grazing years. There are very few available options for our lands.

Please keep our situation in mind as you go through the steps of this LBA.

Thank you for any help possible.

Sincerely, Thomas W. Edwards
Leah B. Edwards

Thomas W. and Leah B. Edwards
94 Edwards Rd. HCR 83
Gillette, WY 82718
(307) 939-1266

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4610

Web site: http://gf.state.wy.us

GOVERNOR
DAVE FREUDENTHAL

DIRECTOR
STEVE K. FERRELL

COMMISSIONERS
CLIFFORD KIRK – President
ED MIGNERY – Vice President
CLARK ALLAN
AARON CLARK
JERRY GALLES
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FRED LINDZEY

August 14, 2009

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MANAGEMENT
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2009 AUG 18 P 1:23

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Casper Field Office
Wright Area Coal DEIS
WYW164812 (North Hilight Field)
WYW174596 (South Hilight Field)
WYW172388 (West Hilight Field)
WYW172685 (West Jacobs Ranch)
WYW173408 (North Porcupine)
WYW176095 (South Porcupine)
Campbell County

Sarah Bucklin
Bureau of Land Management
Casper Field Office
2987 Prospector Drive
Casper, WY 82604-2968

Dear Mr. Bucklin:

The staff of the Wyoming Game and Fish Department has reviewed the Draft Environmental Impact Statement for the Wright Area Coal Lease Applications. We offer the following comments for your consideration.

The six proposed coal leases lie within the Highlight Pronghorn, Cheyenne River Pronghorn, Thunder Basin Mule Deer, and Rochelle Hills Elk Herd Units. Pronghorn use much of the areas for yearlong and winter yearlong habitat. No crucial winter range for pronghorn is contained within the project area. Mule deer in the region utilize portions of the project area as yearlong habitat. Elk frequent areas surrounding the proposed coal leases, utilizing these areas mainly as winter yearlong habitat. Removal of sagebrush and grassland habitats will reduce overall forage for all three of these big game species. We recommend implementing effective restoration activities following mining practices that strive to restore sagebrush and native forbs (Medcraft and Clark 1986, Gamo and Anderson 2002). 31

The BLM draft EIS for the Wright coal leases recognized the existence of several sage grouse leks on or directly adjacent to the proposed coal leases. The area also provides breeding, nesting, brood-rearing, and winter habitat for sage grouse. The BLM concedes that several leks will

likely be destroyed by mining activity should the coal leases proceed as planned in Alternatives 1 and 2. While the aforementioned leks are not within any of the "core areas" defined by the Governor's Sage Grouse Task Force, the loss of entire leks and their associated nesting and wintering habitat certainly constitutes an impact on local sage grouse populations. If these coal leases are approved, we recommend that mining companies continue to improve reclamation techniques that in time provide suitable habitat for sage grouse.

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WGFD recommends that wildlife surveys be performed to detect the presence of sensitive or threatened species prior to activities that disturb new areas. Surveys should also be continued to document active nests of raptor species present on the coal leases. A 1/2 mile buffer around each nest should be maintained where possible. Exceptions may be granted based on topography or other site-specific factors and as coordinated with USFWS. Nesting sites that are destroyed should be mitigated by creation of new nest site options, either nest platforms or nest boxes where applicable.

Some portions of the proposed coal leases contain United States Forest Service (USFS) surface lands that are a part of Thunder Basin National Grasslands. Loss of these areas to mining will result in reduced recreational opportunities for the public in a part of Wyoming where accessible public land is already limited. Both hunting and other outdoor recreational utilization will be lost on those portions of USFS lands that are leased for coal extraction. WGFD recommends that the BLM and USFS investigate the possibility of working with the coal industry to facilitate land exchanges and/or purchases to provide replacement public lands for recreational use on the Thunder Basin National Grasslands. 7

Thank you for the opportunity to comment. If you have any questions or concerns, please contact Heather Obrien, Wildlife Biologist at 307-682-1579 or Scott Gamo, Staff Terrestrial Biologist at 307-777-4509.

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 AUG 18 P 1:23

Sincerely,

John Emmerich
Deputy Director

JE:MF:gfb

cc: USFWS
H. Obrien, L. Jahnke, WGFD Sheridan

Gamo, R. S. and S. H. Anderson. 2002. Use of reclaimed minelands by pronghorn antelope and mule deer. Intermtn. J. Sci. Vol. 8. 4:213-222.

Medcraft, J. R. and W. R. Clark. 1986. Big game habitat use and diets on a surface mine in northeastern Wyoming. J. Wildl. Manage. 50:135-142.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2009 SEP -2 P 1: 56

AUG 3 1 2009

In Reply Refer To:
ES-61411/W.02/WY09FA0183

Memorandum

COPY

To: Environmental Protection Specialist, Bureau of Land Management, Wyoming High Plains District Office, Casper, Wyoming, Attention: Ms. Sarah Bucklin

From: for Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne, Wyoming Scott Hicks

Subject: Comments on the Wright Area Coal Lease Applications Draft Environmental Impact Statement

Thank you for your letter and attached draft Environmental Impact Statement (DEIS) for the Wright Area Coal Lease Applications, dated June 17, 2009, received in our office on June 26. The DEIS analyzes the environmental consequences of leasing six tracts of Federal coal reserves totaling approximately 21,885-acres, located in Campbell County, Wyoming. In your letter you requested the U.S. Fish and Wildlife Service (Service) review the DEIS and provide comments.

In response to your request to review the proposed action, we are providing you with comments on (1) threatened, endangered and candidate species. The Service provides recommendations for protective measures for threatened and endangered species in accordance with the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Specific Comments

Appendix G, Page G1-13, Ute ladies'-tresses - Existing Environment: The second paragraph states that Habitat Management Inc. has identified potential habitat within the North Hilight Lease By Application (LBA) analysis area. We recommend that the final EIS discuss the location and amount of potential habitat identified for each of the LBA tracts. The final EIS should also note the dates of all surveys conducted for the Ute ladies'-tresses (*Spiranthes diluvialis*) orchid within each of the LBA tracts. 67

Appendix G, Page G1-14, Ute ladies'-tresses - Existing Environment: The first paragraph states, "previous surveys have been conducted during the flowering period within the existing Black Thunder Mine permit area (e.g., for each of BLM's EISs analyzing the environmental impacts of leasing the LBA tracts obtained by the mine since 1992, as listed in Table 1-1 of this EIS) and no 68

Ute ladies'-tresses orchids were found during any of those surveys." Surveys conducted for previously leased LBA tracts may or may not have included lands being analyzed in this EIS. If the Bureau of Land Management (Bureau) has survey information from previous Ute ladies'-tresses orchid surveys that included all or a portion of the current proposed LBA tracts, the results of those surveys should be described in the final EIS and biological assessment. We recommend that all Ute ladies'-tresses survey reports used in this analysis be included in an appendix to the final biological assessment.

Appendix G, Pages G1- 15, G2-14, G3-16, G4-15, G5-17 and G6-16, Ute ladies'-tresses - Effects of the Proposed Project: For each of the six proposed LBA leasing actions analyzed in the DEIS and biological assessment the Bureau has determined that Alternative 2 (the Bureau's preferred alternative) "may affect, but not likely to adversely affect" the Ute ladies'-tresses orchid. However, in the following paragraphs on each of the above referenced pages it states, "nonetheless, if undetected populations are present on the ephemeral streams in the general analysis area, they would be lost due to surface disturbing activities."

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We recommend that any potential habitat that has not already been surveyed for Ute ladies' tresses within the six LBA tracts be identified and surveyed prior to surface mining activities. In addition, the Bureau should identify lease stipulations for each of the six LBA tracts in the final EIS that will protect populations of Ute ladies'-tresses, should they be found to occur within the LBA tracts.

Appendix G, Page G1- 15, second paragraph: The fourth sentence in this paragraph states, "as described above, Black Thunder Mine has conducted multiple orchid surveys of suitable habitat over multiple years during the known time of flowering using USFWS accepted techniques." However, the DEIS does not provide references for these surveys. We recommend the final EIS include references to all supporting surveys used to make your determinations of affects for threatened and endangered species.

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Appendix G, Pages G1- 19, G2-18, G3-20, G4-20, G5-22 and G6-21, Blowout Penstemon - Effects of the Proposed Project: For each of the six proposed LBA leasing actions analyzed in the DEIS and biological assessment the Bureau has determined that Alternative 2 (the Bureau's preferred alternative) "would have no effect on the blowout penstemon." However, in the following paragraphs on each of the above referenced pages it states, "if undetected populations are present, they could be lost to surface disturbing activities." Since blowout penstemon could occur in these areas, we recommend the final EIS address this recent species update by including language such as:

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"Habitat for the blowout penstemon (Penstemon haydenii) will be identified prior to any surface disturbing activities. If suitable habitat (e.g., sparsely vegetated active sand dunes or sand dune blowouts) is determined to be present on the site, surveys will be conducted for the presence of this species. If the species is found, a 0.25-mile no surface disturbance buffer will be placed around the population consistent with the Bureau's Biological Assessment (BLM 2005)."

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CASPER FIELD OFFICE

For our internal tracking purposes, the Service would appreciate notification of any decision made on this project (such as issuance of a permit or signing of a Record of Decision or Decision

Memo). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

Thank you for the opportunity to comment on the Wright Area Coal DEIS. If you have any questions regarding this letter or your responsibilities under the Act, please contact Bradley Rogers at (307) 684-1046.

cc: BLM, Field Manager, Buffalo Field Office, Buffalo, WY (D. Spencer)
FWS, Fish and Wildlife Biologist, Buffalo Field Office, Buffalo, WY (B. Rogers)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)
WGFD, Non-Game Coordinator, Lander, WY (B. Oakleaf)

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2009 SEP -2 P 1: 56

United States Department of the Interior
U. S. GEOLOGICAL SURVEY
Reston, VA 20192

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
2010 AUG 14 P 12: 46

COPY

In Reply Refer To:
Mail Stop 423

AUG 0 6 2009

Ms. Sarah Bucklin
Bureau of Land Management
2987 Prospector Drive
Casper, WY 82604

Subject: Draft Environmental Impact Statement for the Wright Area of the Wyoming Powder River Basin

Dear Ms. Bucklin:

As requested by your correspondence of June 17, 2009, the U.S. Geological Survey (USGS) has reviewed the subject draft environmental impact statement (DEIS) and offers the following comment.

SPECIFIC COMMENT

Section 3.5.1.2.1.2, West Jacobs Ranch LBA Tract, page 3-108, first full paragraph, first sentence; and page 3-110, first partial paragraph, last sentence

The two sentences appear to contradict each other. The first states that "The extent of drawdown west of the mines that is specifically attributable to mine dewatering *can no longer be defined* due to much greater and areally extensive drawdown cause by CBNG development." [italics mine] Two pages later, the document states that "... WDEQ/LQD would require that future drawdown impacts due to mining alone be predicted..." The apparent contradiction may merely be a matter of semantics: drawdown due to mining can still be defined (by various methods such as mathematical modeling or analytical solutions). The accuracy of those estimates cannot be tested or observed in the real world, however, because in practice mine drawdown it is a relatively small impact that is masked by much larger drawdown due to CBNG development. The same apparent contradiction occurs in descriptions of other tracts in other parallel sections of the DEIS, such as the last sentence on page 3-112 compared with the first sentence on page 3-115. 66

Thank you for the opportunity to review the DEIS. If you have any questions concerning our comment, please contact Lloyd Woosley, Chief of the USGS Environmental Affairs Program, at (703) 350-8797 or at lwoosley@usgs.gov.

Sincerely,

James F. Devine
Senior Advisor for Science Applications

BLM Responses to Comment Letters Received Regarding the Wright Area Draft EIS

Comment Response 1: Please review Section 1.2; we have clearly stated the purpose and need of the EIS and the proposed action. Approximately 92 percent of the total coal that is mined in the U.S. is used for generating electricity. Currently, coal-fired electric generating plants are the cornerstone of the nation's central power configuration. Electricity is important to the country's security and economy. Many other states rely on Wyoming for coal reserves in view of the fact that Wyoming coal is used to generate electricity in 36 states.

We revised the Final EIS to include additional information regarding the projected electric generation portfolio of the United States. Please see Section 4.2.14.4. Studies have indicated that even with a considerably more optimistic projection for renewable sources, coal use continues to be projected as the largest portion of the domestic electric fuel mix until at least 2035.

As described in Section 4.2.14.4 of the EIS, the key determinant of energy consumption is population. The population in the U.S. has increased by about 20 percent and energy consumption by a comparable 18 percent since 1990, with variations in energy use per capita depending on factors such as weather and the economy. As human population and activities have increased, carbon-based fuels have been used to provide for these additional energy needs. To meet the nationwide consumer demand and requirement for energy, coal is burned in power plants to produce electricity. Many countries are even more reliant on coal for their energy needs than is the United States. As stated in the EIS, more than 70 percent of the electricity generated in China and India comes from coal.

As described throughout Chapter 1, the purpose of this EIS is to analyze and disclose the potential effects to the natural and human environment from the proposed leasing of six maintenance tracts of federal coal in the Wright Area of the Wyoming Powder River Basin. Although leasing these tracts would not authorize mining operations on those lands, the EIS evaluates the potential impacts of mining the tracts because mining is a logical consequence of issuing a lease for a maintenance tract of federal coal. The EIS presents BLM's analysis of environmental impacts under the authority of NEPA and associated rule and guidelines.

The BLM is a multiple use land management agency that also manages federal minerals, including federal coal reserves. BLM administers public lands and minerals under the policy and practice of multiple use management. The Bureau's responsibility for multiple use involves balancing an extensive diversity of resources and the potential use or development of those resources and lands as administered by BLM. Managing vast and varied resources under this mandate is a complex undertaking, particularly since the priorities set for one management activity may conflict with the priorities of another. For both BLM and FS administered public lands, the management, constraints, limitations, and prescriptions for those lands are developed through the land use planning process. The public is encouraged and invited to participate throughout those processes. The EIS identifies and explains that the proposed actions and alternatives are consistent with the BLM Buffalo Field Office and USFS land use plans.

Comment Response 2: Please review the BLM National Environmental Policy Act (NEPA) Handbook H-1790-1. As described in the handbook, proposed federal projects that are externally generated actions, like coal lease applications filed by a proponent, include the formulation of a range of alternatives encompassing denial of the request (No Action), approval of the request as proposed by the proponent, and approval of the request with modifications as made by BLM to the proponent's proposal. As exemplified in H-1790-1, the Wright Area EIS range of alternatives carry out the intent and spirit of NEPA.

For the alternatives and their descriptions, please see Chapter 2 in the EIS. This chapter contains the full range of alternatives in response to the coal lease applications there were submitted by the lease applicants. Chapter 2 describes the proposed action and a number of alternatives for each of the six lease by application (LBA) tracts being evaluated in this EIS.

Please review Section 2.7.1 for the new mine start alternative. As stated in the EIS, this alternative was not analyzed in detail because a new mine start is highly unlikely at this point in time for a number of reasons including initial capital expenses, mine startup costs, obtaining new permits, etc. Please review the EIS, all of these are clearly discussed and explained.

As explained in Section 2.7.2, the delaying the sale alternative was not analyzed in detail because it would not produce substantially different impacts from other alternatives already analyzed in detail. The environmental impacts of mining the coal later as part of an existing mine would be expected to be similar and about equal to the Proposed Action and Alternatives 2 and 3 for each LBA tract.

The EIS is not intended to be an environmental analysis of the numerous technologies that are capable of producing electricity. As stated throughout the Wright Area EIS, the EIS was prepared pursuant to the NEPA and other applicable regulations and statutes to address possible environmental and socioeconomic impacts that could result from the Wright Area coal lease applications.

As stated in Chapter 4, ongoing scientific research is working to identify the potential impacts of greenhouse gases (GHG) on global climate. Our analysis recognizes that the addition of non-carbon fueled electric generation sources could reduce future GHG emissions. Further, the addition of alternate sources of electric generation would potentially help to conserve carbon-based fuels and provide a broader portfolio of electric sources. However, the environmental effects and impacts associated with the wide variety of renewable electric generation technologies are well beyond the scope of this EIS. Individual projects associated with alternative electric generation technologies would be evaluated separately under their own NEPA process as each project is proposed and would be analyzed on their own merit. In order for an alternative energy project to come to fruition, there must first be a valid proponent to propose, support, and fund the project.

Comment Response 3: The BLM does not permit, nor authorize, mining operations and does not have the authority to regulate mining activities nor mitigate air quality impacts. As discussed in detail in Section 1.3 of the EIS, WDEQ is authorized by the Secretary of the Interior to

regulate surface coal mining operations and surface effects of mining on federal and non-federal lands within Wyoming.

Air pollution is controlled by state and federal air quality regulations and standards established under the federal Clean Air Act Amendments administered by EPA. The National Ambient Air Quality Standards (NAAQS) were established by EPA under the authority of the Clean Air Act (CAA). The Wyoming Ambient Air Quality Standard (WAAQS) for the PM_{10} annual, the SO_2 annual, and 24-hour levels are more stringent than the National Ambient Air Quality Standard (NAAQS) and are enforced by WDEQ/AQD. State implementation plans are in place to ensure that proposed actions like coal mining comply with all associated air quality regulations and criteria.

As disclosed in the EIS, large surface coal mines in the PRB have the potential to become particulate emission sources contributing to air quality degradation. As stated in Section 3.4.2.3 of the EIS, the WDEQ/AQD requires the Wyoming Powder River Basin mines to collect air quality data. The eastern Powder River Basin is one of the most intensely monitored areas in the world for air quality. As explained throughout the EIS, WDEQ/AQD has, by statute, the authority and responsibility to require mitigation for air quality impacts.

WDEQ/AQD issues permits to mine coal under the authority delegated to them by the EPA under the CAA. In Wyoming, mines in the PRB are permitted under the CAA as regulated emission sources. Permits issued by the WDEQ identify mitigation measures that the permittee must implement in order to comply with the permit. These measures, currently in place at the Wright Area mines and typically in place at other PRB mines, are described in Section 3.4.2 of the EIS. WDEQ/AQD is authorized to condition permits as necessary for mitigation. WDEQ/AQD will not permit activity that is out of compliance with the WAAQS.

Ozone is included in the EIS discussion regarding NO_X emissions since NO_X is one of the main components involved in the formation of ground level ozone. As previously discussed, EPA is the agency chiefly responsible for national air quality regulations and authorities concerning ozone, CO_2, and the development of national standards. BLM does not govern air quality standards and does not issue air quality permits.

The EIS evaluates the Prevention of Significant Deterioration (PSD) and it is addressed in Chapter 3 and 4. Section 169 of the Clean Air Act addresses visibility protection. On June 15, 2005, EPA issued final amendments to its July 1999 Regional Haze Rule. These amendments apply to the provisions of the rule and require emission controls known as Best Available Retrofit Technology, or BART, for industrial facilities emitting air pollutants that reduce visibility. As explained in the EIS, the nearest Class I PSD areas to the general analysis area for this EIS are Wind Cave National Park (about 100 miles east) and the Badlands Wilderness Area (about 150 miles east).

The EIS has been revised to include additional information regarding air quality data and visibility monitoring. Please see Section 3.4.4.1.1, 3.4.4.1.2, 3.4.4.1.3, Table 3-12, Figure 3-19, and Section 4.2.3 for analyses regarding air quality, visibility, the Regional Haze Rule, and AQRVs. The EIS clarifies that the cumulative air quality modeling did not separate PSD

increment-consuming sources from those that did consume increment. The modeling was designed to include both known and predicted sources, regardless of regulatory status. Again, BLM has no jurisdiction over the air quality permitting process.

For questions or concerns related to permitting procedures in Wyoming, please contact WDEQ, the governing agency of the coal mine permit process.

Comment Response 4: Please refer to Section 3.3.2.1.2 in the EIS regarding methane, or CBNG. BLM recognizes that CBNG is a valuable energy resource and BLM policy encourages the development of this resource, where economically feasible, in advance of coal mining. The analysis in the EIS clarifies that CBNG has been commercially produced in the PRB since 1989. The EIS discloses the release of methane as a result of mining, and that coal seams were already substantially depleted of CBNG in the vicinity of the mines in 2000. By 2005, drilling activity in the areas adjacent to the coal mines declined significantly. There has been little recent interest in drilling CBNG in this area.

The climate change and global warming analysis in Section 4.2.14.1 of the EIS identifies methane as a greenhouse gas (GHG) emission. The EIS describes the potential release of methane, both as a direct result of mining and the cumulative release of methane from activities in the PRB. Section 3.18.2 of the EIS contains estimates of GHG emissions resulting from specific mine operations at the three applicant mines as projected under the proposed actions and alternatives over the life of the actions. The estimates reflect mining and oil and gas activity based on national data scaled to activity in the PRB region.

Surface mines release methane to the atmosphere as the coal is exposed and loaded in small diluted volumes. Flaring is not feasible with surface mining operations since flaring requires the gas to be concentrated in quantities sufficient to burn, as might be possible in an underground mine. We did recognize that large volumes of methane have been put to beneficial use as a result of CBNG (coalbed natural gas) recovery in advance of mining, and that by the time the coal is mined, methane in commercial quantities has been depleted.

Comment Response 5: The information provided in your comment has been considered in the preparation of the EIS. Please review our analyses and disclosure of impacts regarding greenhouse gas emissions, global warming, climate change, cumulative effects of combustion of PRB coal by power plants, and current and future energy sources and emissions of greenhouse gases in Section 4.2.14.1, 4.2.14.2, and 4.2.14.4.

Also, please see Section 4.2.14.3 in the EIS. It addresses U.S. actions and strategies regarding GHG emissions. Potential regulatory policies to address climate change are in various stages of development at the federal, state, and regional levels. EPA is the agency chiefly responsible for the Clean Air Act and its implementation including the governing of GHG emissions as air pollutants. EPA is the agency with the authority to regulate GHG emissions from power plants and factories, not BLM. BLM does not regulate GHG emissions, nor set national standards for carbon fuel use.

BLM does not govern air quality standards and pollutants. Further, BLM does not permit, nor authorize, mining operations and does not have the authority to regulate mining operations. As discussed in detail in Section 1.3 of the EIS, WDEQ is authorized by the Secretary of the Interior to regulate and permit surface coal mining operations.

Your comment suggests that the EIS should examine a wide variety of "mitigation alternatives" with the only connection being that all the actions would, in theory, fall under the jurisdiction of an assortment of agencies within the Department of Interior. Your suggested approach fails to recognize that each project proposal is a federal action in its own right and must be evaluated in light of the effects of that action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or proponent undertakes such other actions.

The EIS addresses the environmental effects of leasing coal and the logical result that coal would be mined by adjacent operating mines. The EIS further discloses indirect emissions with the assumption that the coal will be mined and burned to produce electricity. It is beyond the scope of this EIS to analyze potential national and international regulations regarding GHGs and carbon fuel use.

Comment Response 6: Please review Section 4.2.14.1 in the EIS; it clearly describes and discusses GHGs and climate change at depth including the observed and projected effects of global warming, sea level changes, differential temperature changes, and changes to vegetation and habitat. We referenced the Intergovernmental Panel on Climate Change (IPCC) assessment throughout the cumulative impacts analysis.

As disclosed throughout the EIS, when coal is burned and used as a primary source for generating electricity, it results in the release of CO_2, a greenhouse gas (GHG). A large portion of our country's existing domestic electric generating capacity is based upon carbon-based fuels, as described in the EIS. The potential impacts of climate change represent the cumulative aggregation of worldwide GHG emissions. As noted in the EIS, many countries are even more reliant on coal for their energy needs than is the United States. More than 70 percent of the electricity generated in China and India comes from coal. Many foreign countries do not have an EPA to regulate air pollution or control emissions.

The EIS provides a meaningful context and measure of the relative significance of coal use from the proposed LBAs and overall projected PRB coal production on total GHG emissions, and the EIS recognizes the effects of historic warming on the western U.S. Please see Chapter 4 to review the complete cumulative impacts analysis. BLM analyzed the cumulative impact on the environment that results from the incremental impact of the proposed LBAs when added to other past, present, and reasonably foreseeable future actions, including GHG emissions.

Please see Section 4.2.14.2 of the EIS for our analysis regarding the cumulative effects of combustion of PRB coal by power plants. We included 1) annual CO_2 emission estimates based on PRB coal production levels, 2) annual CO_2 equivalents (CO_2e) emission estimates from coal production at all PRB mines with pending LBAs, and 3) estimated CO_2 emissions produced from

the combustion of coal produced from the Wright Area EIS coal tracts. As described in the EIS, we assumed that coal mining would proceed in accordance with permit conditions. We further assumed that this coal would be sold to consumers in response to forecasts of coal demand. Historically, the consumers have been the domestic electric utility companies although there is potential for sales outside the U.S. The coal market is open and competitive; consumers are free to choose and buy from the most cost effective suppliers in order to meet their needs.

As previously noted, in Chapter 4, we estimated the amount of GHG emissions that could be attributed to coal production as a result of leasing the proposed LBAs, as well as from the forecast coal production from all coal mines in the Wyoming PRB. Again, we assumed that all PRB coal would be used for coal-fired electric power generation. This gives an upper estimate of GHG emissions resulting from use of the coal that would be produced from the proposed LBAs and for forecast total PRB coal production. The estimate was derived by relating the portion of coal produced in the Wyoming PRB to national steam coal totals, and then applying that ratio to the total emission of GHG estimated in the U.S. as a result of coal-fired electric generation.

We have assumed that existing land and resource conditions within the analysis area have been and will continue to be affected by climate change under all alternatives including the No Action Alternative. Existing climate prediction models are not at a scale sufficient to estimate potential impacts of climate change within each analysis area. We have referenced national and regional data that is available including "The Effects of Climate Change on Agriculture, Land Resources, Water Resources and Biodiversity in the United States" (U.S. Climate Change Science Program, 2008).

An additional June 2009 report defined the relative degree of climate change effects that could potentially be experienced in the future in various regions of the United States (Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.), Cambridge University Press). The report uses two scenarios to bracket potential climate effects and separates the country into regions. The Wyoming Powder River Basin is included in the Great Plains region, which is characterized by strong seasonal climate variations. Historically, the area has been subject to prolonged drought followed by wetter conditions. Average temperature increases have been predicted in the region with the greatest changes being in the winter such that commonly very cold days would become less common and warmer wetter weather would be more common.

Under the higher heat trapping emissions scenario, temperatures are projected to increase over the next 100 years more so than under the lower heat trapping emissions scenario. The milder winters and longer growing season would be expected to favor larger numbers of insects earlier and longer into the season. The change in climate is expected to cause a shift in wild plant and animal distributions favoring those species that are better suited for the warmer wetter climates that both the lower emission and higher emission scenarios predict for the Powder River Basin. With increasing precipitation, soil erosion in drainages and sheet flow across the land surface would be expected to increase, based on assumptions.

Please see Section 3.18.2 for our site-specific analysis regarding GHG emissions. It contains estimates of GHG emissions resulting from the combined mine operations. The site-specific impacts analyzed in this EIS are based on the assumption that if an LBA tract is offered for competitive lease, a lease would be issued and mining would be permitted. We further assume that the applicant would be the lessee, and the lease would be permitted as an extension of their current mining operations. As described in Chapter 3, we estimated the change to GHG emissions under each alternative LBA configuration, including the No Action Alternative. The EIS estimates direct emissions of GHGs as a result of continued operations of the applicant mines and the proposed leasing actions. The EIS also estimates potential GHG volumes resulting from the assumed use of this coal at dispersed electric generation facilities.

As previously described, the EIS is addressing the environmental effects of leasing federal coal and the potential mining of that coal. The EIS further discloses the indirect emissions on the presumption that the coal will potentially be mined and burned to produce electricity. The EIS does not attempt to estimate the cost of GHG emissions from coal combustion at utility power plants. The EIS does not assert that the cost of GHG is zero or any particular value, as there is no known threshold or context for this value. In a regulatory structure where GHG control costs factor into electric generation costs, coal users would likely weigh these costs into capital and operating decisions. Electric generation activity is directly influenced by consumer demand. If electricity cannot be supplied to meet demand, power prices rise until the demand falls. Measures to reduce GHG emissions from coal burning are applicable at the place where the coal is consumed because the coal consumer must comply with regulatory and price constraints, and this will bear on fuel choices. Infrastructure, equipment availability, incentives, and cost also determine the potential for switching to non-carbon based electric generation. Mining the lease reserves and the continued operation of a Powder River Basin mine is not directly tied to any existing or proposed electric generation facility. Limiting one or even several points of fuel supply will not affect coal use because of the diverse group of national and international suppliers.

Finally, please review Section 4.2.14.3, which describes U.S. actions and strategies to address GHG emissions. As stated in the EIS, national policies regulating specific levels of significance have not yet been established for GHG emissions. Given the state of the science, it is not possible to associate specific actions with specific global impacts such as potential climate effects. Since there are no tools available to quantify incremental climate changes associated with these GHG emissions, the analysis cannot reach conclusions as to the extent or significance of the emissions on global climate.

As described throughout the EIS, BLM does not govern GHG emissions, air quality standards, nor pollutants. Further, BLM does not permit nor authorize mining operations and does not have the authority to regulate mining operations or the burning of coal at utility plants. The Clean Air Act requires the EPA to regulate air pollutants and develop regulations, rules, and standards for industries that emit one or more pollutants in significant quantities.

BLM has considered and addressed climate change comments that we received in a timely manner pertaining to this EIS. They are also included in our administrative record.

Comment Response 7: We have revised Section 3.11 in the Final EIS to include additional information regarding the loss of access to public lands. In general, if the LBAs are leased, the loss of access to federally administered public lands in the LBAs may extend for 20 years or more after permitting depending on individual mine plans, mine variation in coal production rates, permitting requirements, and reclamation sequence and succession. Also, please see Chapter 2. It describes and discloses in detail the length of time that would be required to recover the federal coal from each LBA. Please see Comment Response #9 for additional information regarding reclamation.

The BLM is a multiple use land management agency that also administers federal minerals, including federal coal reserves. BLM administers public lands and minerals under the policy and practice of multiple use management. The Bureau's responsibility for multiple use involves balancing an extensive diversity of resources and the potential use or development of those resources and lands as administered by BLM. Managing vast and varied resources under this mandate is a complex undertaking, particularly since the priorities set for one management activity may conflict with the priorities of another. For both BLM and FS administered public lands, the management, constraints, limitations, and prescriptions for those lands are developed through the land use planning process. The public is encouraged and invited to participate throughout the land use planning processes. The EIS identifies and explains that the proposed actions and alternatives are consistent with the BLM Buffalo Field Office and USFS land use plans.

As described in the EIS, for the lands included in the Wright Area LBAs and affiliated study areas, there are, in fact, no BLM administered surface lands. BLM does not control nor manage private surface ownership lands. Those rights and authorizations belong to the private surface land owners. As shown in Table 3-15 in the EIS, private surface ownership makes up 65.1 percent of the total acreage included in BLM's preferred alternatives. BLM will not lease coal under private lands without the consent of the qualified surface owner (43 CFR 3400.0-5(gg)).

As also indicated in Table 3-15, approximately 12,481 acres of federal surface administered by the USFS are included in the Wright Area LBA tracts under BLM's preferred alternative. As described in Section 1.6, USFS is a cooperating agency on this EIS and must consent to leasing the federal coal underlying lands that they administer before BLM can include those lands in a decision to hold a federal coal lease sale. The USFS will issue their own separate record of decision (ROD) regarding their potential consent to lease those lands. A decision to consent to lease USFS lands can be appealed within 45 days from the date that the Notice of Publication of USFS ROD is published in the Laramie Boomerang.

If USFS administered public lands are leased for coal, at the mine permit stage, USFS would include stipulations related to allowing access to TBNG lands included in existing federal coal leases. USFS does not necessarily allow the mines to close access to all public lands within the permit boundary. For human health and safety reasons, access can be closed in the areas that are currently being actively mined. The mines can officially only deny public access to National Forest System lands included in federal coal leases that are within the "active area fence" for each mine. If the mines remove publicly accessible roads from public access, they must provide alternate publicly accessible roads in that area.

The TBNG is a mixture of public and private surface lands. In some cases, USFS lands are isolated parcels surrounded by private lands that are not easily accessible to the public. Federal land exchanges can be used as a tool to help facilitate the creation of more contiguous blocks of National Forest System land, can make state land more accessible and usable to the general public, and can decrease conflicts related to crossing private land to reach public land.

From 1993 through 2000, the USFS Douglas Ranger District completed 21 land exchanges involving more than 69,000 federal acres. In exchange for these federal lands, the USFS acquired more than 46,000 acres, eliminated 12 private inholdings within federal lands, eliminated 71 isolated parcels of public lands, and gained 426.8 acres of wetlands.

From 2000 through 2010, the USFS Douglas Ranger District completed two land exchanges involving more than 5,199 federal acres. In exchange for these federal lands, the USFS acquired more than 4,918 acres, eliminated three private inholdings within federal lands, eliminated three isolated parcels of public lands, and gained 0.3 acres of wetlands.

Comment Response 8: Please see Section 3.3.2, 3.11.1, and 3.15 of the EIS. Impacts to ancillary facilities that support oil and gas production in the area are addressed in detail in those sections. The EIS identifies and discloses that, in order for coal to be mined, oil and gas development must be curtailed and development facilities and equipment must be removed prior to mining operations. As stated in Section 3.15, the pipeline owner/operator and the coal mine operator must come to agreement before any disruption, relocation or abandonment of these pipelines would occur.

For more information, please also see Section 4.1.12, 4.5.11, and Appendix D. Appendix D lists the stipulations that are included on coal leases in the Powder River Basin. These stipulations specifically address multiple mineral development and oil and gas/coal resources.

Comment Response 9: As described in the EIS, the Surface Mining Control and Reclamation Act of 1977 (SMCRA) is the federal law that regulates surface coal mining. BLM has no authority under SMCRA. BLM does not regulate or enforce reclamation of mined lands in Wyoming. The Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) regulates and monitors reclamation. Reclamation laws for coal mining in Wyoming originate from the State of Wyoming's Open Cut Reclamation Act of 1969 and the Wyoming State Environmental Quality Act of 1973, as well as from SMCRA, the federal act. These three acts together regulate coal mining.

The State of Wyoming has the overall reclamation authority and enforces the federal and state acts through the WDEQ. Within the federal coal leasing program, BLM only has the authority to make decisions regarding the potential leasing of federal coal resources. BLM does not authorize surface disturbance or permit mining operations, nor administer reclamation activities. The Office of Surface Mining Reclamation and Enforcement (OSM) and the WDEQ/Land Quality Division (LQD) are the reclamation authorities.

Long term reclamation information is provided in Section 4.1.1.1 in the EIS and includes tables that provide detailed reviews and projections of actual and projected disturbance and reclamation in the Wright subregion. This review reflects the total disturbance, including active mining and mined but unreclaimed, as well as disturbed but unavailable for reclamation due to occupation by long term structures or facilities. Please note that permanently reclaimed areas are also included in the analysis.

In particular, Table 4-2 and 4-3 in Chapter 4 of the Final EIS summarize a detailed review and projection of actual and projected disturbance and reclamation acreages through the year 2020. This review reflects the total disturbance area (including the active mining area, the unreclaimed mined area, and the area disturbed but unavailable for reclamation due to being occupied by long-term structures or facilities), as well as areas permanently reclaimed. The trend is that the acreage including active mining and mined but unreclaimed is expected to increase slowly, less than 1 percent per year, as is the acreage of land disturbed but unavailable for reclamation. The rate of permanent reclamation will be more rapid, about 4 percent per year. The ratio of total land reclamation to total land disturbance was around 30 percent in 2003, and is expected to be 45 percent by 2010, and approaching 60 percent by 2020. As of 2008, the actual ratio of total land reclamation to total land disturbance was about 38 percent (15,800 acres permanently reclaimed out of a total mine disturbance area of 41,700 acres) for the Wyoming PRB mines. Of the total unreclaimed disturbance, about 12,000 acres were unavailable for reclamation and 14,000 acres were in active mining operations. An accounting of acres disturbed to acres reclaimed for the three applicant mines in 2008 is also discussed in Chapter 3 of the EIS.

During the permitting process, the mines submit reclamation plans to WDEQ for approval. These plans are based on the individual mining company's mining progression. The WDEQ approves or rejects these plans based on the mining progression of the individual mine and the area needed for long-term facilities, sedimentation reservoirs, haul roads, diversions, and topsoil stockpiles. The reclamation plan is evaluated against the individual mine progression by the WDEQ to ensure reclamation is directly following the mining extraction process.

WDEQ has strict parameters for coal mine reclamation procedures, species compositions, final land surface contour, and environmental sustainability. SMCRA requires sufficient bonding to cover anticipated reclamation costs. When mining is permitted, WDEQ/LQD sets the bond amount for reclamation of all disturbed lands and the operator posts an acceptable bonding instrument for this amount with the State of Wyoming. The reclamation bond is not released until a minimum of ten years have elapsed from the date of final seeding and the WDEQ/LQD has determined that all reclamation verifications have occurred. Regardless of their bond release status, reclaimed lands are frequently utilized, and are often preferred, by wildlife and are commonly used for livestock grazing.

On a monthly basis, WDEQ/LQD monitors all lands within the mining permit boundary. These lands must pass requirements set by state law. Until the mines terminate their permit, the WDEQ does not require them to complete final bond release as long as contemporaneous reclamation is proceeding at the required rate and to the required standards as regulated by state and federal laws. Please note that there are several phases of bond release that mines may apply for that represents every task from replacing the backfill, to the approved contour, to placing topsoil and

permanent seeding. Therefore, a percentage assessment of lands that have been released from final bonding requirements is not an accurate assessment of "contemporaneous" reclamation.

As previously mentioned, during the interim period between initial reclamation and final bond release, land condition and status is monitored by WDEQ/LQD, and that information is publically available at their Cheyenne office. Individual coal mine annual reports are also available to the public at WDEQ/LQD offices and include additional reclamation information. OSM also prepares reports describing reclamation activities in Wyoming. Please contact their offices for further information regarding reclamation.

Comment Response 10: The EIS includes a thorough evaluation of water resources in Section 3.5, 4.2.4, and 4.2.5. Please review these sections, and in particular, see Section 4.2.4 for the groundwater cumulative impact analysis, which includes coalbed methane/natural gas development. As noted throughout the EIS, SMCRA and Wyoming state law require that the surface coal mine operator provide the owner of the affected water right with water of equivalent quantity and quality.

There are a number of specific studies under SMCRA and Wyoming law that would be done and would bear on the approval of a permit to mine any Wright Area LBA lands that might be leased. Once the mining plan has been developed, the mine would then submit a mine permit application to WDEQ. A Cumulative Hydrologic Impact Assessment (CHIA) would then be developed by the WDEQ/LQD to examine how the mining of the LBA, along with any other already approved mining, would affect groundwater. The CHIA considers recharge contribution and a system of wells to monitor groundwater would also be specified at that time. The management of surface water flows during mining, as well as the restoration of surface water flow systems post mining, is specified in each mining permit. CHIAs are available for the public to review at the WDEQ/LQD.

The cumulative water modeling study, completed by BLM in December 2009 as part of the Powder River Basin Coal Review, provides additional information on surface and groundwater resources and effects by regional development activities. To review the report, please access the following link:
http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/prbdocs.html

For the purposes of identifying and disclosing potential impacts, the EIS assumes that: 1) each LBA is offered for lease, 2) that the successful lessee is the applicant mine, and 3) that the mine applies for, and is granted, a permit to mine the LBA in a manner similar to the mining that is already permitted on other lands at the applicant mine.

Comment Response 11: If the decision is made to offer an LBA for lease and hold a coal sale, prior to proceeding with any lease offer as a result of processing the Wright Area LBAs, BLM will ensure that the provisions of the Mineral Leasing Act and the Federal Coal Leasing Amendments are complied with. A lease cannot be issued to any entity that would result in that

entity exceeding the acreage limitations. As described in Section 1.6 of the EIS, the Department of Justice will be consulted prior to the issuance of a lease.

Comment Response 12: The Wright Area EIS wildlife surveys were carried out in accordance with established agency guidelines and protocols. BLM prepared and provided the Wright Area EIS, Biological Evaluation, and Biological Assessment to USFWS, USFS, and the Wyoming Game and Fish Department for their review. BLM has improved and revised the wildlife analyses in the FEIS based on comments received from the professional wildlife biologists at these agencies.

Please see Section 3.10.5.1 in the EIS for the sage-grouse analysis. The sage-grouse is designated as a BLM Sensitive Species and as a USFS Region 2 Sensitive Species and Management Indicator Species, as additionally analyzed and described in detail in Appendix H. On March 5, 2010, the Service announced its decision to add the Greater sage-grouse to the list of Candidate species under the ESA. USFWS found that listing the Greater sage-grouse was warranted but precluded by higher priority listing actions. BLM identifies Greater sage-grouse as a Candidate species in the EIS.

The U.S. Fish and Wildlife Service (USFWS) is responsible for the administration of the Endangered Species Act. USFWS is the lead agency that manages threatened and endangered species and, through the Section 7 process, consults with other agencies in how proposed projects may impact and affect listed species. All federal agencies have a responsibility under Section 7(a)(1) of the Endangered Species Act to conserve federally listed threatened and endangered species. BLM is partnered with USFWS in fulfilling our Section 7 consultation obligations and responsibilities. We continue to work with USFWS in order to address concerns and provide any additional information needs. Section 7 consultation will be completed before a decision is made on the Wright Area EIS proposed coal leases.

As explained in the EIS, Wyoming has been exceptionally proactive in the management and conservation of its Greater sage-grouse. In 2007, Wyoming Governor Dave Freudenthal commissioned a Statewide Sage-grouse Implementation Team (SGIT), which emerged from the Governor's 2007 Sage-grouse Summit. On March 17, 2008, the Implementation Team preliminarily identified and mapped recommended sage-grouse core breeding areas in Wyoming in an effort to better understand what types of habitat the grouse prefer and what areas should be protected. The Core Population Strategy for the state of Wyoming is designed to maintain habitats and viable populations of sage-grouse in areas where they are most abundant. SGIT delineated approximately 40 areas around the state with the objectives of maintenance and enhancement of sage-grouse habitats and populations within those focal areas. The polygons were delineated by evaluating habitats within a four mile radius of selected sage-grouse leks in high lek-density areas. The SGIT continues to refine the delineated core population areas based on updated information and consultation with state and federal agencies.

On August 1, 2008, the Governor of Wyoming issued an executive order regarding sage-grouse core area protection. According to the executive order, state agencies are directed to work with federal agencies and landowners to maintain and enhance sage-grouse habitats and populations. The BLM Wyoming State Office is in the process of developing a statewide sage-grouse

management policy and has incorporated sage-grouse focus areas based on the core population area concept in the draft management policy.

None of the lands analyzed in the Wright Area EIS are located within the designated sage-grouse core population areas as mapped and identified by Wyoming's SGIT. Additionally, none of the lands evaluated in the EIS are within any of BLM's sage-grouse management focus areas.

Requirements to protect wildlife during mining operations are addressed as part of the existing mining and reclamation plan for each individual mine. BLM has no authority over these plans. If an LBA is leased and mined, the coal company, in concert with the USFWS, will develop a USFWS-approved mitigation plan to address and mitigate wildlife issues, including sage-grouse, before any surface disturbing activities can occur. Administered by WDEQ, requirements would be stipulated in the mining and reclamation plan amendments if the tract is leased, and before the tract would be mined.

Finally, WDEQ has strict parameters for coal mine reclamation procedures, species compositions, final land surface contour, and environmental sustainability. SMCRA requires sufficient bonding to cover anticipated reclamation costs. When mining is permitted, WDEQ/LQD sets the bond amount for reclamation of all disturbed lands and the operator posts an acceptable bonding instrument for this amount with the State of Wyoming. The reclamation bond is not released until a minimum of ten years have elapsed from the date of final seeding and the WDEQ/LQD has determined that all reclamation verifications have occurred. Regardless of the bond release status, reclaimed lands are frequently utilized, and are often preferred, by wildlife.

Comment Response 13: The USFWS is responsible for the administration of the Endangered Species Act. It is the mandate and responsibility of the Service to provide guidance to federal agencies in how to avoid adverse impacts to protected species and habitats. USFWS is currently monitoring trust resources to see how they are affected by changing climate. The USFWS Endangered Species Program is working to develop interim guidance regarding relevant aspects of ESA implementation involving climate change with a focus on how to evaluate and include the best available scientific information on climate change in the decision making process.

BLM prepared and provided the Wright Area EIS wildlife analyses, Biological Evaluation, and Biological Assessment to USFWS, USFS, and the Wyoming Game and Fish Department for their review. BLM has improved and revised the wildlife analyses in the FEIS based on comments received from professional wildlife biologists at these agencies.

Through the Section 7 process, the Service consults with agencies in how proposed projects may impact and affect listed species. All federal agencies have a responsibility under Section 7(a)(1) of the Endangered Species Act to conserve federally listed threatened and endangered species. BLM is partnered with USFWS in fulfilling our Section 7 consultation obligations and responsibilities. BLM will continue to coordinate and consult with USFWS on listed species and will work to ensure that our projects do not adversely affect nor jeopardize threatened and endangered species. Section 7 consultation will be completed before a decision is made on the Wright Area EIS proposed coal leases.

Section 4.2.14.1 in the EIS describes and discusses GHG and climate change at depth including the observed and projected effects of global warming. Section 4.2.14.3 in the EIS addresses U.S. actions and strategies regarding GHG emissions. Potential regulatory policies to address climate change are in various stages of development at the federal, state, and regional levels. EPA is the agency chiefly responsible for the Clean Air Act and its implementation including the governing of GHG emissions as air pollutants. EPA is the agency with the authority to regulate GHG emissions from power plants and factories, not BLM. BLM does not regulate GHG emissions, nor set national standards for carbon fuel use. It is very likely that various GHG emission limits will be established, enacted, and regulated by EPA in the future. As explained in the EIS, coal-fired power plants would have to comply with any new EPA standards, rules, or regulations for emission controls. Regulatory limits on emissions by coal-fired power plants have been and will likely continue to be enacted by EPA in the future.

Again, BLM does not govern GHG emissions, air quality standards, pollutants, nor air quality mitigation. Further, BLM does not permit, nor authorize, mining operations and does not have the authority to regulate mining operations nor the burning of coal. The Clean Air Act requires the EPA to regulate air pollutants, and they are required to develop regulations, rules, and standards for industries that emit one or more pollutants in significant quantities.

Comment Response 14: As directly stated by Secretary Salazar, "The fact remains that oil and gas and coal are a very important part of our energy portfolio now and they will continue to be an important part of our energy portfolio in the future . . . Fossil fuels and clean technology coal will have to be part of the mix if the U.S. is able to have enough energy in the future." Secretary Salazar also stated, "I don't want you all here to be scared, those of you here who are supportive of coal and oil and natural gas. At the end of the day, if we are going to be an energy independent nation, it's going to take all of us and all of you in coal and oil and those of us who want to harness the wind—all of us." His speech is available at: http://www.farmandranchguide.com/articles/2009/11/18/ag_news/regional_news/news2.txt

As stated in the EIS, approximately 92 percent of the total coal that is mined in the U.S. is used for generating electricity. Currently, coal-fired electric generating plants are the cornerstone of the nation's central power configuration. Electricity is important to the country's security and economy. Many other states rely on Wyoming for coal reserves in view of the fact that Wyoming coal is used to generate electricity in 36 states.

As described in Section 4.2.14.4 of the EIS, the key determinant of energy consumption is population. The population in the U.S. has increased by about 20 percent and energy consumption by a comparable 18 percent since 1990, with variations in energy use per capita depending on factors such as weather and the economy. As human population and activities have increased, carbon-based fuels have been used to provide for these additional energy needs. To meet the nationwide consumer demand and ever-growing requirement for energy, coal is burned in power plants to produce electricity.

We revised the Final EIS to include additional information regarding the projected electric generation portfolio of the United States. Please see Section 4.2.14.4. Studies have indicated

that even with a considerably more optimistic projection for renewable sources, coal use continues to be projected as the largest portion of the domestic electric fuel mix until at least 2035. Other energy sources for electric power have been and continue to be developed, but not to the extent that they can instantaneously replace coal as a fuel for electrical generation. At this time, there is not enough alternative energy sources developed and in place to fill the gap that would be left if coal was removed as a fuel source for electrical generation in the U.S.

America's electrical power demand results from electric use decisions made by individuals and businesses. The coal market is open and competitive; consumers are free to choose and buy from the most cost effective suppliers in order to meet their needs. BLM leases federal coal to private coal companies that develop and supply coal primarily as a fuel for electric utility companies to generate electricity in response to the electric demand of the American people. BLM recognizes that coal leasing demand is a direct indication of electric generation activity, which in turn is directly influenced by consumer demand. If the demand for coal decreases nationwide, then coal production and coal mining would decrease.

A Record of Decision (ROD) shall be issued for each LBA addressed in this EIS. In the ROD, BLM will reach a decision as to whether to reject the LBA or competitively offer a federal coal tract in response to the LBA. The ROD will address public interest considerations made in the decision.

As described throughout Chapter 1, the purpose of this EIS is to analyze and disclose the potential environmental impacts and effects from the proposed leasing of six maintenance tracts of federal coal in the Wright Area of the Wyoming Powder River Basin. Although leasing these tracts would not authorize mining operations on those lands, the EIS evaluates the potential impacts of mining the tracts because mining is a logical consequence of issuing a lease for a maintenance tract of federal coal. Please see Section 3.19 in the EIS for the analysis regarding irreversible and irretrievable commitments of resources.

The BLM is a multiple use land management agency that also administers federal coal leasing and the management of other federal minerals. BLM does not solicit, importune, nor seek out project proposals regarding coal, uranium, oil, gas, wind, solar, or any other energy-type resource. Rather, an applicant, lease holder, and/or company will propose a project or submit an application to BLM if their proposed action includes BLM-administered public lands and/or federal minerals. BLM manages these actions and proposals through leases and rights-of-way where public lands and/or minerals are concerned. Again, applicants, lease holders, and companies are the ones that propose development projects to BLM, not the other way around.

Wind power and other alternative energy development projects potentially depend on available transmission capacity to link the project sites to the national grid. There are a number of high wind potential areas in Wyoming where the transmission infrastructure and powerline capacity is being enhanced and expanded in order to support wind power development. Of special note, BLM has an active renewable energy program and has recently created the Wyoming BLM Renewable Energy Coordination Office to facilitate the processing of renewable energy projects.

In order for an alternative energy project or any other project to come to fruition, as previously explained, there must first be a valid proponent to plan, develop, and propose the project to BLM, i.e. applicant, lessee, or company. As with any project, alternative energy projects would be evaluated separately under their own National Environmental Policy Act (NEPA) process. Each proposed project would be analyzed independently, on its own merit.

BLM is a land management agency and, as such, does not have the means to develop "clean coal" technologies. However, the mission of the Department of Energy (DOE) is to promote America's energy security through reliable, clean, and affordable energy. As noted by the DOE's Office of Fossil Energy, fossil fuels supply 85 percent of the nation's energy and, therefore, they are charged with researching and developing a number of high priority projects including pollution-free coal plants, carbon capture and sequestration, coal gasification, and new combustion turbine technology. For further information, please review their website at: http://fossil.energy.gov/programs/powersystems/index.html

As described throughout the EIS, BLM does not govern GHG emissions, air quality standards, nor pollutants. Further, BLM does not permit, nor authorize, mining operations and does not have the authority to regulate mining operations or the burning of coal. The Clean Air Act requires the EPA to regulate air pollutants and develop regulations, rules, and standards for industries that emit one or more pollutants in significant quantities.

Comment Response 15: Carbon sequestration is addressed in Section 4.1.1.2.5, 4.2.14.3, and 4.2.14.4 of the EIS.

Comment Response 16: Please see Section 4.2.14.5 in the EIS for the analysis regarding combustion by-products. Black carbon is a general term applied to various carbonaceous products that have not completely combusted. The WDEQ/AQD monitors and regulates coal combustion facilities in Wyoming. WDEQ enforces regulations on particulate emissions from coal combustion facilities at or above the standards set by the EPA. The Clean Air Act requires the EPA to regulate air pollutants and develop regulations, rules, and standards for industries that emit one or more pollutants in significant quantities.

Comment Response 17: Please review Section 4.2.14.1 in the EIS; it clearly describes and discusses GHG and climate change at depth including the observed and projected effects of global warming, sea level changes, differential temperature changes, and changes to vegetation and habitat.

Local human health impacts from mining in the PRB are described in Section 3.18.1.1 in the EIS. However, the tools necessary to effectively quantify the effects on global human health due to increased CO_2 levels from a specific activity, like the mining of an LBA tract in Wyoming and the combustion of that particular source of coal, are not currently available.

Comment Response 18: Please review Section 4.2.14.1 in the EIS; it clearly describes and discusses GHG and climate change at depth including the observed and projected effects of global warming, sea level changes, differential temperature changes, and changes to vegetation and habitat.

The tools necessary to quantify incremental effects on oceans due to increased CO_2 levels for specific activities, like the mining of an LBA tract, are not available. Consequently, impact assessment of effects of specific anthropogenic activities cannot be performed. Additionally, specific levels of significance have not yet been established. Therefore, potential global analysis of ocean acidification in this EIS is limited to accounting and disclosing factors that contribute to GHG levels. To the extent that emission data were available or could be inferred from representative type data, we have identified potential GHG emissions that could result from the development of a proposed LBA, as well as emissions that could result from selection of the No Action Alternative.

Comment Response 19: Ozone has been included in discussions on emissions of nitrogen oxide, NO_X, since it is one of the main components involved in the formation of ground level ozone. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit NO_X and volatile organic compounds (VOC) that help to form ozone. Ground-level ozone is the primary constituent of smog. Sunlight and hot weather can cause ground level ozone to form in harmful concentrations in the air. As a result, it is known mainly as a summertime air pollutant. Many urban areas tend to have high levels of ozone; rural areas can also have increased ozone levels.

Under the Clean Air Act (CAA), EPA has set protective health-based standards for ozone in the air we breathe. Prior to May 27, 2008, the National Ambient Air Quality 8-hour Standard for ozone was 0.080 ppm (157 micrograms per cubic meter--$\mu g/m^3$). In May of 2008, EPA revised the 8-hour standard to 0.075 ppm (147 $\mu g/m^3$). The EPA proposed a new primary and secondary ozone standard in the Federal Register on Tuesday Jan. 19, 2010. The final standard is expected to be issued by August 31, 2010. The new primary standard was proposed as a daily maximum 8-hour average in the range of 0.060 to 0.070 ppm. There are two ozone monitoring stations currently available in the PRB. According to the EPA AirData website, ozone levels have been monitored in the PRB since 2001.

As explained throughout the EIS, the WDEQ/AQD requires the PRB mines to collect air quality data. The eastern PRB is one of the most intensely monitored areas in the world. According to EPA AirData, there are six total suspended particulate (TSP) monitors, five $PM_{2.5}$ (particulates smaller than 2.5 microns in diameter) monitors and 36 PM_{10} (particulates smaller than 10 microns in diameter) monitors in the Wyoming portion of the PRB. Data for TSP dates back to 1980 and data for PM_{10} dates back to 1989. Approximately 57,000 TSP samples had been collected through 2004. Approximately 47,550 PM_{10} samples had been collected through 2007. Information about the regulatory framework, the monitoring network, and PM_{10} concentration trends since monitoring began are included in Appendix F of the EIS.

The federal standard for particulate matter was measured as TSP until 1987. This measurement included all suspendable dust (generally less than 100 microns in diameter). In 1987, EPA changed from a TSP-based standard to a PM_{10}-based standard. In 2006, EPA again revised the air quality standards for particulate matter by changing the 24-hour fine particle standard from the previous level of 65 $\mu g/m^3$ to 35 $\mu g/m^3$ and revoked the annual PM_{10} standard of 50 $\mu g/m^3$. EPA retained the existing annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ and the 24-hour PM_{10} standard of 150 $\mu g/m^3$. These revisions took effect on December 18, 2006. The current federal ambient air standards are shown in Chapter 3 of the EIS. Wyoming added the PM_{10} standard in 1989. Even with the evolution of state and federal small-size particulate standards, TSP is still monitored in some PRB locations as a surrogate for PM_{10} and as an indication of overall atmospheric levels of particulate matter.

The Task 1A Report for the PRB Coal Review documents the modeled air quality impacts of operations during the baseline year using actual emissions and operations for that year. Emissions from minor sources were estimated due to unavailability of actual emissions data. The baseline year analysis evaluated impacts both within the PRB itself and at selected sensitive areas surrounding the region. The analysis specifically looked at impacts of coal mines, power plants, CBNG development, and other development activities.

As discussed in Chapter 3 of the EIS, modeling tends to over-predict the 24-hour impacts of surface coal mining and, as a result, WDEQ/AQD does not consider short-term PM_{10} modeling to be an accurate representation of short-term impacts. In view of this, a memorandum of agreement between WDEQ/AQD and EPA Region VIII, dated January 24, 1994, allows WDEQ/AQD to conduct monitoring in lieu of short-term modeling for assessing coal mining-related impacts in the PRB. This agreement also requires Wyoming to implement "Best Available Work Practice" mitigation measures at any mine where an exceedance of the PM_{10} and $PM_{2.5}$ NAAQS has occurred. The monitored exceedances at surface coal mines in the Wyoming PRB and the measures that WDEQ/AQD has implemented or is proposing to implement to prevent future exceedances of the PM_{10} NAAQS are addressed in detail in Chapter 3 of the EIS.

It should be noted that WDEQ/AQD issues the permits to mine coal in Wyoming under the authority delegated to them by the EPA under the Clean Air Act (CAA). Wyoming mines in the PRB are permitted under the CAA as regulated emission sources. WDEQ permits identify mitigation measures that the permittee must carry out in order to comply with the permit. These measures are currently in place at the Wright Area mines. The WDEQ/AQD conditions permits to provide necessary mitigation. The WDEQ/AQD has stated clearly that they cannot issue any permit that violates ambient air quality standards.

Comment Response 20: Please review Section 4.2.14.5 in the EIS for the analysis regarding mercury from coal combustion. We disclose adverse health effects caused by mercury, bioaccumulation in the food web, and other issues. An estimate of the percentage of global mercury emissions contributed by the three applicant mines is included.

The estimated percentage of the annual total global anthropogenic mercury emissions from burning all of the coal produced from the Wyoming PRB, as well as from the three applicant

mines, is included in Section 4.2.14.5. Given the mines' projected future levels of production under the considered alternatives, the additional years of mercury emissions attributable to burning the coal produced by the three applicant mines are also included with the caveat that the uncertainties about future regulatory requirements and the use of the coal mined from the Wright Area LBA tracts make it difficult to project the impacts of mercury emissions that would potentially be produced from burning the coal included in these tracts.

Over the past decade, EPA has been focused on addressing environmental and human health mercury risks. EPA found that overall U.S. mercury air emissions have been reduced by 45 percent since 1990. In 2009, EPA estimated that mercury emissions from domestic coal-fired power plants accounted for about one percent of the global total. Coal-fired boilers are required to have control devices to reduce the amount of emissions that are released into the atmosphere. The use of air pollution control equipment at power plants in the U.S. has resulted in fewer emissions but has also increased the amount of solid residues.

Table 4-40 summarizes how the various continents contributed to the worldwide anthropogenic mercury emissions in 2004. As shown, the U.S. anthropogenic mercury emissions were estimated to account for about three percent of the global total. EPA estimates that 83 percent of the mercury deposited in the U.S. originates from international sources outside the country, with the remaining 17 percent coming from the U.S. and Canada.

As described throughout the EIS, BLM does not govern coal-fired power plant emissions, air quality standards, nor pollutants. BLM does not permit, nor authorize, mining operations and does not have the authority to regulate mining operations or the burning of coal. The Clean Air Act requires the EPA to regulate air pollutants and to develop regulations, rules, and standards for industries that emit one or more pollutants in significant quantities.

Comment Response 21: Please refer to Section 3.4.4.2 in the EIS for the lake acidification analysis. As noted in the EIS, USFS has been monitoring air quality in the Wind River Mountain Range in Wyoming since 1984 and is seeing a general trend of decreasing sulfates. We also address acid rain in Section 3.4.3.2, 3.4.4.2.1, and 4.2.14.2 of the EIS.

To help reduce acid rain, EPA implemented a program to reduce releases of SO_2 and other pollutants from coal-fired power plants. The first phase began in 1995 for SO_2 and targeted the largest and highest emitting power plants. The second phase, started in 2000, set tighter restrictions on smaller coal-, gas-, and oil-fired plants. Scientists predict that the decrease in SO_2 emissions required by the Acid Rain Program will significantly reduce acidification. Regulatory limits on emissions by coal-fired power plants have been and will continue to be administered and implemented by EPA.

In a 2002 USGS analysis (USGS Fact Sheet-038-02), Appalachian and Illinois Basin coals supplying a Kentucky power plant were found to contain 2.5 to 3.5 percent sulfur. In the same study, Powder River Basin coal supplying an Indiana power plant was found to contain 0.23 to 0.47 percent sulfur. The study indicated that PRB coal contained approximately 8 times less sulfur than coals being used from the Appalachian and Illinois Basins. As explained in Chapter

4 of the EIS, one of the reasons that PRB coal competes well in the coal market is because of its low sulfur content and value in helping to lower SO_2 pollution from coal-fired power plants.

Comment Response 22: Please see Section 3.6 in the EIS for the alluvial valley floors (AVFs) analysis. It is BLM policy to not lease lands that could not be permitted for mining under Section 510 of the Surface Mining Control and Reclamation Act (SMCRA). For stream-laid deposits that could possibly be AVFs, we ask for comment from WDEQ/LQD as to whether these areas could be mined and reclaimed in accordance with WDEQ/LQD and SMCRA regulations. If WDEQ provides a preliminary finding that the AVF is significant to farming and that protection of the AVF precludes mining, BLM will not lease those lands. Neither the WDEQ nor OSM, both cooperating agencies on this EIS, identified additional areas as potential AVFs that would be unsuitable for mining.

Comment Response 23: Please see Section 3.7 in the EIS for the wetlands analysis and to review site-specific wetlands and restoration information. As stated in the EIS, the U.S. Army Corps of Engineers (COE) requires mitigation of all impacted jurisdictional wetlands in accordance with Section 404 of the Clean Water Act. As described in the EIS, wetlands are restored under the jurisdiction of the COE. There are special required permitting procedures to assure that after mining, there would be no net loss of jurisdictional wetlands.

If a lease is issued, a formal wetland inventory is completed and submitted to the COE for verification as part of the permitting process. COE reviews all surface coal mining and reclamation permits. For any LBA tract that is leased, restoration of jurisdictional wetlands would be required, and consultation with the U.S. Army Corps of Engineers (COE) would be completed during the permitting process.

COE is the agency with the authority to approve plans for wetland restoration and the number of acres to be restored. COE considers the type and function of each jurisdictional wetland that will be impacted and may require restoration of additional acres if the type and function of the restored wetlands will not completely replace the type and function of the original wetland. The wetland mitigation plan, approved by COE, then becomes part of the WDEQ/LQD mining permit. WDEQ/LQD is the agency that permits mining operations and has authority to enforce mining regulations; they can require the restoration of some non-jurisdictional wetlands depending on the values associated with the wetland. WDEQ requires restoration of playas if they have hydrologic significance. Reclaimed wetlands are monitored using the same procedures used to identify pre-mining jurisdictional wetlands.

Naturally occurring wetland areas within the general Wright analysis area and, generally speaking, in the overall Wyoming PRB, are typically associated with the presence of surface water and shallow groundwater that exists within alluvial deposits. They are generally thin, very limited in areal extent, and are closely associated with drainage channels. Riverine, palustrine-type wetlands are the most common type and are typically defined by their close association with drainage channels. These wetland areas occur sporadically along the channels and banks and are generally supported by periodic, seasonally-occurring flow events that recharge the alluvial

deposits. Wetland areas and other waters of the U.S. also occur within naturally-occurring playas and depressions, as well as stockponds built within the drainages; however, those features are also strongly associated with the presence of surface water rather than groundwater. Of particular note, as described in the EIS, all the streams in the general Wright analysis area are naturally ephemeral.

Shallow groundwater tables in the general Wright analysis area are predominantly associated with alluvial deposits and are therefore extremely limited in both occurrence and areal extent, and typically exist only along the ephemeral drainages. Once the drainages that have been disturbed by mining are reclaimed in order to restore their pre-mining essential hydrologic functions, the shallow alluvial deposits that were replaced, as required by mine permit, will resaturate. Reestablishment of a shallow alluvial groundwater table and associated wetland areas will be dependent upon the occurrence of ephemeral streamflow events.

As disclosed in the EIS, during the mining and reclamation period when the drainages and playa areas are disturbed, there is a temporary loss of wetlands. Monitoring efforts conducted by the mines have observed that surface runoff and sediment control structures (i.e. reservoirs and diversion channels) potentially act as seasonal wetland areas at times for wildlife. As previously mentioned, complete and timely reclamation of wetland areas that are disturbed by surface coal mining in the PRB is required by the U.S. Army Corps of Engineers and the WDEQ.

Comment Response 24: The USFWS is responsible for the administration of the Endangered Species Act (ESA). It is the mandate and responsibility of the Service to provide guidance to federal agencies in how to avoid adverse impacts to protected species and habitats. Through the Section 7 process, the Service consults with agencies on how proposed projects may impact and affect listed species. All federal agencies have a responsibility under Section 7(a)(1) of the ESA to conserve federally listed threatened and endangered species.

BLM recognizes that Ute Ladies'-tresses orchid (ULT) is listed under the ESA as a Threatened species. Please see the Biological Assessment in Appendix G of the EIS for the detailed analyses regarding ULT. The Wright Area mines have conducted multiple ULT surveys over multiple years according to the guidelines that were written and provided by USFWS. The Service developed these guidelines in concert with professional biologists, botanists, and ecologists that were knowledgeable about this species. BLM prepared and provided the Wright Area EIS, Biological Assessment (BA), and Biological Evaluation (BE) to USFWS and USFS for their review. BLM has improved and revised the EIS, BA, and BE based on their reviews.

BLM is partnered with USFWS in fulfilling our Section 7 consultation obligations and responsibilities. BLM will continue to coordinate and consult with USFWS on listed species and will work to ensure that our projects do not adversely affect nor jeopardize threatened and endangered species. Section 7 consultation will be completed before any decision is made on the Wright Area EIS LBAs.

Comment Response 25: You state in your comment letter that Canada lynx and piping plover use lands in the PRB mining area. Unless you have direct species observation information to contribute, your comment is erroneous. If you are in possession of observation data or verified, legitimate distribution information regarding these species, please contact the USFWS Ecological Services in Cheyenne, Wyoming immediately as they would be highly interested in any valid data that you may have.

The USFWS is responsible for the administration of the Endangered Species Act (ESA). It is the mandate and responsibility of the Service to provide guidance to federal agencies in how to avoid adverse impacts to protected species and habitats. Through the Section 7 process, the Service consults with agencies on how proposed projects may impact and affect listed species. All federal agencies have a responsibility under Section 7(a)(1) of the ESA to conserve federally listed threatened and endangered species.

As described in the EIS, see Section G-4.0 of the Biological Assessment for the detailed analyses regarding the status of Threatened and Endangered species in Campbell County where the Wright Area mines are located. As explained in the EIS, USFWS biologists have used the best scientific information available to formulate a list of Threatened and Endangered (T&E) species that occur in or may be affected by proposed projects in Campbell County. Updated in March, 2010, the list clearly shows one species that is currently recognized as Threatened (Ute Ladies'-tresses), and one species that is recognized as Endangered (Blowout Penstemon). Please contact the USFWS Ecological Services regarding any issues that you may have with the T&E species list that the Service's professional biologists prepared for Campbell County.

BLM prepared and provided the Wright Area EIS, Biological Assessment (BA), and Biological Evaluation (BE) to USFWS and USFS for their review. BLM has improved and revised the EIS, BA, and BE based on their reviews.

BLM is partnered with USFWS in fulfilling our Section 7 consultation obligations and responsibilities. BLM will continue to coordinate and consult with USFWS on listed species and will work to ensure that our projects do not adversely affect nor jeopardize threatened and endangered species. Section 7 consultation will be completed before any decision is made on the Wright Area EIS LBAs.

Comment Response 26: Please refer to Section 3.3.2.1.2 in the EIS regarding methane, or CBNG. BLM recognizes that CBNG is a valuable energy resource and BLM policy encourages the development of this resource, where economically feasible, in advance of coal mining. The EIS acknowledges that much of the CBNG resources have already been recovered by existing oil and gas operators. CBNG has been commercially produced in the PRB since 1989. By 2005, drilling activity in the areas adjacent to the coal mines had declined significantly. The EIS points out that there has been little recent interest in drilling CBNG in the general Wright analysis area.

Comment Response 27: Please see our extensive cumulative impacts analysis in Chapter 4 of the EIS. Over 100 pages in length, our analysis is rigorous and comprehensive.

The Powder River Basin (PRB) Coal Review began in 2003. The Review's purpose was to evaluate the current condition of environmental and socioeconomic aspects in the PRB for a base year, to project reasonably foreseeable development in future years, and to develop models as well as other quantitative and qualitative tools to estimate future effects on environmental and socioeconomic aspects. The PRB Coal Review is not a NEPA document. It is a planning tool, a set of environmental impact analysis tools, and, when maintained through the years, is a method to calibrate development projections and related estimation of effects.

The Coal Review products were delivered and posted for public access in 2005 and 2006. Several of the initial 2005 and 2006 reports have been updated. The 2010 air quality modeling report has been supplemented by adding 2015 modeling and, most recently, 2020 modeling. BLM has also tracked annual development activity and has updated that work through 2008; the 2009 data will be added as it becomes available. With the 2009 completion of the groundwater model and the 2020 air quality modeling work, the reports have been issued and incorporated into the Wright Area Final EIS cumulative analysis. In addition, EPA specifically commented that the PRB Coal Review studies were used effectively in the Wright Area EIS discussion of the cumulative environmental consequences.

The Coal Review is a dynamic, expanding body of information; new data is added continuously as it becomes available. The Review has been available to the public since 2006 and was the subject of an open house in May of that year to explain and demonstrate the modeling and report products. The Review is available online at:
http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/ prbdocs.html

Modeling and report updates and revisions are posted to the website as they are completed, and, when used as a tool for cumulative impact analysis or planning, the latest task report data and results are used. BLM recognizes that the PRB Coal Review is not the only source for cumulative impact analysis, which is why land use plans, WDEQ's Cumulative Hydrologic Impact Assessments, and other sources and tools are used in addition to the Coal Review.

Connected actions have also been addressed in Chapter 4. As previously discussed, this chapter addresses current or planned development in the Powder River Basin (PRB) and describes PRB cumulative development and the cumulative environmental consequences of that development. Both low and high production scenarios with projections to the year 2020 are discussed. Past, present, and reasonably foreseeable development and the cumulative environmental consequences of that development are also detailed. The years 2010, 2015, and 2020 were selected for the analysis of the direct, indirect, and cumulative impacts in Chapter 4. This is the duration of the expected production as related to the LBA coal reserves.

Your comment suggests that the EIS should examine a wide variety of actions with the only connection being that all the actions are under the jurisdiction of the Department of the Interior (DOI). Your suggested approach fails to recognize that each of these proposals are federal actions in their own right, and must be evaluated in light of the effects of that action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

The EIS addresses the environmental effects of leasing coal in the PRB and the logical result that the coal would potentially be mined by adjacent operating mines. The EIS further discloses indirect emissions with the assumption that coal would be mined and burned to produce electricity. It is beyond the scope of this EIS to analyze all the DOI-authorized projects and proposed activities that occur in the United States.

Comment Response 28: To be clear, the Powder River Basin (PRB) Coal Production Region is a coal production region. Decertification of the region recognized that the PRB was expected to continue as a coal production region, but that the leasing would be primarily for maintenance of production at already existing mines. In 1990, the Powder River Regional Coal Team (RCT) and BLM recognized that the PRB had become a mature coal production region where the leasing interest would not reflect leasing for reserves to commence a new mining venture, but, rather, the coal resources would be sought to replace reserves depleted by production at existing mines.

Coal leasing in the PRB had operated as a federal coal production region under the definition at 43 CFR 3400.5, with leasing addressed under the regional leasing process as described under 43 CFR 3420, through the 1980s. Many of the federal coal production regions were decertified in the later 1980s, in large part because of a decline of interest in leasing federal coal (64 FR 52240). However, many of the Wyoming PRB mines had depleted their original leases during the 1980s, and there was a recognized need for replacement reserves in order to maintain production at these mines.

In 1989, public comment was requested on partially or totally decertifying the PRB. While most comments were supportive, three parties expressed concern that decertification and the LBA process would lead to leasing abuse and restricted public involvement. In 1990, based on the advice of the RCT, BLM decertified the region. However, in light of concerns raised by the public, certain conditions of the decertification were established, in part, based on the RCT's advice: 1) the region was decertified for production maintenance leasing, 2) the RCT would remain active to guide leasing, 3) new mine starts or expansions would be considered on a case by case basis, and 4) operating guidelines for LBAs would be adopted.

In a region that is decertified, BLM is able to consider leasing by application (LBA) under the rules at 43 CFR 3425. The RCT has met about once each year since the decertification. BLM has presented all lease by applications to the RCT and has considered their advice on how to proceed with those applications. LBAs have been rejected by BLM since decertification, consistent with public comment at RCT meetings, and RCT advice.

Decertifying the PRB recognized the need for a production maintenance leasing mechanism. Decertifying the PRB did not cause LBAs to occur, but recognized the need that existed at the time of decertification, and continues to exist as evidenced with the Wright Area LBAs and other coal lease applications.

You are correct that production of PRB coal has increased steadily since decertification. Part of this growth is due to an increase in the demand for electric power and the related increase in demand for steam coal as a fuel for low cost electric generation. There are also cost (mining and

reclamation) advantages that have favored PRB coal over other domestic coal regions as well as the low sulfur content of PRB coal, which results in cost-effective air pollution control.

The production increase has been made with no new mining operations opening since decertification, although several of the operations have consolidated. As shown in Figure 4-2 in the EIS, leasing under the LBA process has essentially been at the same rate as reserves existing before decertification have been being depleted. This level of leasing activity remains consistent with the 1990 decertification action.

Production maintenance leasing does indeed define a leasing level. BLM has managed leasing to assure that the rate of new reserves being leased matches the rate of reserve depletion through production. This avoids reserves being offered at speculative value while balancing a reserve base to allow coal producers to maintain production capacity (equipment and employees).

The lease application is submitted in order to identify those lands that the applicant has identified as needed to maintain production at an existing mine. BLM formulates alternatives (Alternatives 1 and 2 in this EIS) that may include more or less lands than are included in the application. Under these alternatives, BLM is able to reconfigure the tract in the public interest to conserve coal resources, enhance competitive potential, and mitigate impacts. BLM has frequently (in almost every LBA offered) delineated a preferred alternative smaller or larger than the application, and containing some different lands than those applied for by the applicant.

It is logical, prudent, and is generally in the public interest for the lease tracts to be adjacent to one or more existing mines. These are production maintenance tracts and, as such, are located so that existing operations could potentially pass onto these tracts without having to open a new pit, which would require significant additional disturbance and higher costs.

BLM has offered coal tracts at several sales where multiple bids were received. There have been sales where the applicant was not the successful bidder. The sales are always competitive, even if there is only one bidder, because the BLM sets a fair market value and will not accept any bid that does not meet that value. These values are not disclosed, and bidders recognize that they need to bid a fair value or the bid will be rejected. BLM has rejected numerous bids that were the apparent high bid.

BLM's practices and administrative controls ensure that fair market values are received for the LBA tracts that are delineated by BLM. The tracts offered by BLM 1) allow coal production to be maintained at already operating mines, 2) avoid coal resource bypass and isolation, and 3) encourage competition.

The BLM properly established the Powder River Coal Production Region as required by 43 CFR 3400.5. The change to the region was published in the Federal Register on January 9, 1990 (55 FR 784-785). BLM has, and continues to manage the LBA process in conformance with the criteria, conditions, and requirements of a decertified coal region.

Processing the Wright Area lease by applications is consistent with the practice we follow in the decertified Powder River Coal Production Region. These are production maintenance tracts,

have been reviewed by the Powder River Regional Coal Team, and are being reviewed under the leasing by application process (43 CFR 3425).

The Powder River RCT meetings are public and provide an opportunity for public comment and statements. Notices for upcoming Regional Coal Team meetings are published in the Federal Register and a press release is also posted on the BLM website. The public is always welcome and is encouraged to attend.

The comment asks whether BLM has made a decision that the entire PRB is unacceptable for further consideration for coal leasing. This is not the case. This determination is based on findings from the resource management plans (RMPs) that encompass the Wright Area. Appendix B in the EIS summarizes the findings of the RMPs as well as a review completed as part of the EIS analyses to update and specify the acceptability for further consideration for coal leasing of lands within the general Wright analysis area.

Like the regional leasing option under 43 CFR 3420, lease by application requires appropriate analysis and assessment of the environmental impacts of coal leasing. Lease by application also requires the opportunity for public participation. The NEPA process resulting in the Wright Area Coal EIS achieves these requirements. Alternative regional leasing levels are not addressed in the LBA process because, as previously discussed, production maintenance leasing is the defined leasing level appropriate to a decertified coal production region. Coal leasing decisions under the lease by application process consider coal economics, both direct and cumulative impact to the environment, and socioeconomic impacts.

The Wright Area Coal EIS is not a regional EIS in the sense of the regulations at 43 CFR 3420. However, the EIS has been properly scoped to address direct, indirect, and cumulative impacts of the proposed leasing. BLM has chosen to address the currently pending LBAs in four separate EISs, some addressing groups of LBAs because of their geographical proximity, others as individual LBA EISs due to either no other LBAs in proximity or the fact that the EIS was already well underway prior to the nearby LBAs being filed. Each EIS is consistent in addressing the specific impacts of each LBA, in addressing the cumulative impacts of the specific LBA when added to other reasonably foreseeable activity, and in having complete public involvement at every step in the NEPA process.

There are considerable undeveloped reserves in the U.S., about half the world's reserves. The Energy Information Administration (EIA) estimates that there are over 250 billion tons of accessible demonstrated reserves in the nation, with about 20 billion committed to existing mining operations. Twenty billion tons represents 50 years of production from the PRB that are presently committed to production, some of which are held by existing PRB operators. At an annual domestic production of one billion tons per year, existing domestic coal mines can produce coal for twenty years, relying solely on already committed reserves.

A Record of Decision (ROD) will be issued for each LBA addressed in this EIS. In the ROD, BLM will reach a decision as to whether to reject the LBA or competitively offer a coal tract in response to the LBA. The ROD will address the public interest considerations made in the decision.

Comment Response 29: We acknowledge that the EIS can be challenging to read at times due to its complex nature, detailed resource information, and technical analyses. To improve the readability, we have prepared a comprehensive executive summary to condense and highlight the results of the analyses. We have also provided technical evaluation appendices in order to improve readability. Please use the Table of Contents to help guide and focus your examination of this document.

Comment Response 30: We have summarized the discussion and have added information to the Executive Summary.

Comment Response 31: The information provided in your comment letter has been considered in the preparation of the EIS.

Comment Response 32: Blasting by surface coal mines is conducted in accordance with Chapter 6 of the WDEQ/LQD Coal Rules and Regulations. Specific control measures for blasting would be developed during the permitting process, when mining operations are authorized.

Voluntary administrative controls are in place and are common components of the mines' operating procedures to mitigate and reduce blasting-related NO_x emissions. Several PRB mines have voluntarily elected to no longer employ cast blasting methods. As stated in Section 3.4.3.1.1 of EIS, the primary control measure for mitigating exposures to offsite residents is to avoid cast blasting when wind directions or atmospheric conditions are unfavorable. As stated in Section 3.4.3.3, weather and atmospheric conditions are closely monitored prior to the decision to detonate a blast. If unfavorable conditions prevail, a decision will be made to postpone the blast until conditions have become favorable. EPA's suggested mitigation methods are included in Section 3.4.3.3, which is comprehensive and has been reviewed by WDEQ/AQD.

The BLM does not authorize mining operations by issuing a lease and does not regulate mining operations after a lease is issued. As discussed in Section 1.3 of the EIS, WDEQ is authorized by the Secretary of the Interior to regulate surface coal mining operations on federal and non-federal lands within Wyoming.

Comment Response 33: The annual NAAQS and WAAQS for NO_2 is 0.053 ppm (53 ppb), which is equivalent to 100 $\mu g/m^3$. The new 1-hour primary NAAQS for NO_2 is 100 ppb. The maximum annual average NO_x prediction for the Jacobs Ranch Mine (year 2013) was 55 $\mu g/m^3$, or 29.2 ppb, well below the federal and state standards. EPA's error in stating that the NO_x prediction for the Jacobs Ranch Mine for 2013 exceeds the NAAQS by 2 ppb is due to a confusion of measurement units. Mitigation measures that are implemented to reduce mine-related NO_x emissions at the three applicant mines are addressed in Section 3.4.3.3 of the Final EIS.

Section 3.4.2.2.1 states that the potential impacts from mining the LBA tracts have been inferred from the projected impacts of mining the existing coal leases as currently permitted. Modeling for each of the three applicant mines, as contained in the mine's current air quality permit, indicates compliance with the PM_{10} annual WAAQS. No impact analyses or modeling for $PM_{2.5}$ are included in the applicant mines' existing air quality permits, which were approved in 2007 (Jacobs Ranch Mine) and 2008 (Black Thunder and North Antelope Rochelle mines). The EPA Surrogate Policy allows states like Wyoming to use PM_{10} as a surrogate for $PM_{2.5}$ in meeting New Source Review requirements under the Clean Air Act, including PSD permitting requirements. Since 1997, the WDEQ/AQD has followed and applied EPA's Surrogate Policy. On May 16, 2008, EPA promulgated a rule that provides states with SIP-approved PSD programs (like Wyoming) that require amendments to incorporate $PM_{2.5}$ into their state PSD rules time to accomplish these amendments to their State Implementation Plan (SIP), and these states have three years to incorporate $PM_{2.5}$ into their state PSD rules. During that SIP-amendment period, a state may continue to implement a PM_{10} program as a surrogate to meet the PSD program requirements for $PM_{2.5}$ pursuant to EPA's 1997 Surrogate Policy.

Mining operations would continue on the existing mine leases as currently permitted, regardless of whether or not the six Wright Area coal lease applications are offered or rejected by BLM. As stated in Section 3.4.2.2.1, if the applicant mines acquire the LBA tracts, they will be required to amend their current air quality permits to include the new lease areas before mining activities can proceed into the new lease areas. New air quality modeling would include an adequate $PM_{2.5}$ modeling analysis to demonstrate compliance with the $PM_{2.5}$ WAAQS.

Comment Response 34: Section 3.4.2.3 of the Final EIS (Regulatory Compliance, Mitigation and Monitoring for Particulate Emissions) covers BACMs for dust control for all surface coal mines in the PRB, and it is stated that additional site-specific layout and mining practices may be included in individual mine and air quality permits.

Section 3.4.2.3 also states: "In response to the measured exceedances of the PM_{10} NAAQS in certain areas of the PRB and in anticipation of possible future exceedances, the WDEQ/AQD in a joint effort with PRB mining stakeholders, developed a Natural Events Action Plan, or NEAP, for the coal mines of the PRB in April 2006 (revised January 2007). The NEAP was developed under the framework afforded by EPA's Natural Events Policy of May 30, 1996. EPA Region VIII approved the WDEQ NEAP on March 13, 2007, and the PRB mining operators have implemented these measures and are presently complying with the NEAP.

"EPA's Exceptional Event Rule of March 22, 2007 no longer requires a NEAP. However, according to the preamble to the Exceptional Event Rule (signed March 22, 2007, effective May 21, 2007), "The EPA believes that it is advantageous for states to keep NEAPs in place that are currently being implemented in order to address the public health impacts associated with recurring natural events such as high wind events. "However, following the promulgation of this rule, states will no longer be required to keep NEAPs in place that were not approved as a part of a SIP for an area." WDEQ will retain the NEAP because it provides the flexibility to control other emission sources, like fugitive emission sources, that otherwise might not be controlled

with BACT. The BACM specified in the NEAP contains an appropriate and reasonable minimum level of control as required under the Exceptional Event Rule for the PRB coal mines.

"WDEQ/AQD may require implementation of the control steps outlined in the NEAP and may require continual evaluation of activity plans when exceedances are monitored at surface coal mines. Some of these measures have been formally implemented at the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines through the establishment of a formal, site-specific mitigative response plan at each of those mines. A mitigative response plan will be developed by any mine that records an exceedance or violation of the NAAQS downwind of its mining operations.

"Other operational control measures that WDEQ/AQD may require at specific mines when exceedances occur include, but are not limited to, site-specific watering of inactive areas and problem areas; relocation of overburden truck-dumping operations and deferring blasting. The mines are experimenting with dust control treatments, including magnesium chloride, surfactants, and petroleum-based products. In addition, WDEQ/AQD may require additional monitoring, action levels based on continuous monitoring, expedited reporting of monitored exceedances, detailed reporting of contributing factors (e.g., meteorological conditions), and continual evaluation of activity plans when exceedances are monitored at surface coal mines.

"The WDEQ/AQD is continually reviewing the data and considering regulatory options, such as increasing the frequency of monitoring to be used as a means of better evaluating dust problems. For example, where elevated emissions have occurred, WDEQ/AQD has increased monitoring frequency requirements including installation of continuous PM_{10} monitors, or TEOMs, which allow monitoring of emissions on a real-time basis. Other regulatory options may include enforcement actions such as Notices of Violation resulting in a consent decree and/or modified permit conditions. WDEQ/AQD is also coordinating with EPA to develop additional monitoring requirements in CBNG development areas, high PM_{10} mitigation action plans in permits, and additional mitigation measures under the SIP."

Comment Response 35: Section 3.4.3.3 describes the voluntary measures that many of the PRB mines have implemented to avoid NO_x emissions impacts to the public. Measures to avoid public exposure to NO_2 from blasting activities are requirements for the Black Thunder Mine as part of a settlement agreement reached in 2000. Considerable discussion in Section 3.4.3.3 addresses the mines' efforts to reduce NO_x emissions from blasting activities. As noted in Table 3-9 and 3-10, the mean annual NO_2 concentrations for all PRB monitoring sites have historically been significantly below the WAAQS and NAAQS annual standard.

Comment Response 36: A summary of the GHG emissions projected with the addition of the six Wright Area LBA tracts was added to the Executive Summary.

Comment Response 37: The annual NAAQS for NO_2 (0.053 ppm or 100 $\mu g/m^3$) has been added to the text within the air quality section of the Executive Summary.

Comment Response 38: There is no scientific basis or regulatory requirement regarding the 3-mile buffer line; it was an arbitrary selection. The EIS has been revised to exclude the 3-mile buffer.

Comment Response 39: The projected modeled visibility impacts for all analyzed Class I and sensitive Class II areas were updated in Table 4-13 in the Final EIS using BLM's updated Task 3A report (Cumulative Air Quality Effects) for the PRB Coal Review.

BLM's PRB Coal Review is extensively referenced throughout Chapter 4 of the Wright Area Coal Lease Applications Final EIS in order to summarize the cumulative impacts occurring as a result of existing development in the PRB. The PRB Coal Review also describes how those impacts would change if other projected development, such as the leasing and mining of additional LBA tracts, were to occur in the area. Task 3 of the PRB Coal Review does not evaluate specific proposed projects within the PRB, but projects that would be expected to occur under the lower and upper coal production scenarios for 2010, 2015 and 2020.

The updated Task 3A report for the PRB Coal Review (Cumulative Air Quality Effects) uses 2004 as the baseline year with projected 2015 and 2020 lower and upper coal production scenarios. The baseline year emissions inventory was developed using 2004 actual emissions data and for the 2015 and 2020 analyses, the emission sources were projected for the assumed upper and lower coal production scenarios. Presenting the type and location(s) of the emissions contributing to the potential cumulative impacts throughout the PRB for 2015 and 2020 under the upper and lower coal production scenarios (as presented in Table 4-11 through 4-14) is considerably beyond the scope of the EIS for the Wright Area LBAs.

As noted, BLM has recently contracted a second phase of the PRB coal review for modeling to update the 2020 analysis and extend the forecast of regional air quality to year 2030. This project will analyze additional pollutants (i.e. ozone) and include photochemical grid modeling. EPA is a key member in the interagency stakeholder group that will review the modeling protocols for the second phase effort.

Comment Response 40: We have updated the data in Table 3-8 in the Final EIS and have revised the units to be consistent throughout ($\mu g/m^3$).

Comment Response 41: Thank you for your comment. We revised the Final EIS to incorporate the information that you provided.

Comment Response 42: The BLM does not permit, nor authorize, mining operations and does not have the authority to regulate mining activities nor mitigate air quality impacts. As discussed in detail in Section 1.3 of the EIS, WDEQ is authorized by the Secretary of the Interior to regulate surface coal mining operations and surface effects of mining on federal and non-federal lands within Wyoming.

As stated in Section 3.4.2.3 of the EIS, the WDEQ/AQD requires the Wyoming Powder River Basin mines to collect air quality data. As explained throughout the EIS, WDEQ/AQD has, by statute, the authority and responsibility to require mitigation for air quality impacts.

Comment Response 43: We have revised, reorganized, and updated Section 4.2.14 in the Final EIS.

Comment Response 44: The BLM's PRB Coal Review is available online at: http://www.blm.gov/wy/st/en/programs/energy/Coal_Resources/PRB_Coal/prbdocs.html

The coal review reports and analyses are used and referenced in the cumulative impact analysis in NEPA documents prepared to evaluate coal leasing in the PRB like the Wright Area Coal Lease Applications EIS and other proposed projects. Since 2006, the coal review analysis has been reflected in each subsequent EIS as modified based on public comment on the analysis. The coal review has also been used to revise and update the BLM land use plans for the Casper, Miles City, and Buffalo Field Offices.

The PRB is a major energy development area with diverse environmental values. BLM and other federal and state agencies need data and analysis tools to evaluate cumulative impacts as additional development is proposed in the basin. The coal review updates historic baseline data and projects the potential future cumulative effects of coal leasing and development based on reasonably foreseeable future development scenarios.

The BLM Wyoming State Office has several pending applications to lease federal coal in the PRB. Each requires a NEPA analysis, and BLM plans to use the results of the PRB Coal Review in evaluating the cumulative impacts of leasing the federal coal included in these applications. The data and modeling tools are also relevant for the cumulative impact assessments for other project-specific impact assessments that BLM must prepare in order to comply with the requirements of NEPA by providing updated, readily available, and consistent information. Products of the study include databases containing future development activities, air quality, water, and socioeconomics information. These databases can be updated through time and used with the existing modeling programs to generate future projections of cumulative effects. As more data about actual development levels and actual associated impacts are collected and evaluated, conclusions based on projected development levels and projected associated impacts may need to be revised in the future to reflect the new information.

The study primarily addresses coal and coal-related development within the PRB and focuses mainly on air quality, water resources, and socioeconomics. The PRB Coal Review is a BLM project, but BLM has invited federal and state agencies with relevant technical expertise to help define the technical approach and content of the project and task reports. Work on the project began in 2003. The Task 2 report on foreseeable development was updated in 2009 based on actual development that had occurred through 2008. The reports estimating effects of future developments to air quality (Task 3A) were done in three parts, primarily to have the reports based on up-to-date emission data. The Task 3A report on estimated effects on air quality by

2010 was completed in 2006, the 3A report for effects by 2015 was completed in 2008, and the 3A report for effects by 2020 was completed in 2009. The reports estimating effects of future development to water (Task 3B) were done in two parts – surface and groundwater, which were completed in 2008 and 2009, respectively.

Comment Response 45: The public has had ample opportunity to participate in the NEPA process in regard to the Wright Area LBAs. Please see Section 1.6 in the EIS, which documents past public participation activities and describes future public involvement and commenting opportunities.

Comment Response 46: Please see the raptor nest site figures in Chapter 3 of the EIS. The raptor nests, including eagle, are clearly shown.

Comment Response 47: Coal mine outbursts are a phenomenon characterized by the sudden and often violent ejection of coal and gas from the solid coal face in an underground mine. When outbursts occur, they can be very serious events and are among the major killers of miners in underground coal mines. Scientists have been investigating coal outbursts for more than 150 years; the precise mechanism that causes the event is still largely unknown. Outbursts typically occur where the roof of the coal seam is well sealed and can generally be attributed to various anomalous geologic features such as structural faults. Studies have found that the gas storage capacity of coals increases with depth and coal rank. For example, subbituminous coals have much higher gas volume storage capacity than lignite coals. Outbursts happen only in deep underground mines where the coal bed is typically of a high rank (i.e., anthracite) and contains gas at high pressure.

Catastrophic release of methane does not occur at the coal face in the open pit mines of the PRB. A comparison cannot be drawn between the nearly instantaneous outburst of methane gas from a deep, high-ranking coal seam in an underground mine and the slow desorption of methane gas from a shallow, low-ranking coal seam in a surface mine. In order for CBNG to be produced from a subbituminous coal, hydrostatic pressure within the coal must be reduced to a level that allows the gas to desorb.

A study published by the U.S. Geological Survey in 2006 (*Gas Desorption and Adsorption Isotherm Studies of Coals in the Powder River Basin, Wyoming and Adjacent Basins in Wyoming and North Dakota*, USGS Open File Report 2006-1174) concluded that the subbituminous Fort Union coal beds having a greater gas volume storage capacity have greater hydrostatic pressures. Only the coal beds in the shallowest part of the basin are strip mined. Groundwater drains into the open mine pits, resulting in the dewatering of any saturated strata, including the coal seams, in the outlying areas. Dewatering of the coal seams mined in the eastern PRB has been ongoing since the mid-1970s. Coal bed methane development of the same seams that are mined began in the eastern PRB on a large scale in the early-1990s. The 2006 USGS study found that these shallow coal beds in the eastern PRB were essentially dewatered and drained of gas as a result.

A recent evaluation of CBNG reserves in the vicinity of the PRB mines by the BLM Wyoming State Office Reservoir Management Group (WSO-RMG, unpublished internal report, 2006) concludes that coal seam gas-in-place is dependent on a number of factors, including coal rank, coal lithology, and initial methane adsorption capacity of the coals, which is controlled by the hydrostatic pressure within the coal. CBNG reservoirs can, thus, be affected by depletion of hydrostatic pressure, such as from coal mining and the surrounding CBNG production. Reservoir analyses prepared by the WSO-RMG have shown that CBNG can generally no longer be economically produced from lands adjacent to the mining areas. Coal cores collected by the USGS and WSO-RMG in the vicinity of the mines generally show that coal seams were substantially depleted of water and natural gas. Therefore, coal seams exposed within open mine pits have typically been dewatered prior to removal of the overburden and are essentially depleted of all gas volume storage capacity. The ongoing reduction of hydrostatic pressure in the coal beds by the mine pits has been accelerated by extensive CBNG production from surrounding lands. The very small amount of residual methane and associated gases are vented to the atmosphere when the coal seam is actually mined; however, a small amount of venting can also occur naturally at the coal outcrop even in the absence of mining.

The article by D.A. Kirchgessner, S.D. Piccot, and S.S. Masemore (Kirchgessner et al. 2000) that is cited by Dr. Kass states: "… methane is retained by the coal bed and surrounding strata as long as it remains under pressure and, assuming that no geologic processes breach the reservoir first, mining releases this pressure and the methane escapes," and "… vertical wells can be drilled into the coal in advance of underground mining to drain methane from the coal." Kirchgessner and others may have indeed developed a method for direct atmospheric measurement of methane emissions from surface coal mines. However, Dr. Kass' statement that "using coal core samples to measure mine methane is fallacious" may stem from his unfamiliarity with the science of determining gas content from the desorption of gas (generally methane) from coal using methods described by Diamond and Schatzel (1998). The gas storage capacity of the PRB coal core samples were determined by the USGS (Open File Report 2006-1174) using those methods.

As stated in Section 3.3.2.2.1, the CBNG resource within the Wyodak-Anderson coal seam has been substantially depleted, either by mining or by recovery from producing CBNG wells nearby. Furthermore, mining operations within the LBA tracts could not begin until permitting is completed, which generally requires several years after a lease is acquired. By that time, it is very likely that most, if not all, of any remaining recoverable CBNG resource will have been exhausted prior to the initiation of mining in the LBA tracts.

As PRB mining operations continue to follow the coal seams downdip, the rate at which the open pits advance will decrease as more and more overburden must be removed to uncover the coal. Even though hundreds of feet of overburden must be removed, the coal will not become wetter or more pressurized due to the constant and continuous dewatering that is the inevitable consequence of open pit mining.

The Final EIS does account for methane emissions from exposed unmined coal at the three applicant mines. The amount of methane vented annually, based on the mines' projected maximum future mining rates and the gas content data obtained by the USGS and WSO-RMG from coal cores, is included in Section 3.18.2. The total amount of anthropomorphic methane

emissions attributed to surface coal mining is given in the DOE's annual report on the emissions of GHGs in the U.S. Citing DOE's most recent annual report, Section 4.2.14.2 in the Final EIS provides an estimate of the methane emissions contributed by the three applicant mines in 2008.

Comment Response 48: PRB coals have a lower BTU per pound than higher ranked coals. This is due in large part to moistures in PRB coal. However, CO_2 is created as a result of the oxidation of the carbon content in the coal. So with PRB coal, the same energy requires a greater weight of coal, but the same amount of carbon content, resulting in the same amount of CO_2.

As stated throughout the Wright Area EIS, the EIS was prepared pursuant to the NEPA and other applicable regulations and statutes to address possible environmental and socioeconomic impacts that could result from potentially leasing the Wright Area LBA tracts. We have assumed that if the tracts are leased, they would be mined. That assumption was used to develop the analysis in Chapter 3 regarding GHG emissions potentially resulting from the mining of the tracts. Chapter 4 of the EIS estimates the cumulative effect of all reasonably foreseeable development activity in the PRB that would likely occur contemporaneously with the assumed mining of the LBA tracts. In this analysis, it is assumed that PRB coal would continue to be used as steam coal for electric generation at a rate similar to recent use. The analysis recognizes that future use of PRB coal, and coal in general, for electric generation is not entirely known, but, based on current electric generation portfolio forecasts, it is likely.

We acknowledge that your method of estimating GHG emissions related to the mining, transport, and consumption of coal is reasonable if one were trying to show the impact of electric generation using coal. Decisions from this EIS will not determine if electric generation from coal continues, and if so, where the coal consumers will buy coal. These matters will be addressed in the marketplace and by law and policies that influence decisions of electricity producers and utility regulators.

Comment Response 49: Coal fines fall from rail cars and accumulate along the rail line. The adverse effects of this accumulation, as well as potential mitigation are addressed in Section 3.15.4.1 of the EIS. WDEQ has responded to complaints from landowners where coal fines are escaping the railroad's right of way.

Comment Response 50: Please refer to Section 3.3.2.1.2 in the EIS regarding methane, or CBNG. BLM recognizes that CBNG is a valuable energy resource and BLM policy encourages the development of this resource, where economically feasible, in advance of coal mining. The analysis in the EIS clarifies that CBNG has been commercially produced in the PRB since 1989. The EIS discloses the release of methane as a result of mining, and that coal seams were already substantially depleted of CBNG in the vicinity of the mines in 2000. By 2005, drilling activity in the areas adjacent to the coal mines declined significantly. There has been little recent interest in drilling CBNG in this area.

Your cited reference of Rice, Ellis, and Bullock (2000) is the U.S. Geological Survey Open-File Report 00-372, "*Water co-produced with coalbed methane in the Powder River Basin, Wyoming: preliminary compositional data*". This report describes the water quality characteristics of only the Wyodak-Anderson coal seam. While it is true that groundwater produced from the Tongue River Member of the Fort Union Formation coals has relatively low sulfate concentrations, groundwaters from the overlying Wasatch Formation and recent alluvial deposits typically have high levels of sulfate, and, as a result, do not meet WDEQ's standards for either domestic or agricultural uses due to the exceedingly high sulfate concentrations. Please see Section 3.5 in the EIS for descriptions of the quality of groundwater associated with each of the water-bearing geologic units that have been, and will continue to be, affected by surface coal mining and CBNG development in the PRB.

There is a paucity of data on the occurrence of radium in the surface and groundwater systems of the PRB. WDEQ does not require coal mine operators to monitor radiochemical constituents in surface water or groundwater within and around their operations. BLM is aware of radiochemical data that is listed for 65 groundwater sites in the PRB and adjacent areas in northeastern Wyoming in a 1984 data report (Open-File Report 83-939). Those data, however, may not be completely representative of current conditions considering the level of development that has been ongoing in the basin over the past 26 years. No other published radiochemical data for naturally-occurring waters in the PRB are known to exist.

The 2002 Powder/Tongue River Basin Water Plan, which was prepared by the Wyoming Water Development Office, stated that "radium-226 may be of concern near uranium ore deposits." Wyoming has been the nation's leading producer of uranium ore since 1995, and numerous uranium mining sites are present in the PRB. Pumpkin Buttes, the primary uranium mining district in the basin, is located more than 20 miles west of the general Wright analysis area. None of the uranium mining sites are located within the same watersheds that the three applicant mines and the six Wright Area LBA tracts are located in. Uranium mining in the PRB is conducted by the in-situ recovery method, which is highly monitored and regulated by the WDEQ and the Nuclear Regulatory Commission. Due to the great distances between the general Wright analysis area and the uranium mining districts in the PRB, cumulative impacts to water resources from these operations were not considered in this EIS.

Radon gas is not known to be associated with either the Wasatch or Fort Union formations in the eastern portion of the PRB where the surface coal mining operations are located.

Comment Response 51: BLM recognizes that CBNG is a valuable energy resource and BLM policy encourages the development of this resource, where economically feasible, in advance of coal mining. We acknowledge your comment of the importance in recognizing that the rights and lease obligations of federal oil and gas lessees be honored.

If a decision is made to lease an LBA tract, mining operations within the tract would not begin until the permitting process is completed, which generally requires several years after a lease is issued. BLM's special coal lease stipulations are identified in Appendix D of the Final EIS.

These stipulations specifically address multiple mineral development and oil and gas/coal resources.

Additionally, BLM's CBNG-coal policy provides the agency's decision-makers with some latitude and tools to assist in working out reasonable accommodations among the lessees of coal and oil and gas in order to optimize the recovery of both of these resources and to ensure that the public receives a reasonable return. BLM recognizes that cooperation in recovering as much of the commercially available methane as possible prior to mining will help to reduce the atmospheric release of residual methane that results from mining and shipping coal.

Another aspect of accommodation between oil and gas operators is the timing of well abandonment and mining and reclamation operations. It is reasonable to defer extensive reclamation on oil or gas sites, when mining and reclamation will follow in a short period of time. In these cases, it is possible to temporarily stabilize sites until mining and reclamation activities occur.

Comment Response 52: Air pollution is controlled by state and federal air quality regulations and standards established under the federal Clean Air Act Amendments. State implementation plans are in place to ensure that actions like coal mining operations comply with all associated air quality regulations and criteria. The Wyoming Ambient Air Quality Standards for the PM_{10} annual and the NO_x annual and 24-hour levels are more stringent than the National Ambient Air Quality Standards and are enforced by the WDEQ/AQD.

Large surface coal mines have the potential to become particulate emission sources in the PRB contributing to air quality degradation. By statute and delegation, WDEQ/AQD has the authority and responsibility to require mitigation for air quality impacts. WDEQ has stated that they will not permit mining operations that don't comply with the standards.

Any LBA offered as a result of this EIS will have a condition placed on the lease requiring the lessee to comply with the air quality regulations. The LBA would be an additional lease mined in conjunction with other leases and state and private lands in order to maintain production at an existing mine. WDEQ air quality permits regulate and mitigate air pollution for an entire mining operation, where any specific mitigation on a single lease would apply only to that lease.

The FEIS contains recently completed results of regional air quality modeling that was done in order to estimate the cumulative air quality effects of all reasonably foreseeable development in the PRB by year 2020. As noted in EPA's letter, BLM has recently contracted for modeling to extend the forecast of regional air quality to year 2030. This modeling should be available for use by regulatory agencies when considering any future permitting related to adding LBA leases to mining operations.

Comment Response 53: We have revised the Final EIS to include additional information regarding cultural resources. As described in Section 3.12 of the EIS, Class III site-specific cultural surveys have been completed for each of the six LBA tracts included in this EIS.

BLM initiated Native American consultation with the tribes on December 16, 2008 in regard to the Wright Area LBAs. We will continue to consult on site-specific culturally significant areas located within the general Wright analysis area.

Regulatory compliance, mitigation, and monitoring requirements for cultural resources are described in Section 3.12.4. Native American consultation will continue throughout the permitting process and will be completed by the Office of Surface Mining Reclamation and Enforcement prior to any surface disturbing activities. The BLM's and U.S. Forest Service's coal lease stipulations with respect to cultural resources are included in Appendix D of the Final EIS.

The effects on regional air quality (including the Class I and Sensitive Class II areas in and around the Black Hills) as a result of all development predicted in the PRB by 2015 were modeled. Those results are discussed in Chapter 4 of the Final EIS. We have also included recently completed modeling that projects the effects of all development through the year 2020. We did not identify measurable direct or indirect impacts from PRB development activity on water quality in the Black Hills.

Comment Response 54: We appreciate your comment and readily acknowledge the importance of agriculture to the community and nation. Section 3.11.1 and 3.11.2.1 in the Final EIS has been revised and expanded to include additional information regarding the impacts and potential loss of grazing on the USFS Thunder Basin National Grasslands (TBNG) allotments contained within the Wright Area LBAs.

During mining operations, lands are taken out of production for grazing and are not restored until the lands are capable of supporting grazing. As described throughout the EIS, reclamation is a long term process, and to achieve bond release, the mines must demonstrate to the Wyoming DEQ/LQD that the land is capable of withstanding grazing pressure comparable to pre-mining conditions. In general, if the LBAs are leased, the loss of access to federally administered public lands included in the tracts may extend for 20 years or more after permitting depending on individual mine plans, mine variation in coal production rates, permitting requirements, and reclamation sequence and succession.

As described in the EIS, portions of the TBNG are included in five of the six LBA tracts and their study areas. Table 3-15 depicts the distribution of surface ownership for BLM's preferred alternatives. As shown, approximately 12,481 acres of federal surface administered by the USFS is included in the North, South, and West Hilight Field tracts and in the North and South Porcupine tracts under Alternative 2, BLM's preferred alternative. Section 3.11.1 in the EIS discloses that these federal lands are located within USFS Grazing Allotments #270 (located in the North Hilight Field tract), #256 (located in the South and West Hilight Field tracts), #266 (located in the West Hilight Field tract), #280, #223, #240, #298, #264, #282 (located in the North Porcupine tract), and #278 and #281 (located in the South Porcupine tract). All of these allotments are currently held by the Thunder Basin Grazing Association (TBGA). If the federal lands are leased for coal, the livestock producers that depend upon these grazing allotments

would be negatively impacted. The EIS discloses that livestock grazing has been the primary use of these lands in the past.

A number of livestock producers depend upon grazing USFS-administered lands within the Wright EIS general analysis area in order to maintain their ranch viability and sustainability. As stated above, much of the general Wright analysis area is currently permitted for grazing use through a grazing agreement between USFS and the TBGA. Overall, this agreement annually permits the TBGA for 71,500 Animal Unit Months (AUMs) on approximately 351,192 acres of TBNG for a period of ten years. In turn, TBGA permits these allotments to its individual members.

If the Wright Area LBAs are leased, approximately 12,481 acres of TBNG surface that are currently permitted for federal grazing by the TBGA would be suspended during mining and reclamation activities. This suspension would result in an additional seven allotments that would no longer be available for grazing. One allotment would be reduced by approximately 50 percent and three allotments would have small reductions in grazing. In total, approximately 2,890 AUMs would be lost from the TBGA, or four percent of the total grazing agreement due to the potential leasing and mining of the Wright Area LBAs. In combination with past impacts, these additional AUM reductions from mining would result in three TBGA members that would no longer have allotments to graze, one member that would have grazing allotments reduced by 65 percent, and one member that would be minimally impacted.

The TBGA permits each of its members to graze in various allotments. When USFS lands are withdrawn from grazing use for any reason, including coal mining, the AUMs are removed from the member's permit since they can no longer graze the area. While the TBGA could potentially provide relief to some of its members through the possible allocation of other vacant allotments if they are available, TBGA cannot totally recover these losses. Often, lost AUMs ultimately result in a net loss to the member and the TBGA and negatively impact the ranchers that were allotted those AUMs for their livestock operations.

Since the onset of mining in this portion of the Powder River Basin, approximately 44,000 acres of federal surface administered by the USFS within 20 allotments have been impacted by coal mining operations. This has resulted in a loss of approximately 10,200 AUMs from the TBGA. Cumulatively, with losses from previous mining activities and these proposed leases, the TBGA grazing agreement could potentially be reduced by approximately 13,090 AUMs, or 18 percent.

As previously described, for five TBGA members, the loss of TBNG grazing use due to the Wright Area LBAs could seriously impact their livestock operations and family ranches. A potential solution to help mitigate adverse effects would be for the TBGA, its affected members, USFS, and the mine operators to partner and collaborate in addressing this issue and begin to develop potential solutions as a consolidated stakeholder group. Also, it might be possible for the affected ranchers to work with one or more of the mines to arrange for grazing on reclaimed mine lands.

As described in Section 1.6, USFS is a cooperating agency on this EIS and must consent to leasing the federal coal underlying lands that they administer before BLM can include those

lands in a decision to hold a federal coal lease sale. The USFS will issue their own separate record of decision (ROD) regarding their potential consent to lease those lands. A decision to consent to lease USFS lands can be appealed within 45 days from the date that the Notice of Publication of USFS ROD is published in the Laramie Boomerang.

Comment Response 55: Please refer to Figure 1-1 or F-1 in the EIS. The mines south and east of Wright do indeed include the three applicant mines (Black Thunder, Jacobs Ranch, and North Antelope Rochelle); however, both the Antelope Mine and North Rochelle Mine (which no longer has an active air quality permit, and its federal coal leases are now owned by Ark Land Company and BTU Western Resources, Inc.) are also included.

Section 3.4 and the Supplemental Air Quality Information appendix (Appendix F) have been updated and revised for the Final EIS. Appendix F in the Final EIS states "… 29 of the 33 valid exceedances (those not considered exceptional events under the NEAP) of the 24-hour PM_{10} standard that have occurred in the PRB through 2009 have been recorded by the group of mines located south and east of the town of Wright; the remaining four exceedances occurred in the group of mines located north of Gillette…" The 29 exceedances did not all occur at the three applicant mines. Please refer to Sections 3.4.2.1, 3.4.2.2.1, 3.4.2.2.1.1, 3.4.2.2.1.2, and 3.4.2.2.1.3 in the Final EIS for an updated accounting of the exceedances that have occurred at each of the three applicant mines. The total number of 24-hour PM_{10} exceedances that have occurred at each of the three applicant mines are also disclosed in the Executive Summary.

Through 2009 there have been no exceedances of the annual PM_{10} standards at all three applicant mines. Through 2009 there have been a total of eight 24-hour PM_{10} exceedances documented at the Black Thunder Mine (six of which occurred prior to 2007 and one was designated as a high wind event under the NEAP). Through 2009 there have been a total of four 24-hour PM_{10} exceedances documented at the North Antelope Rochelle mine (two of which occurred prior to 2007 and two were designated as a high wind event under the NEAP). Through 2009 there has been one 24-hour PM_{10} exceedance documented at the Jacobs Ranch Mine (which occurred prior to 2007).

In summary, since the three applicant mines have been in existence and monitoring the particulates and reporting the results to the WDEQ/AQD, a total of 13 24-hour PM_{10} exceedances are on record, three of which were designated as being caused by high wind events under the NEAP. Nine of the other 10 exceedances occurred prior to 2007 and DEQ acknowledges that most of those could have qualified as being the result of high wind events under the NEAP.

Comment Response 56: Table F-1 and Table 3-8 have been updated and revised for the Final EIS. The background concentrations for particulates (PM_{10} and $PM_{2.5}$) are based on data collected at the Jacobs Ranch and Black Thunder mines in 2005 through 2008. Please refer to the explanation of how those values were determined in the tables' footnotes.

Please see Section 3.4.2.2.1 and Appendix F for the discussion on air quality modeling for the three existing applicant mine operations. Due to the similarities in mining rates and mining operations, the potential impacts of mining the LBA tracts have been inferred from the projected impacts of mining the existing coal leases as currently permitted. The applicant mines' current air quality permit modeling results agree favorably with the historical monitoring data recorded by them. If the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines acquire the LBA tracts, they will have to amend their current air quality permits to include the new leases before mining activities can proceed into the new lease areas. New air quality modeling would need to be conducted in support of that permit application demonstrating on-going compliance with all applicable ambient standards.

Comment Response 57: WDEQ/AQD's Natural Events Action Plan states that "all coal mines in the Wyoming PRB employ Best Available Control Technology (BACT). This Natural Events Action Plan for the Powder River Basin identifies BACT measures in place as the result of existing permit requirements, additional potential control measures identified as BACM, and reactionary control measures directed at transient problem sites that may be implemented during Natural Events. Implementation of BACT, BACM, and reactionary control measures will assure that anthropogenic dust emissions from the coal mines in the PRB are controlled to the greatest extent possible. The goal is to protect public health and to minimize exceedances of the PM_{10} NAAQS through the continued implementation of BACT, and implementation of BACM and reactionary control measures."

WDEQ does conduct regularly scheduled mine inspections. The control measures identified as BACM that are employed at each of the mines are directed at transient problem areas or sites that are unique to the particular operation and are typically action measures rather than devices or installations. However, the actions employed by the mines during "natural events" can be observed and noted during the agency's inspections. Included in Section F-2.8 of Appendix F, we describe Wyoming's NEAP, including two lists of control measures designed to prevent exceedances during high wind events. Included are the measures that the mines can implement continuously so that they are in place before a high wind event occurs. These measures primarily address the principal mine-controlled sources of fugitive dust, which are large contiguous disturbed areas. The second list is an additional category of control measures that include actions that can be taken during a high wind event, depending on site specific conditions. The implementation of BACT, BACM, and reactionary control measures assure that anthropogenic dust emissions from the coal mines in the PRB are controlled to the greatest extent possible.

Comment Response 58: The applicant mines' current air quality permit modeling results agree with the historical recorded monitoring data. As such, the mines' BACT requirements for particulates have been effective at protecting the NAAQS, and the EIS provides all of the information necessary to demonstrate compliance with BLM FLPMA obligations. In addition, the EIS states that if the Black Thunder, Jacobs Ranch, and North Antelope Rochelle mines acquire the LBA tracts, they will have to amend their current air quality permits to include the new leases before mining activities could proceed into the new lease areas. New air quality

modeling would need to be conducted in support of the permit application demonstrating on-going compliance with all applicable ambient standards.

Comment Response 59: Section 3.4.3 (Emissions of Nitrogen Oxides and Ozone) has been updated and revised in the Final EIS. The EIS discloses all possible sources for these gas emissions and the monitoring efforts of the WDEQ in the PRB.

The EIS states that "ozone monitoring is not required by WDEQ at the PRB coal mines, but levels have been monitored by WDEQ/AQD at its ambient air quality monitoring sites in the PRB since 2001." An exceedance of the O_3 8-hour standard occurs if the 4th-highest daily maximum value is above the level of the standard. Table 3-9 shows that no exceedances of the O_3 standard have occurred at either of the two monitoring sites when evaluated under the standard in place at the time the values were recorded. If the strengthened 2008 standard was applied retroactively, one exceedance would have occurred in 2003 at the Campbell County site. The EIS discloses that BLM expects a stricter O_3 standard of between 0.06 and 0.07 ppm to be announced in August 2010.

Your comment claims that ozone levels in the PRB are trending upward. BLM cannot make that assertion based on the limited data that are currently available, both temporarily and spatially, for the PRB. For example, sans the statistical trend analyses demonstrated by WildEarth's comment, the highest recorded value occurred in 2003; seven years in the past. Additional data from these two sites and preferably a larger ozone air quality monitoring network that covers more of the basin are needed before any trends can be clearly defined.

Comment Response 60: Based on data collected at WDEQ's Campbell County ozone monitoring site from 2005 through 2008, we have updated the Final EIS to include the background ozone level as 133 $\mu g/m^3$ (0.057 ppm) in Table 3-8 and F-1.

WDEQ does not currently require ozone monitoring or modeling by the PRB coal mines. Therefore, the applicant mines' current air quality permits do not address impacts to the ozone standards, and as stated in the response to WildEarth's prior comment (4a), ozone monitoring data for the eastern PRB are limited. BLM has disclosed the sources of ozone emissions from the mining operations and the environmental consequences related to it.

Note that on January 6, 2010, EPA proposed to strengthen the NAAQS for ground-level ozone. EPA is proposing to strengthen the 8-hour "primary" ozone standard to a level within the range of 0.060-0.070 ppm. For the primary standard, ozone concentrations are averaged over 8-hour periods. The fourth highest 8-hour value at a particular monitor in the most recent year is averaged with the fourth-highest 8-hour values from the previous 2 years. This produces a 3-year average. To meet the standard, the 3-year average must be less than or equal to the level of the standard. In light of EPA's proposed ozone standard, additional ozone monitors would be needed in the PRB before a quantitative assessment of ozone impacts in the PRB could be made. EPA is considering comments received on the proposed monitoring requirements and plans to issue a final rule in coordination with the final ozone standards in August 2010.

The BLM as well as WDEQ recognize that ozone levels in the state are a serious concern. WDEQ operates and maintains a network of ambient air quality monitors to determine compliance with the NAAQS. When areas do not meet the NAAQS, WDEQ performs special monitoring studies, such as that which is ongoing in the Upper Green River Basin, to better understand ozone formation.

Comment Response 61: Ground-level ozone is not emitted directly into the air, but is created by sources of NO_X, which in the presence of volatile organic compounds (VOCs) reacts to form ground-level ozone. Therefore, the statement that is made in the EIS that measures to reduce mine-related NO_X emissions should also reduce the potential for the formation of ground-level O_3 in the PRB is entirely reasonable.

Comment Response 62: The cumulative air quality effects analysis in Section 4.2.3 has been updated and revised in the Final EIS.

BLM updated the air quality model and cumulative impact analysis for the year 2020 using 2004 as the baseline year with revised 2020 coal production scenarios, based on the PRB Coal Review Task 3A Report update. The analysis specifically looked at impacts of coal mines, power plants, CBNG development, and other development activities. The revised baseline year emissions inventory was developed using 2004 actual emissions data or emissions estimates and incorporated the recent analyses of emissions in Wyoming and Montana that were not available when the previous modeling was done.

Two of the reservations noted in your comment are located within the PRB: the Northern Cheyenne Indian Reservation, which is designated as a PSD Class I area, and the Crow Indian Reservation, which is designated as a PSD Class II area. The Northern Cheyenne Reservation is located 13 miles from the Colstrip Power Plant and the Rosebud surface coal mine, and 10 miles from the Absaloka surface coal mine. The Crow Reservation actually borders the Absaloka surface coal mine. These two reservations are approximately 130 miles north of the general Wright analysis area. The Wright EIS general analysis area is located about 330 miles away from the Fort Belknap Reservation and about 140 miles from the Wind River Reservation; both of these reservations are designated as PSD Class II areas. The modeled impacts to the visibility at these reservations, as shown in Table 4-13 in the EIS, are the cumulative result of all current and projected development activities within the PRB, not just the impacts that would result from the leasing and subsequent mining of the six Wright Area LBA tracts.

Section 3.17.7 in the EIS addresses environmental justice and the impacts related to the proposed leasing of the six Wright Area LBA tracts, not the cumulative impacts from all development within the PRB. Therefore, the analysis in Section 3.17.7 is limited to Campbell County. The cumulative visibility impacts resulting from all projected development within the PRB would be no more acute for Native American populations than for the general public.

Comment Response 63: Thank you for your comment. We have revised the Final EIS to incorporate additional information regarding paleontological and cultural resources in the Wright EIS general analysis area.

We have added the Rockpile Museum in Gillette to the BLM High Plains District coal EIS mailing list. The museum will receive all future BLM Wyoming PRB federal coal environmental impact statements.

As is BLM policy, a survey of the lands being considered for federal coal leasing must be surveyed for historical and archeological sites and artifacts in advance of leasing. These surveys are typically completed by consulting firms approved and/or permitted by the Forest Service (USFS) or BLM. Agency approval allows them to conduct surveys on lands administered by either of these agencies, and sets professional and technical standards for their work.

Based on the survey report findings, the BLM or USFS then consults with the Wyoming State Historic Preservation Office (SHPO) regarding the significance of sites discovered and the eligibility of those sites for the National Register of Historic Places. If the lands are leased, the WDEQ, the agency that permits coal mining, will require that a plan be developed to mitigate (generally by avoiding or excavating and recording) each eligible site. WDEQ will enforce this plan as a condition of the mining permit.

The cultural survey reports include specific location and content information for each site found. This information is confidential under the National Historic Preservation Act. The consultant, federal agency, and SHPO are all prohibited from public release of this information. It might be possible for the Rockpile Museum to enter into a formal data sharing agreement with the agencies where specific information could potentially be shared. The Museum would be under the same public release prohibitions as the other agencies.

Paleontological surveys of the lands being considered for federal coal leasing are undertaken to locate, identify, and document paleontological resources that might be affected, and to provide recommendations of management/mitigation for identified paleontological resources. Like the cultural resource surveys, these surveys are completed by qualified consulting firms that are approved to conduct surveys on public lands administered by the federal land management agency.

Potentially significant fossil specimens exposed on the surface have been collected and reposited with the Denver Museum of Natural History to prevent data loss. The qualified paleontologists who conducted the field survey may recommend that mitigation efforts be conducted to determine if additional buried material is present, and to then collect any scientifically significant specimens.

BLM will attach a stipulation to each lease requiring the operator to report significant paleontological finds to the authorized federal agency and suspend production in the vicinity of a find until an approved paleontologist can evaluate the paleontological resource.

Comment Response 64: We have added your name to the BLM High Plains District coal EIS mailing list. You will receive all future BLM Wyoming PRB federal coal environmental impact statements.

Figure 4-5 in the Final EIS does not represent current conditions, but rather, it depicts the areal extent of groundwater level drawdown within the Wyodak coal seam aquifer that would be expected to occur as a result of all mining activity in the Wright Area should all six of the Wright Area LBA tracts be leased and mined. The five-foot drawdown limit shown in Figure 4-5 extends west beyond the Turner Ranch on Bates Creek. However, groundwater level drawdowns in the coal seam aquifer that are due to mine pit dewatering have been completely overshadowed by the dewatering effects on the coal seam aquifer as a result of coal bed natural gas (CBNG) development in this area. It is very unlikely that mine pit dewatering alone has had or will have any measurable effect on the Wyodak coal seam aquifer as far west as the Turner Ranch on Bates Creek.

The statement in Section 3.5.2.1 that "springs are uncommon and none have been identified within the general analysis areas of these six LBA tracts" is factual. It is unclear but assumed the springs that you refer to in your comment are located within the Bates Creek watershed. Bates Creek is a major tributary of Antelope Creek, and the mouth of Bates Creek is located roughly 10 miles southwest of the western edge of the South Porcupine LBA Tract, the closest of the six Wright Area LBA tracts to Bates Creek.

The Final EIS has been updated to include the results of BLM's regional groundwater flow model, which illustrates the areal extent and degree of drawdown that is associated with the mining operations and the CBNG development operations in the PRB. The groundwater flow model used in this NEPA analysis is included in BLM's PRB Coal Review Task 3B Report. The PRB Coal Review is used by BLM to evaluate the cumulative impacts of leasing federal coal in the PRB. The groundwater model and its results are described in detail in the Task 3B Report and can be reviewed on the BLM High Plains District website. Figures depicting the effects of coal mine-related dewatering only and CBNG development-related dewatering only are included in the Final EIS; these data indicate that the effects of mine dewatering have not and will not in the future extend to the west far enough to effect groundwater resources in the Bates Creek watershed.

The springs that you describe in your comment are much removed from the general Wright analysis area; therefore, the past and present hydrogeologic conditions responsible for these once-significant springs and their demise were not investigated in detail in this EIS. However, based on the general hydrologic characteristics of the geologic units that occur in the eastern part of the PRB, it is reasonable to assume that the springs were and are presently associated with a shallow groundwater source, such as recent alluvial deposits or possibly the Wasatch Formation, rather than a deep groundwater source, such as the Wyodak coal seam.

Springs and seeps do not commonly occur within the PRB due to many factors, including the semi-arid climate and the lithologic characteristics of the shallow geologic units that crop out on the surface of the basin. In general, springs and seeps that occur within the drainages of the PRB are typically associated with shallow groundwater that is stored in the streams' recent alluvial

deposits. Determining the cause of the changes to the "spring holes" on Bates Creek that you have witnessed is beyond the scope of this EIS. However, if these springs are indeed associated with shallow Bates Creek alluvial groundwater, those changes may be the result of changes that have occurred to the stream's hydrologic flow regime, which could be the result of the extreme drought conditions that have prevailed in the PRB since 1999.

We encourage you to advise the BLM High Plains District Office in Casper of the spring locations so that they can be included in the administrative record for this EIS. Those locations should be made available to the WDEQ as well. If nearby lands are leased for coal in the future, their locations should be made available to the coal lessee for study purposes.

Twenty-eight wells have been installed in the backfill at the North Antelope Rochelle Mine to monitor water levels and water quality. As required by the WDEQ, the mine also monitors water levels and water quality in many wells that are completed in the water-bearing units that are affected by mining, including alluvial deposits, clinker deposits, Wasatch overburden strata, Fort Union coal beds, and underburden strata. The monitor well you cite (PRCC-21B) is a WDEQ required monitor well. Monitoring data and other required information, such as the well's completion record, is reported to WDEQ by the mine operator. We understand that this data is made available to the public, and the WDEQ/LQD office, either in Sheridan or Cheyenne, should be able to assist you with locating all the information on this or any of the mine's other monitoring wells. It should be noted that it is unlikely a well used for stock watering would also be used by a mine as a monitoring well due to the fact that its water level would be greatly affected by pumping, negating its usefulness to monitor the effects of mine-related dewatering and drawdown.

Comment Response 65: Mining companies restrict access to their permitted lands as a safety precaution. There are dangers on mine sites; companies control visitors to protect the public's safety and prevent accidents. However, the controlled mine areas should be well posted to prevent the public from accidently entering these areas. Please contact the mine company regarding your access to grazing areas and any affiliated problems that may have arisen regarding their employees' conduct and customer service. It is our understanding that all of the PRB mines continue to welcome visitors and will gladly conduct tours of their operations provided that they are contacted in advance of your visit.

Comment Response 66: Thank you for your comment. We have updated and revised Section 3.5.1.2.1.1 (North, South, and West Hilight Field LBA Tracts), Section 3.5.1.2.1.2 (West Jacobs Ranch LBA Tract), and Section 3.5.1.2.1.3 (North and South Porcupine LBA Tracts) in the Final EIS. We revised the discussions on identifying and predicting the extent of drawdown in the Wyodak coal aquifer that is specifically attributable to mine dewatering.

Comment Response 67: The Biological Assessment (Appendix G) has been revised extensively for the Final EIS. A discussion on the location and extent of the potential wetland areas was added for each LBA tract including separate maps to depict those areas within the respective

tract's general analysis area. Also added were more detailed descriptions of each tract's existing environments and the potentially suitable habitats for each listed species. Dates of all surveys conducted for ULTs are provided in the EIS.

Comment Response 68: Previous surveys for ULT have been conducted within the adjacent mines' existing permit areas in order to evaluate the potential effects of leasing federal coal reserves within those areas and are contained within the respective BLM EIS documents. References are made to those sources in Appendix G including the survey dates, surveyors' names, and results.

Comment Response 69: The Biological Assessment (Appendix G) has been revised extensively for the Final EIS. Appendix G states that all potentially suitable habitat within the general analysis area of each LBA tract will be surveyed for ULT three consecutive years during the plant's flowering period in order to determine the presence of the species prior to any surface disturbing activities.

BLM's and USFS's special coal lease stipulations are identified in Appendix D of the Final EIS and they include a threatened, endangered, candidate, or other special status plant and animal special stipulation. This stipulation was developed in concert with USFWS and specifically states, "Any potential habitat that has not already been surveyed for Ute ladies'-tresses within the project area shall be identified and surveyed prior to surface mining activities."

Comment Response 70: The Biological Assessment (Appendix G) has been revised extensively for the Final EIS. Further analysis determined that no suitable habitat for blowout penstemon is present within the general analysis areas of the six Wright Area LBA tracts; Appendix G has been revised to clarify that finding. BLM's and USFS's special coal lease stipulations are identified in Appendix D of the Final EIS. The threatened, endangered, candidate, or other special status plant and animal species coal lease stipulation that was developed in concert with the USFWS is included. With the guidance and support of USFWS, wildlife mitigation measures will also be prescribed at the permitting stage.

Comment Response 71: Thank you for your comment. We revised Section 3.12 in the Final EIS to include additional information regarding cultural resources. BLM initiated Native American consultation with the tribes on December 16, 2008 in regard to the Wright Area EIS. Preliminary analysis of the Class III inventories associated with the six Wright Area LBA coal tracts indicates that there are likely archeological sites that may be of tribal significance. Once the Class III inventories are fully analyzed, BLM will consult the tribes in accordance with the National Historic Preservation Act regulations. Because there are numerous cultural resources in the Wright EIS general analysis area, BLM will conduct site-specific tribal consultation individually on each lease. BLM will consult with the Cheyenne River Sioux Tribe, and other tribes, in relation to the specific culturally significant areas that are located within the Wright EIS general analysis area beginning in the summer or fall of 2010.

Comment Response 72: We revised and updated Section 3.3.2.1 and 3.3.2.2 in the Final EIS to include additional information regarding the different forms of modern unconventional development of "continuous" hydrocarbon accumulations, including tight sand and shale gas.

In the Final EIS, we added a new subsection to the unconventional oil and gas analysis (Section 3.3.2.1.2) in order to address the potential for the development of continuous oil and gas resources in the PRB. Subsection 3.3.2.1.2.1 addresses CBNG production in the PRB and in the general Wright analysis area.

In addition, the potential impacts of coal leasing upon both conventional and unconventional oil and gas development in the PRB and general Wright analysis area have been added to Section 3.3.2.2 in the Final EIS. A discussion covering secondary recovery methods used to enhance production from old fields with declining production has also been included in the conventional oil and gas resources section (3.3.2.1.1), as was the potential for increased conventional oil and gas exploration due to increased prices.

The development of natural gas from hydrocarbon rich shale and tight sand formations is a very recent phenomenon in the oil and gas industry. The industry's ability to drill and complete wells that are capable of tapping these unconventional hydrocarbon resources is largely due to evolving state-of-the-art directional drilling and new formation fracturing technology. As discussed in the Final EIS, the oil and gas industry has only recently begun to explore the potential proficiency and feasibility of developing these continuous hydrocarbon resources in the PRB.

Summary of the Wright Area Coal Lease Applications Draft EIS Public Hearing

Two statements were given as testimony at the Wright Area Coal Lease Applications Draft EIS Public Hearing held on July 29, 2009 in Gillette, Wyoming. The complete transcript is available for public review at the BLM High Plains District Office in Casper.

Shannon Anderson, speaking on behalf of the Powder River Basin Resource Council (PRBRC), described a number of the group's concerns in regard to Powder River Basin coal mining including reclamation, groundwater impacts, and loss of wildlife habitat and livestock grazing areas. Ms. Anderson's testimony highlighted the formal comment letter that was submitted to BLM by the PRBRC during the Draft EIS public comment period. Their letter is included in this appendix.

Brad Mohrmann delivered testimony as a Sierra Club representative. Mr. Mohrmann asked the BLM to consider several issues including whether federal coal should currently be leased in light of the slow economy, decline in coal production, increased wind power electric generation, and the push to generate clean renewable energy. Concerns with reclamation, bonding, new climate change legislation, and the economics of leasing coal at this time were also presented.