



March 15, 2013

**BY ELECTRONIC MAIL AND  
CERTIFIED MAIL RETURN RECEIPT REQUESTED**

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**Re: Petition to Supplement Wright Area Coal Lease Applications Final  
Environmental Impact Statement to Address Significant New Information  
Regarding Air Quality Impacts of Coal Mining in Powder River Basin of  
Wyoming**

Dear Messrs. Salazar, Klein, Jirón, and Simpson:

Attached, please find a formal rulemaking Petition from WildEarth Guardians requesting that the United States Department of Interior, Bureau of Land Management (“BLM”), Office of Surface Mining Reclamation and Enforcement (“OSMRE”), and the U.S. Forest Service (“USFS”) address significant deficiencies in the environmental analyses supporting several recent and upcoming coal leasing and associated strip mining decisions in the Powder River Basin of northeastern Wyoming. Specifically, we request that your agencies address significant flaws in the air quality impacts analysis and assessment in the Final Environmental Impact Statement (“FEIS”) for the Wright Area Coal Lease Applications (hereafter “Wright Area FEIS”), in accordance with the National Environmental Policy Act (“NEPA”). We request that your agencies supplement the FEIS accordingly and ensure that the air quality impacts of coal mining in the Powder River Basin of Wyoming are effectively mitigated in accordance with your substantive duties to protect natural resources.

The Powder River Basin of northeastern Wyoming and southeastern Wyoming is the largest coal producing region in the United States. Surface strip mines in the region produce more than 460 million tons of coal annually, more than 40% of all coal produced in the nation. Not only does this mining pose significant regional environmental impacts, but given that the coal mined in the region is used to fuel hundreds of coal-fired power plants in the U.S., this mining indirectly leads to a number of additional significant impacts, such as climate change impacts associated with carbon dioxide emissions, impacts associated with coal ash disposal, and impacts associated with the release of other air pollutants.

Our request is made based on the conclusions of a technical report indicating that the air quality impacts analysis in the Wright Area FEIS is substantively flawed in a number of regards and fails to address significant new information regarding the impacts of the coal leases analyzed and assessed therein. In particular, the FEIS fails to adequately analyze and assess impacts to a number of national ambient air quality standards (“NAAQS”), casting doubt as to whether your agencies have adequately analyzed and assessed impacts to air quality and to the public health that the NAAQS are supposed to protect.

This request is made in light of the fact that your agencies each have a significant role in reviewing and approving coal mining decisions in the Powder River Basin, particularly decisions related to the Wright Area FEIS. Because the overwhelming majority of the coal in the Powder River Basin is federally owned, the U.S. government is largely responsible for managing this resource. To this end, BLM is responsible for issuing coal leases, as well as approving subsequent lease readjustments and resource recovery and protection plans. The USFS, as manager of the Thunder Basin National Grassland in northeastern Wyoming, is responsible for providing consent to coal leasing where minerals underlie the Grassland, as well as for providing authorization for any special use permits related to the surface impacts of mining. OSMRE reviews and make recommendations to the Secretary of Interior regarding the approval of any mining plan or mining plan modifications related to the development of federal coal. The Interior Department, through the Assistant Secretary for Lands and Minerals Management, ultimately approves mining plans or mining plan modifications authorizing the extraction of the federal coal that is part of the coal leases.

Ensuring the Wright Area FEIS is up to date and appropriately supplemented in accordance with NEPA is critical to ensuring your agencies make well-informed decisions related to the leasing and mining of coal in the Powder River Basin. To this end, our Petition requests that you refrain from undertaking actions that would irreversibly and irretrievably commit resources prior to ensuring that the air quality analysis in the Wright Area FEIS is fully supplemented and adequate.

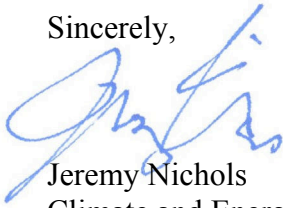
The Wright Area FEIS analyzes and assesses one of the largest—if not the largest—coal leasing proposals in American history. It is incumbent upon your agencies to ensure that these coal leasing plans are approved in as informed of a manner as possible to ensure that you are not inappropriately saddling the American public with unacceptable, and potentially grossly detrimental, environmental impacts.

In submitting our Petition, we have copied other agencies with relevant insight and authority, including the U.S. Environmental Protection Agency. We request that as your agencies respond to our Petition, these agencies be consulted and informed of your actions.

Our Petition requests that you respond within 60 days and that you refrain from undertaking any irreversible or irretrievable commitment of resources unless and until the Wright Area FEIS is supplemented accordingly.

Thank you for your time and attention to this matter. If you have any questions or concerns, WildEarth Guardians' contact information is provided in the Petition.

Sincerely,



Jeremy Nichols  
Climate and Energy Program Director  
WildEarth Guardians

cc (by e-mail only):

Tommy Beaudreau, Acting Assistant Secretary for Lands and Minerals Management, U.S. Department of Interior, [feedback@ios.doi.gov](mailto:feedback@ios.doi.gov);  
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Neil Kornze, Acting Deputy Director, Programs and Policy, U.S. Bureau of Land Management, [nkornze@blm.gov](mailto:nkornze@blm.gov);  
Stephanie Connolly, District Manager, High Plains District, Wyoming State Office, Bureau of Land Management, [sconnolly@blm.gov](mailto:sconnolly@blm.gov);  
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**Petition to Supplement the Wright Area Coal Lease Applications  
Final Environmental Impact Statement to  
Address Significant New Information Regarding the Air Quality Impacts of Coal Mining in  
the Powder River Basin of Northeastern Wyoming and Southeastern Montana**

**Submitted March 15, 2013 by WildEarth Guardians**

Pursuant to 5 U.S.C. §§ 553(e) and 555(b), WildEarth Guardians hereby formally petitions the U.S. Department of Interior, Bureau of Land Management (“BLM”), U.S. Forest Service (“USFS”), and Office of Surface Mining Reclamation and Enforcement (“OSMRE”) to prepare a supplement to the Final Environmental Impact Statement for Wright Area Coal Lease Applications (hereafter “Wright Area FEIS”).<sup>1</sup> We petition you to supplement in accordance with the National Environmental Policy Act, 42 U.S.C. § 4332, *et seq.*, Council on Environmental Quality (“CEQ”) NEPA implementing regulations, 40 C.F.R. § 1502.9(c)(1)(ii), as well as your respective agencies’ directives setting forth NEPA supplementation requirements, including:

- For the Department of Interior: Department of Interior Departmental Manual (“DM”), 516 DM 1, 1.14;
- For the Bureau of Land Management: BLM NEPA Handbook, H-1790-1, Section 5.3;
- For the U.S. Forest Service: Forest Service Handbook, FSH 1909.15, Section 18; and
- For the Office of Surface Mining Reclamation and Enforcement: OSMRE NEPA Handbook, Reg-1, Section 2.E.3.k.

We hereby petition you to supplement the Wright Area FEIS to address significant new information regarding the air quality impacts of the coal leasing analyzed in the FEIS. This new information is discussed in more detail below.

This is a rulemaking Petition submitted pursuant to the Administrative Procedure Act (“APA”), which gives interested persons the right to petition for the “issuance, amendment, or repeal of a rule.” 5 U.S.C. § 553(e). Additionally, it is submitted in accordance with Interior Department rulemaking regulations at 43 C.F.R. § 14.2, which applies to the Interior Department and its agencies, and U.S. Department of Agriculture rulemaking regulations at 7 C.F.R. § 1.28, which applies to the Department of Agriculture and its agencies, including the USFS.

Alternatively, this Petition is filed pursuant to the general appearance provisions of the APA. *See* 5 U.S.C. § 555(b). These provisions provide that any interested person may appear before the agency for a determination of a request. This right is affirmed by the First Amendment to the U.S. Constitution, which provides that any person has the right to “petition the government for a redress of grievances.” First Amendment to the U.S. Constitution. Our request is presented in more detail below.

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<sup>1</sup> We direct this petition to each agency individually as each agency has individual responsibility to fulfill the action requested in this Petition, but also urge the agencies to act collaboratively in response to this petition given shared and overlapping responsibilities.

## BACKGROUND

### A. The Wright Area FEIS

The Wright Area FEIS was prepared pursuant to NEPA in July of 2010. Notice of availability of the EIS was published on July 30, 2010. *See* 75 Fed. Reg. 44951. The FEIS analyzed and assessed the impacts of the BLM's proposal to lease six tracts of federal coal reserves adjacent to the Black Thunder, Jacobs Ranch, and North Antelope Rochelle coal mines in Campbell County, Wyoming, as well as the "logical consequence" of mining the coal leases.<sup>2</sup> *See* Wright Area FEIS, available online at <http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/hpdo/Wright-Coal/feis.Par.33083.File.dat/01WrightCoalVol1.pdf> (Volume 1) and <http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/hpdo/Wright-Coal/feis.Par.41820.File.dat/02WrightCoalVo2.pdf> (Volume 2). The area also includes two other surface coal mines, the Antelope and School Creek mines.

The Black Thunder and North Antelope Rochelle coal mines are extremely large surface mines located in the Powder River Basin of northeastern Wyoming and southeastern Montana, the nation's largest coal producing region, near the town of Wright. The strip mines, which are located in the southern portion of the Powder River Basin, are the two largest in the region, each year producing more than 100 million tons of coal. *See* Figure 1. According to the U.S. Energy Information Administration ("EIA"), the Black Thunder and North Antelope Rochelle coal mines were the nation's two single largest coal producers in 2011. *See* EIA, 2012, "Major U.S. coal mines, 2011," available online at <http://www.eia.gov/coal/annual/pdf/table9.pdf>.

The six tracts of federal coal reserves, hereafter referred to as the "Wright Area coal leases," analyzed in the FEIS included the following:

1. North Hilight: The North Hilight coal lease would expand the Black Thunder coal mine. The FEIS considered the North Hilight coal lease to contain as much as 727,500,000 tons of mineable coal covering 7,139.4 acres. The FEIS considered total area to be disturbed by the coal lease would be as much as 12,908.8 acres. *See* Wright Area FEIS at 2-78.
2. South Hilight: The South Hilight coal lease would expand the Black Thunder coal mine. The FEIS considered the South Hilight coal lease to contain as much as 347,800,000 tons of mineable coal covering 2,922.4 acres. The FEIS considered total area to be disturbed by the coal lease would be as much as 2,731.4 acres. *See* Wright Area FEIS at 2-81.
3. West Hilight: The West Hilight coal lease would expand the Black Thunder coal mine. The FEIS considered the West Hilight coal lease to contain as much as 1,147,900,000 tons of mineable coal covering 8,570.1 acres. The FEIS

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<sup>2</sup> The Jacobs Ranch Mine has since merged with the Black Thunder coal mine. All operations at Jacobs Ranch are now considered to be part of Black Thunder.

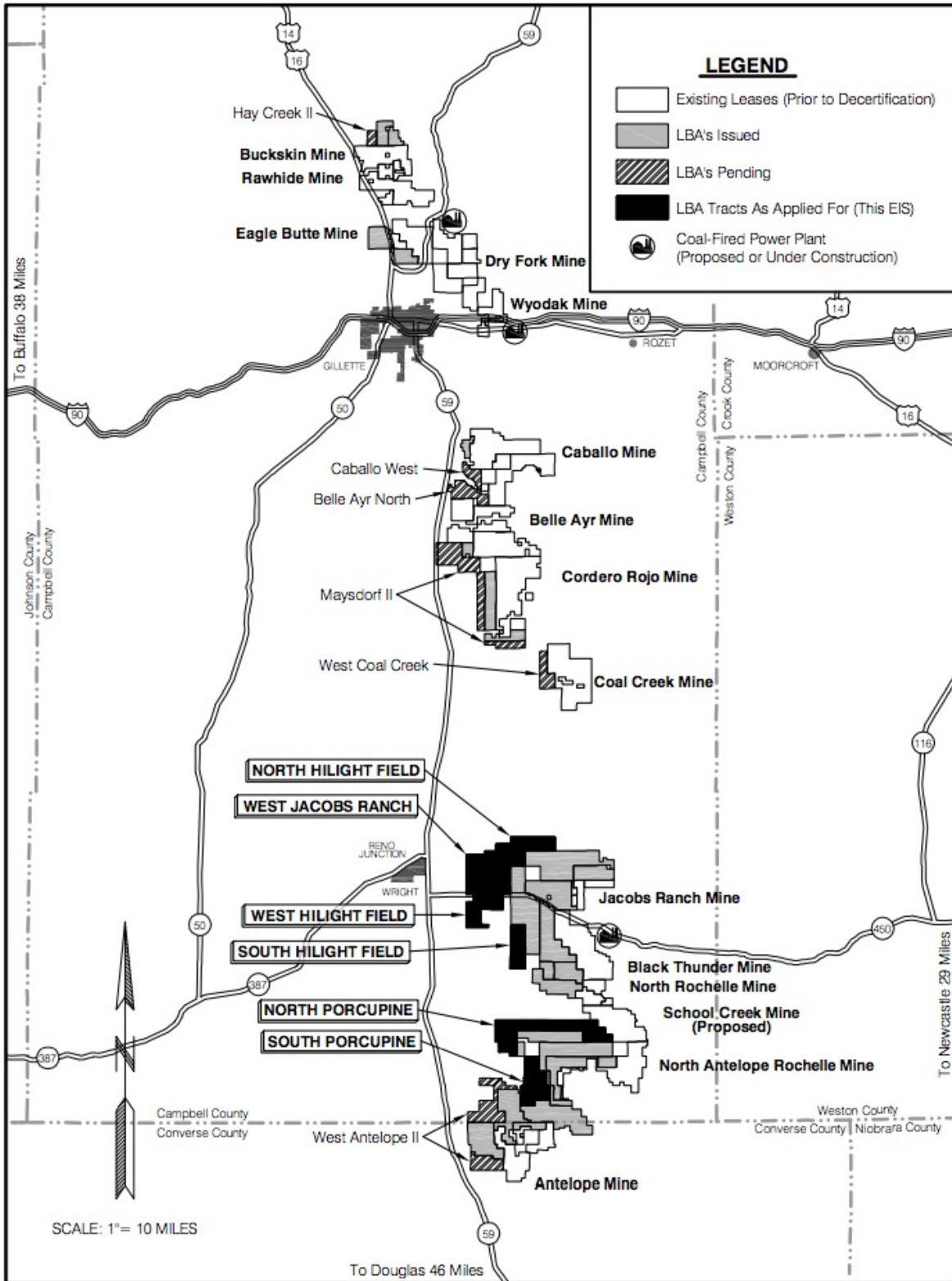
considered total area to be disturbed by the coal lease would be as much as 11,629.5 acres. *See* Wright Area FEIS at 2-83.

4. West Jacobs Ranch: The West Jacobs Ranch coal lease would expand the Black Thunder coal mine. The FEIS considered the West Jacobs Ranch coal lease to contain as much as 1,269,000,000 tons of mineable coal covering 8,076.2 acres. The FEIS considered total area to be disturbed by the coal lease would be as much as 9,370 acres. *See* Wright Area FEIS at 2-85.
5. North Porcupine: The North Porcupine coal lease would expand the North Antelope Rochelle coal mine. The FEIS considered the North Porcupine coal lease to contain as much as 845,000,000 tons of mineable coal covering 7,366.8 acres. The FEIS considered total area to be disturbed by the coal lease would be as much as 11,767 acres. *See* Wright Area FEIS at 2-87.
6. South Porcupine: The South Porcupine coal lease would expand the North Antelope Rochelle coal mine. The FEIS considered the South Porcupine coal lease to contain as much as 440,600,000 tons of mineable coal covering 3,568 acres. The FEIS considered total area to be disturbed by the coal lease would be as much as 4,610 acres. *See* Wright Area FEIS at 2-89.

In total, the Wright Area FEIS considers the impacts of leasing more than 4.7 billion tons of coal and directly impacting through surface mining more than 53,000 acres of the Powder River Basin, an area 82 square miles in size. Arguably, it is one of the largest, if not largest ever, coal leasing proposals ever analyzed.

While the BLM was the lead agency on the FEIS and was largely responsible for its preparation, the USFS and OSMRE aided in the preparation of the FEIS as “cooperating agencies.” Wright Area FEIs at ES-11. Although the FEIS was largely meant to inform the BLM’s leasing decisions, it was also intended to inform the actions of other agencies, including the USFS and OSMRE. As the FEIS noted, “Other agencies, including OSM, will also use this analysis to make decisions related to leasing and mining the federal coal in these six tracts.” *Id.*

Indeed, although the BLM is responsible for leasing federal coal reserves, other federal agencies are responsible for related decisions. In the case of the USFS, because the agency manages the Thunder Basin National Grassland, which overlies much the North Hilight, South Hilight, West Hilight, North Porcupine, and South Porcupine coal leases, it must provide its consent to the leases before they can be authorized by the BLM. In the case of the Interior Department and OSMRE, the agencies must approve plans authorizing the mining of the Wright Area coal leases before mining can proceed. The agencies are also responsible for a number of related decisions, including, but not limited to, authorization of special use permits for the use and occupation of lands managed by the USFS, authorization of resource recovery and protection plans by the BLM, and approval of future lease readjustments by the BLM.



**Figure 1. Map of Wright Area Coal Mines and Wright Area Coal Leases Analyzed in the FEIS. See Wright Area FEIS at 1-2.**

To this end, since its release, the Wright Area FEIS has been explicitly relied upon by the U.S. Department of Interior, BLM, USFS, and OSMRE in approving, or recommending approval of, several leasing and mining actions related to the Wright Area coal leases. Examples of such actions include:

- For the BLM, the authorization of the sale and issuance of the South Hilight (Record of Decision (“ROD”) signed by BLM High Plains District Manager, Stephanie Connolly, on March 1, 2011), North Hilight (ROD signed by Stephanie Connolly on February 1, 2012), South Porcupine (ROD signed by Stephanie Connolly on August 10, 2011), and North Porcupine (ROD signed by Stephanie Connolly on October 17, 2011) coal leases;
- For the USFS, the consent to the BLM’s sale and issuance of the South Hilight (ROD signed by Medicine Bow-Routt National Forest and Thunder Basin National Grassland Supervisor, Phil Cruz, on June 12, 2011), North Hilight (ROD signed by Phil Cruz on November 23, 2011), South Porcupine (ROD signed by Phil Cruz on July 20, 2011), and North Porcupine (ROD signed by Phil Cruz on September 30, 2011) coal leases. The Wright Area FEIS was also relied upon by the USFS in approving the construction and operation of the School Creek coal mine (Decision Notice signed by Acting Deputy Medicine Bow-Routt National Forest and Thunder Basin National Grassland Forest Supervisor, Jeff Stoney, on September 18, 2012);
- For Interior and OSMRE, the review and approval of a mining plan modification for federal coal lease WYW172692 at the Black Thunder Coal Mine (decision signed by the Assistant Secretary of the Interior for Lands and Minerals Management on May 20, 2011) and the review and approval of a mining plan for federal coal leases WYW151134, WYW172413, and WYW172414 for the School Creek mine (decision signed by the Assistant Secretary on November 24, 2010).

It is expected that the Wright Area FEIS will continue to be relied upon by Interior, the BLM, the USFS, and OSMRE in issuing future decisions related to the leasing and mining of the Wright Area coal leases. These decisions will include, but are not limited to: authorization of the sale and issuance of the West Hilight and West Jacobs Ranch coal leases by the BLM, as well as approval of resource recovery and protection plans and lease readjustments for the Wright Area coal leases and other related leases; consent to the issuance of the West Hilight coal lease by the USFS and approval of special use permits related to the mining of the Wright Area coal leases; review and approval of mining plans and/or mining plan modifications to approve the mining of the Wright Area coal leases and other related leases.

## **B. NEPA Supplementation Requirements**

CEQ NEPA implementing regulations, which apply to all federal agencies, state that “Agencies shall prepare supplements to either draft or final environmental impact statements if: There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.” 40 CFR § 1502.9(c)(1)(ii). To this end, the U.S. Supreme Court has held:



[A] supplemental EIS must be prepared by an agency...if there remains major federal action to occur, and if the new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered.

*March v. ONRC*, 490 U.S. 360 (1989). Thus, NEPA and governing caselaw are therefore clear that where significant new information arises that has bearing on an action analyzed under an EIS, and where there remains major federal action to occur that was authorized by an EIS, supplementation is commanded. The duty to supplement is echoed in underlying Agency directives. See Interior Departmental Manual, 516 DM 1, 1.14; BLM NEPA Handbook, H-1790-1, Section 5.3; Forest Service Handbook, FSH 1909.15, Section 18.2(2); and OSMRE NEPA Handbook, Reg-1, Section 2.E.3.k.

Pursuant to NEPA, agencies must take a “hard look” at new information to assess whether supplementation may be necessary. See *Norton v. Southern Utah Wilderness Alliance*, 524 U.S. 55 (2004). Agency directives also echo this duty. The Forest Service Handbook, for example, states:

If new information or changed circumstances relating to the environmental impacts of a proposed action come to the attention of the responsible official after a decision has been made and prior to completion of the approved program or project, the responsible official should review the information carefully to determine its importance. Consideration should be given to whether or not the new information or changed circumstances are within the scope and range of effects considered in the original analysis.

FSH 1909.15, Section 18.1. Thus, your agencies are obligated to rigorously review new information to determine its significance and bearing on actions analyzed in EISs and to supplement the EIS as may be appropriate.

### **C. Legal Basis for Petitioning**

The APA provides that interested persons may petition for the “issuance, amendment, or repeal of a rule.” 5 U.S.C. § 553(e). This provision is echoed in underlying Department of Agriculture and Interior Department regulations. See 7 C.F.R. § 1.28 and 43 C.F.R. § 14.2.

A rule is defined as “...the whole or part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy[.]” 5 U.S.C. § 551(4). This is a Petition requesting your agencies, either individually or collectively, determine that supplementation of the Wright Area FEIS is necessary under NEPA, and to supplement the FEIS accordingly. Thus, this petition requests your agencies to issue an agency statement of particular applicability and future effect designed to implement law. It is therefore a rulemaking petition.

Alternatively, this Petition is filed pursuant to the general appearance provisions of the APA. See 5 U.S.C. § 555(b). These provisions provide that any interested person may appear

before the agency for a determination of a request. This right is rooted to the First Amendment to the U.S. Constitution, which provides that any person has the right to “petition the government for a redress of grievances.” First Amendment to the U.S. Constituion.

## **THE PETITIONED ACTION AND NEED FOR A SUPPLEMENT TO THE WRIGHT AREA FEIS**

This Petition is a request that the Department of Interior, BLM, USFS, and OSMRE, either individually or collectively, supplement the air quality analysis in the Wright Area FEIS in accordance with NEPA, CEQ regulations implementing NEPA, and your agencies’ respective directives. NEPA requires that the environmental impacts of major federal actions be analyzed in an EIS. *See* 42 U.S.C. § 4332(2)(C); *see also* 40 C.F.R. § 1502.16. The duty to analyze environmental impacts extends to direct impacts, indirect impacts, and cumulative impacts of major federal actions. *See* 40 C.F.R. §§ 1502.16(a), (b), and (d). To this end, your agencies analyzed and assessed the direct, indirect, and cumulative air quality impacts of the Wright Area coal leases. It is this analysis that we request be supplemented.

Supplementation is commanded in light of the fact that there is significant new information regarding the direct, indirect, and cumulative air quality impacts of coal leasing and related activities addressed in the Wright Area FEIS and given that there remains federal action to be authorized and/or implemented under the Wright Area FEIS. By supplementing this analysis, your agencies will ensure that future action remaining to be implemented in reliance upon the Wright Area FEIS is appropriately informed, thereby fulfilling NEPA’s mandate of ensuring that federal agencies make “decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.” 40 C.F.R. § 1500.1(c). Below, we detail the need for supplementation.

### **A. Significant New Information Regarding Air Quality Impacts**

The Wright Area FEIS discusses the air quality impacts of issuing the Wright Area coal leases, as well as the attendant mining and related activities, which the FEIS refers to as “logical consequence[s]” of issuing the coal leases. Wright Area FEIS at 3-323. The FEIS discusses the direct, indirect, and cumulative air quality impacts of these actions, noting that air quality is among the “[c]ritical elements of the human environment that could potentially be affected by the [Wright Area coal leases].” FEIS at 3-2.

Unfortunately, an expert report commissioned by WildEarth Guardians demonstrates the Wright Area FEIS falls significantly short of adequately analyzing and assessing the direct, indirect, and cumulative air quality impacts in a number of key regards. *See* Attachment 1, Copeland, C., “Technical Comments on the Air Quality Impacts Assessment and Analysis in the Wright Area Coal Lease by Application Final Environmental Impact Statement” (March 12, 2013). In particular, the FEIS fails to adequately analyze and assess the impacts of the Wright Area coal leases to a number of National Ambient Air Quality Standards (“NAAQS”). NAAQS are established by the U.S. Environmental Protection Agency (“EPA”) and represent federal standards, the attainment and maintenance of which, are requisite to protecting public health. *See* 42 U.S.C. § 7409(b)(1). As federal air quality standards, federal agencies are duty-bound to

ensure their actions do not jeopardize compliance with the NAAQS. *See e.g.* Federal Land Policy and Management Act, 43 U.S.C. § 1712(c)(8), stating that BLM must “provide for compliance with...State and Federal air, water, noise, or other pollution standards or implementation plans.”

Among the key findings, the technical review reveals that for the following air quality issues, the FEIS is fatally flawed:

- Emissions Inventory: The Wright Area FEIS fails to analyze and rely upon a complete inventory of air emissions for the Wright Area coal mines. *See* Attachment 1 at 3-5. The review notes that existing inventory data is incomplete, particularly with regards to fine particulate matter emissions, or PM<sub>2.5</sub>, and that a number of discrepancies exist between existing inventories prepared by the U.S. Environmental Protection Agency (“EPA”) and by the Wyoming Department of Environmental Quality (“WDEQ”). The lack of adequate inventory data indicates that the FEIS fails to adequately disclose the affected environment and therefore fails to adequately analyze and assess air quality impacts;
- Nitrogen Dioxide Impacts: The Wright Area FEIS fails to adequately analyze and assess the direct, indirect, and cumulative impacts of the Wright Area coal leases to national ambient air quality standards (“NAAQS”) adopted for nitrogen dioxide (“NO<sub>2</sub>”), including the 1-hour and the annual NO<sub>2</sub> NAAQS. *See* Attachment 1 at 5-19. The review discloses that the FEIS fails to ensure adequate monitoring of 1-hour concentrations of NO<sub>2</sub>, fails to include a quantitative analysis of impacts to the 1-hour NO<sub>2</sub> NAAQS, which was adopted in early 2010, relies upon inaccurate background NO<sub>2</sub> concentration data, fails to include enforceable mitigation measures to ensure 1-hour and annual NO<sub>2</sub> concentrations are kept below the NAAQS, and that the cumulative air quality analysis prepared as part of the Powder River Basin Coal Review and relied upon in the Wright Area FEIS underpredicts impacts in the Wright Area and does not adequately address the 1-hour NO<sub>2</sub> NAAQS (including by failing to utilize the AERMOD model to appropriately analyze and assess near-field NO<sub>2</sub> impacts), thereby rendering the cumulative effects discussion in the FEIS fatally flawed. The review also notes that permitting by the WDEQ has entirely failed to address the impacts of coal mining to the 1-hour NO<sub>2</sub> NAAQS.

The failure to adequately analyze and assess impacts to the NO<sub>2</sub> NAAQS is especially troublesome in light of the magnitude of nitrogen oxide (“NO<sub>x</sub>”) emissions associated with coal mining. NO<sub>x</sub> includes all nitrogen oxide compounds, including NO<sub>2</sub>. The Powder River Basin Coal Review presumed that 75% of all NO<sub>x</sub> is NO<sub>2</sub>. The technical review notes that by 2015, NO<sub>x</sub> emissions from the Black Thunder coal mine will be as high as 6,713 tons annually, primarily due to blasting and haul truck emissions. To put this into perspective, this is nearly the same amount of NO<sub>x</sub> emissions released by the 817 megawatt Dave Johnston coal-fired power plant, a which is located in Converse County, Wyoming in the far southern Powder River Basin. According to EPA data queried online, the Dave Johnston power plant

released 6,999 tons of NO<sub>x</sub> in 2012. *See* EPA, “Air Markets Program Data,” available at <http://ampd.epa.gov/ampd/>.

- Ozone Impacts: The Wright Area FEIS fails to adequately analyze and assess the direct, indirect, and cumulative impacts of the Wright Area coal leases to NAAQS for ozone. *See* Attachment 1 at 19-25. The review discloses that the FEIS fails to address recent ozone monitoring data indicating exceedances of the current 8-hour ozone NAAQS, fails to quantify impacts to ozone concentrations using available modeling protocol, fails to ensure enforceable mitigation measures to ensure ozone concentrations remain below the NAAQS, and fails to address recently proposed revisions to the ozone NAAQS that have direct relevancy to the public health impacts of the Wright Area coal leases, as well as the future compliance status of the region. The technical review notes that given that exceedances of the ozone NAAQS have occurred in the region, a quantitative ozone modeling analysis is required to demonstrate that impacts will not be significant or that the NAAQS will not be jeopardized, and that the BLM in particular has indeed conducted such quantitative modeling in other parts of Wyoming. The Technical Review notes the failure of the Powder River Basin Coal Review to analyze and assess the cumulative ozone impacts in any way. The review also notes that WDEQ has so far failed to analyze or assess in any way the impacts of coal mining to the ozone NAAQS.
- Fine Particulate Matter Impacts: The Wright Area FEIS fails to adequately analyze and assess the direct, indirect, and cumulative impacts of the Wright Area coal leases to NAAQS for PM<sub>2.5</sub>, including the 24-hour and annual PM<sub>2.5</sub> NAAQS. *See* Attachment 1 at 25-34. The review discloses that the FEIS fails to address the newly adopted annual PM<sub>2.5</sub> NAAQS, which were adopted in late 2012, fails to address monitoring data showing recent exceedances of the PM<sub>2.5</sub> NAAQS in the Powder River Basin, fails to rely on an adequate PM<sub>2.5</sub> emissions inventory, fails to ensure that enforceable mitigation measures are relied upon to ensure protection of both the 24-hour and annual PM<sub>2.5</sub> NAAQS, fails to adequately model the PM<sub>2.5</sub> impacts of the Wright Area coal leases (including by failing to address the impacts of secondary PM<sub>2.5</sub> formation), and fails to appropriately analyze and assess the cumulative PM<sub>2.5</sub> impacts. The review specifically identifies flaws in the Powder River Basin Coal Review analysis of PM<sub>2.5</sub> impacts, as well as the failure of the FEIS to reconcile the fact that the Powder River Basin Coal Review found widespread modeled violations of the PM<sub>2.5</sub> NAAQS, yet the FEIS concludes that the NAAQS will be protected. The review also notes that WDEQ has so far failed to analyze or assess in any way the impacts of coal mining to the current 24-hour and annual PM<sub>2.5</sub> NAAQS.

In light of the findings of this technical review, we request your agencies fully review the findings therein and supplement the Wright Area FEIS accordingly. Indeed, these findings represent significant new information that is materially relevant to the direct, indirect, and cumulative impacts of the Wright Area coal leases. Based on the findings of the expert report commissioned by WildEarth Guardians, it appears that the FEIS fails to address a number of deficiencies in the methodologies for analyzing and assessing impacts to the NO<sub>2</sub>, ozone, and PM<sub>2.5</sub> NAAQS, fails to address a number of deficiencies in the data relied upon in the FEIS, and

overall, fails to provide adequate information and analysis that demonstrates the NAAQS, and therefore public health, will be adequately protected. Although your agencies have asserted that the air quality impacts of the Wright Area coal leases will be protective of the NAAQS, the information in the technical review strongly indicates otherwise.

To this end, we request your agencies supplement the analysis and assessment of direct, indirect, and cumulative impacts to the NO<sub>2</sub> NAAQS, ozone NAAQS, and PM<sub>2.5</sub> NAAQS. Clearly there is new information demonstrating that the impacts of the Wright Area coal leases will impact the environment in a significant manner or to a significant extent that has not been considered. Supplementation is therefore not only appropriate, but required.

## **B. There Remains Federal Action**

Supplementation is not only appropriate given that there is significant new information indicating that the Wright Area coal leases will impact the environment in a significant manner or to a significant extent not already considered in the FEIS, but given that there remains federal action to be completed under the FEIS.

To begin with, the BLM has yet to make any decisions regarding the West Hilight and West Jacobs Ranch coal leases. To this end, the USFS has yet to consent to the issuance of these leases and Interior and OSMRE have yet to approve the addition of the federal coal reserves that are a part of these leases to a mining plan. Thus, there is clearly federal action to be taken under the FEIS.

Furthermore, it appears that federal action has yet to be taken for the other Wright Area coal leases. In particular, the Interior Department and OSMRE have yet to approve mining plans incorporating the federal coal reserves that are a part of the North Hilight, South Hilight, North Porcupine, and South Porcupine coal leases. Thus, there is further federal action to be taken under the FEIS.

More broadly however, it appears that all your agencies intend to rely on the FEIS for a number of future decisions related to coal mining in the Powder River Basin. For example, the USFS and OSMRE have relied on the Wright Area FEIS to approve coal mining at the School Creek coal mine. The School Creek coal mine is located near the Black Thunder and North Antelope Rochelle coal mines. Thus the agencies have relied on the Wright Area FEIS to approve mining activities, inferring that impacts analyzed in the Wright Area FEIS are indicative of the impacts of the School Creek coal mine. In light of this, it is clear that the Wright Area FEIS is intended to inform myriad coal leasing and mining decisions, some of which are likely to extend beyond the Wright Area coal mines and Wright Area coal leases.

Thus, there is clearly major federal action yet to be completed under the Wright Area FEIS, further bolstering the need to supplement the FEIS.

## CONCLUSION

Supplementation of the Wright Area FEIS under NEPA is clearly warranted. Not only are there significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, but there remains federal action to be completed under the Wright Area FEIS. The Department of Interior, BLM, USFS, and OSMRE are therefore duty bound to supplement the FEIS. To this end, your agencies are prohibited from undertaking any further action under the Wright Area FEIS that would irreversibly commit resources and prevent the consideration of reasonable alternatives in a supplemental FEIS.

If your agencies determine that supplementation is not appropriate, you must provide a response explaining why you believe supplementation is not appropriate.

The APA requires agencies to conclude the matter raised in this petition within a reasonable time. *See* 5 U.S.C. § 555(b). Department of Agriculture and Department of Interior regulations further require that rulemaking petitions be given “prompt consideration.” *See* 7 C.F.R. § 1.28 and 43 C.F.R. 14.3. Given this, we request that your agencies, either individually or collectively, respond within 60 days. In accordance with 5 U.S.C. § 555(e), your answer to this petition must provide a complete statement of all grounds for denial should you decide to deny this Petition in whole or in part.

The full name and address of the petitioner is as follows:

WildEarth Guardians  
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Denver, CO 80202  
(303) 437-7663  
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Please direct all correspondence regarding this matter to Jeremy Nichols, WildEarth Guardians’ Climate and Energy Program Director, at the contact information listed above. Thank you for your consideration of this Petition. We appreciate your prompt attention to this matter.

# **Attachment 1**

# **Technical Comments on the Air Quality Impacts Assessment and Analysis in the Wright Area Coal Lease by Application Final Environmental Impact Statement**

Comments by Cindy Copeland  
for WildEarth Guardians

March 12, 2013

These technical comments assess the current air quality conditions in the Wright Area (located in Wyoming's Powder River Basin) and analyze the air quality impacts analysis that was conducted for the Wright Area Coal Lease by Application Final Environmental Impact Statement, finalized in July 2010. The "Update of Task 3A Report for the Powder River Basin Coal Review Cumulative Air Quality Effects for 2020," released in December 2009, is also analyzed for its relevance to the Wright Area. The comments focus on the adverse impacts from the coal mines on nitrogen dioxide, ozone and fine particulate concentrations. This detailed review points to the need for improved air quality monitoring and emissions inventories for the coal mines. The shortcomings in the current Bureau of Land Management (BLM) documents for the Wright Area, indicate that the BLM must complete quantitative analyses that properly assesses compliance with the National Ambient Air Quality Standards, including the annual and 1-hour nitrogen dioxide standard, the 8-hour ozone standard, and the 24-hour and newly adopted annual fine particulate standards. The coal mines in the Wright Area are large sources of air pollution and their impacts to air quality in the surrounding area must be properly addressed.



## **Technical Comments on the Air Quality Impacts Assessment and Analysis in the Wright Area Coal Lease by Application Final Environmental Impact Statement**

These comments assess the current air quality conditions in the Wright Area and analyze the air quality impacts analysis that was conducted for the Wright Area Coal Lease by Application Final Environmental Impact Statement (Wright Area EIS), finalized in July 2010. This EIS assesses the impacts of issuing six new coal leases in the Wright Area for the Black Thunder, North Antelope Rochelle and the Jacobs Ranch coal mines. The Black Thunder and Jacobs Ranch mines have since merged; the Black Thunder and North Antelope Rochelle coal mines are now the two largest in the world, containing more than four billion tons of coal. Other coal mines in the area include the School Creek and Antelope mines. These comments also address portions of the “Update of Task 3A Report for the Powder River Basin Coal Review Cumulative Air Quality Effects for 2020” (Coal Review), from December 2009, that concern the Wright Area.

The Wright Area EIS analyzed current projected impacts for the applicable National Ambient Air Quality Standards (NAAQS) as well as impacts to Class I areas. While the EIS provides insight into current air quality and projected future conditions in the Wright Area, there are several key components missing from this analysis, notably:

- The BLM has not provided a comprehensive emissions inventory for the Wright Area;
- The BLM has not analyzed impacts to the 1-hour nitrogen dioxide (NO<sub>2</sub>) NAAQS, nor is there proper monitoring of maximum short-term concentrations in the Wright Area. Modeling for the annual NO<sub>2</sub> standard likely underpredicts impacts, although it shows modeled violations of the NAAQS, which the BLM fails to address;
- The BLM has failed to conduct a quantitative ozone analysis in either the EIS or the Coal Review despite the fact that ozone levels in the Powder River Basin are near the level of the NAAQS; and
- The BLM has failed to adequately address impacts to annual and 24-hour PM<sub>2.5</sub> concentrations, notably the BLM has not addressed the fact that modeling projects violations of both NAAQS.

These shortcomings are compounded by the fact that the Wyoming Department of Environmental Quality (WDEQ) has inadequately addressed the impacts of coal mining to air quality, notably in that it has not maintained adequate inventories, has not adequately modeled impacts to the NAAQS, and has not enacted enforceable emission limits to ensure that the NAAQS are fully protected.

The BLM must acknowledge the existing air quality concerns in the Wright Area and recognize that increased mining activities in the area will result in increases in nitrogen dioxide, ozone, and particulate pollution that will have significant detrimental effects on human health and the environment. Specifically, the BLM must acknowledge and address the areas of concern described in more detail below.

## **I. Complete Emissions Inventories for the Wright Area Coal Mines Must be Developed and Relied on in the EIS**

In order to understand the extent of the air quality impacts from the coal mines in the Wright Area, an accurate emissions inventory needs to be developed. There are currently two emissions inventories available that include the coal mines, these are: 1) WDEQ has a 2008 actual emissions inventory for minor sources, which is the only year for which WDEQ has collected emissions data from minor sources (see Table 1), and 2) EPA's 2008 National Emissions Inventory (NEI) data. But, there are large discrepancies between these inventories that render it difficult to understand the air quality impacts in the Wright Area from coal mines.

EPA's NEI data show lower levels of nitrogen oxides (NO<sub>x</sub>) for Campbell County than does WDEQ's 2008 minor source inventory. The 2008 NEI has a value of 508.62 tons per year of NO<sub>x</sub> in Campbell County from all the coal mines in the County,<sup>1</sup> while WDEQ's minor source actual inventory of the same year gives a total of 1115.66 tons per year NO<sub>x</sub> for just the three Wright Area mines reporting data. Two of the Wright Area mines (North Rochelle Mine and School Creek Mine) were not yet operating, so no actual emissions data are available for these sources. And the emissions given for Black Thunder Mine, which are just 3.8 tons per year for NO<sub>x</sub> and 140.1 tons per year of PM<sub>10</sub>, are extremely low. The Black Thunder Mine (which now includes the Jacobs Ranch Mine and the North Rochelle Mine) has a permitted coal production limit of 190 million tons per year.

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<sup>1</sup> EPA, 2008 National Emissions Inventory, <http://www.epa.gov/ttnchie1/net/2008inventory.html>.

**Table 1. 2008 Wyoming Minor Source Actual Emissions Inventory<sup>2</sup>**

| Facility Name                    | Company Name                   | County          | NO <sub>x</sub> tons per year (tpy) | PM <sub>10</sub> tpy | Total Volatile Organic Compounds (VOC) |
|----------------------------------|--------------------------------|-----------------|-------------------------------------|----------------------|--|
| Jacobs Ranch Mine <sup>3</sup>   | Jacobs Ranch Coal Company      | Campbell County | 265.24                              | 1555.49              | 3.92                                   |
| North Antelope Rochelle Mine     | Powder River Coal, LLC         | Campbell County | 846.62                              | 2453.21              | 2.86                                   |
| Black Thunder Mine               | Thunder Basin Coal Company LLC | Campbell County | 3.8                                 | 140.1                | 2.9                                    |
| North Rochelle Mine <sup>4</sup> | Triton Coal                    | Campbell County | Not yet operating                   |                      |  |
| School Creek Mine Mine           | Peabody                        | Campbell County | Not yet operating                   |                      |  |
| Antelope Mine                    | Antelope Coal Company          | Converse County | No data                             | 1058.69              | No data                                |

Despite the large amount of fugitive emissions from the coal mines, they are considered minor sources under air permitting rules. In the Black Thunder Mine permit, the point source emissions from stationary boilers and stationary diesel fired equipment are limited to 64.5 tons per year of NO<sub>x</sub> emissions and those same sources combined with the fugitive truck dump emissions are limited to 84.5 tons per year of PM<sub>10</sub>.<sup>5</sup> These limits enable the mine to be treated as a synthetic minor source under Wyoming's permitting rules, although total emissions from the mine are far greater than these permitted emissions, mostly due to emissions from fugitive dust, cast blasting and mobile emissions from mining equipment.

Wyoming's 2008 actual inventory does not include PM<sub>2.5</sub>, which is an important component of coal mine emissions. The 2008 NEI shows 14,062.45 tons per year of primary PM<sub>2.5</sub> emissions from coal mines in Campbell County and 1,205.3 tons per year of primary PM<sub>2.5</sub> from coal mines in Converse County.<sup>6</sup> The coal mines are large sources of fine particulate pollution and the emissions from individual mines need to be inventoried.

Considering the discrepancies and lack of data provided in the emissions inventories for the coal mines in the Wright Area, there is a need for an accurate and complete inventory of all the operating coal mines in the area. Even though these sources are considered

<sup>2</sup> WDEQ, <http://deq.state.wy.us/aqd/Actual%20Emissions.asp>

<sup>3</sup> The Jacobs Ranch Mine has since merged with the Black Thunder Mine, which the Thunder Basin Coal Company owns.

<sup>4</sup> The North Rochelle Mine has since merged with the Black Thunder Mine, which the Thunder Basin Coal Company owns.

<sup>5</sup> Wyoming Department of Environmental Quality, Air Quality Division, Permit Application Analysis for Black Thunder Mine, AP-10986, 15 December 2010, 13, Table 7-1.

<sup>6</sup> EPA, 2008 NEI.

minor sources under the permitting framework, their fugitive emissions make them significant polluters of particulates, NO<sub>x</sub> and other ozone forming pollution. Because recent monitoring data shows increasing levels and potential NAAQS problems, the specific air quality impacts from the mines must be understood in order to improve air quality in the Powder River Basin. In the next sections of these comments, NO<sub>2</sub>, ozone and PM<sub>2.5</sub> monitoring data for the area will be presented, along with a critique of the air quality analysis (or lack thereof) for these pollutants in the Wright Area EIS and Coal Review.

## **II. Nitrogen Dioxide Emissions from the Wright Area Coal Mines Must be Better Addressed**

NO<sub>2</sub> and NO<sub>x</sub> emissions from the coal mines in the Wright Area are a significant source of air pollution in the region and the lack of short-term monitoring data for the area makes it difficult to determine the extent of the problem. Sources of NO<sub>x</sub>, including NO<sub>2</sub>, at the coal mines include diesel trucks and other mining equipment, trains and cast blasting, which is the type of blasting used by all three mines covered by the Wright Area EIS.

### **A. BLM Must Require 1-hour NO<sub>2</sub> Monitoring for the Wright Area that Represents Maximum Concentrations:**

Table 2 shows 1-hour NO<sub>2</sub> monitoring data for the Powder River Basin from recent years. The first maximum and 98<sup>th</sup> percentile values are all below the NAAQS of 100 parts per billion (ppb). While there are a number of monitors in the region, the Wright Area itself is lacking in certified monitors to capture the short-term increases in NO<sub>2</sub> that occur when blasting operations take place at those mines. The Tracy Ranch monitor, located near the Black Thunder Mine boundary, is an industrial monitor operated by Thunder Basin Coal Company. EPA's AirData system only contains Tracy Ranch data for 2004. The Antelope Site 3 monitor, operated by Antelope Coal Company and located in Converse County, only has recent monitoring from 2006, 2009 and 2010 entered in AirData.<sup>7</sup>

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<sup>7</sup> EPA, AirData, Interactive Map, [http://www.epa.gov/airquality/airdata/ad\\_maps.html](http://www.epa.gov/airquality/airdata/ad_maps.html)

**Table 2. Powder River Basin 1-Hour NO<sub>2</sub> Monitoring Data<sup>8</sup>**

| Monitor Site                                      | Site Number | Year | First Maximum Value (ppb) | First Maximum Date | 98th Percentile (ppb) |
|---|-------------|------|---------------------------|--------------------|-----------------------|
| Tracy Ranch (Thunder Basin Coal Company)          | 789         | 2004 | 46                        | 26-Jan-04          | 32                    |
| Thunder Basin Grassland                           | 123         | 2009 | 14                        | 27-Jan-09          | 11                    |
| Thunder Basin Grassland                           | 123         | 2010 | 15                        | 9-Jan-10           | 11                    |
| Thunder Basin Grassland                           | 123         | 2011 | 15.8                      | 19-Sept-11         | 11.3                  |
| Thunder Basin Grassland                           | 123         | 2012 | 24.7                      | 11-Aug-12          | 11.2                  |
| Antelope Site 3 (Antelope Coal Company)           | 819         | 2006 | 43                        | 14-Jul-06          | 41                    |
| Antelope Site 3 (Antelope Coal Company)           | 819         | 2009 | 32                        | 1-Aug-09           | 30                    |
| Antelope Site 3 (Antelope Coal Company)           | 819         | 2010 | 34                        | 16-Apr-10          | 33                    |
| Gillette College                                  | 800         | 2011 | 44.8                      | 20-Nov-11          | 39                    |
| Gillette College                                  | 800         | 2012 | 39.3                      | 14-Mar-12          | 31.8                  |
| South Campbell County                             | 456         | 2009 | 40                        | 10-Sept-09         | 29                    |
| South Campbell County                             | 456         | 2010 | 35                        | 8-Jan-10           | 32                    |
| South Campbell County                             | 456         | 2011 | 46.1                      | 20-Nov-11          | 33.4                  |
| South Campbell County                             | 456         | 2012 | 37.6                      | 29-Sept-12         | 31.5                  |
| Belle Ayr Mine                                    | 892         | 2009 | 74                        | 4-Nov-09           | 24                    |
| Belle Ayr Mine                                    | 892         | 2010 | 70                        | 3-Mar-10           | 34                    |
| Belle Ayr Mine                                    | 892         | 2011 | 44                        | 4-Jan-11           | 36                    |
| Belle Ayr Mine                                    | 892         | 2012 | 61.1                      | 12-Apr-12          | 34.1                  |
| Hilight-Reno Junction Gas (Western Gas Resources) | 011         | 2012 | 58                        | 7-Aug-2012         | 52                    |

<sup>8</sup> EPA, AirData, Interactive Map, [http://www.epa.gov/airquality/airdata/ad\\_maps.html](http://www.epa.gov/airquality/airdata/ad_maps.html)

The Tracy Ranch monitor, operated by Thunder Basin Coal Company is the best placed monitor in the Wright Area but it is an industrial monitor and data is not consistently reported to EPA or easily available to the public.<sup>9</sup> According to WDEQ's "Wyoming Ambient Air Monitoring Annual Network Plan 2008," the Tracy Ranch monitor is downwind of mining activity. WDEQ's monitoring network assessment indicated that this monitor might have had some upgrades made to it during 2008.<sup>10</sup> The 2010 permit application analysis for the Jacobs Ranch Mine merge with the Black Thunder mine includes 1-hour NO<sub>2</sub> monitoring data for the Tracy Ranch monitor for the years 2007 through 2009. The 98<sup>th</sup> percentile 1-hour average NO<sub>2</sub> values for those years were, 34.2 ppb in 2007, 30 ppb in 2008 and 30.7 ppb in 2009.<sup>11</sup>

WDEQ's monitoring network assessment for 2011 describes the objectives of the NO<sub>2</sub> monitors in the Wright Area. According to WDEQ, "The Belle Ayr Monitor is located near the rail road and represents a "maximum concentration" in and around the coal mines."<sup>12</sup> Due to funding shortages, the Belle Ayr and Antelope NO<sub>x</sub> monitors were shut down between March 2007 and April 2009. The Antelope monitor is also not currently operational due to power constraints, but WDEQ indicated it would research a new location for the monitor during 2012.<sup>13</sup>

The NO<sub>2</sub> monitoring network in the Powder River Basin needs to be reviewed to ensure that maximum ambient concentrations from the blasting operations at the mines are being represented. WDEQ explains that the Belle Ayr monitoring site is the maximum concentration site because it is close to a rail loop, but whether it is also a maximum concentration site representing the short-term NO<sub>2</sub> concentrations from blasting is unclear. Furthermore, given the potential for significant emissions, the Wright Area mines should be adequately represented by an NO<sub>2</sub> monitor as well. The North Antelope Rochelle Mine and Black Thunder Mine are the largest producing mines in the country and the short-term NO<sub>2</sub> levels from blasting in this area need to be adequately monitored.

EPA's final rule for the 1-hour NO<sub>2</sub> NAAQS explains that the NO<sub>2</sub> monitoring network needs to represent maximum concentrations that occur near roadways. EPA explained that, "Because monitors in the current network are not sited to measure peak roadway associated NO<sub>2</sub> concentrations, individuals who spend time on and/or near major roadways could experience NO<sub>2</sub> concentrations that are considerably higher than indicated by monitors in the current area-wide NO<sub>2</sub> monitoring network."<sup>14</sup> Because blasting operations at the coal mines cause high NO<sub>2</sub> concentrations in the Wright Area,

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<sup>9</sup> Although TBCC reports data to WDEQ for this monitor, electronic copies of that data could not be obtained.

<sup>10</sup> WDEQ, Wyoming Ambient Air Monitoring Annual Network Plan 2008, [http://deq.state.wy.us/aqd/downloads/AirMonitor/Network%20Plan\\_2008.pdf](http://deq.state.wy.us/aqd/downloads/AirMonitor/Network%20Plan_2008.pdf), 24.

<sup>11</sup> WDEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 35.

<sup>12</sup> WDEQ, Wyoming Ambient Air Monitoring Annual Network Plan 2012, 20 June 2012 [http://deq.state.wy.us/aqd/downloads/AirMonitor/Network\\_Plan\\_2012\\_Rev\\_1.pdf](http://deq.state.wy.us/aqd/downloads/AirMonitor/Network_Plan_2012_Rev_1.pdf), 31.

<sup>13</sup> Ibid, 31-2.

<sup>14</sup> EPA, "Primary National Ambient Air Quality Standards for Nitrogen Dioxide," Final Rule, 9 February 2010, 75 FR 6479.

the same objective should apply for this monitoring network. NO<sub>2</sub> monitoring in this area should be conducted in such a way to represent the maximum concentrations from mining operations. Unfortunately, there is currently a lack of data showing the NO<sub>2</sub> concentrations from blasting. But given the fact that school bus stops, houses and businesses are near or on the permit boundaries and have been affected by the NO<sub>x</sub> clouds, WDEQ and BLM should find a way to more accurately characterize the emissions in order to keep the public safe.<sup>15</sup>

The Wright Area EIS cites a Thunder Basin Coal Company study conducted during 2002 to evaluate the NO<sub>2</sub> levels during blasting at the Black Thunder Mine. For this study, monitors were placed inside the permit boundary at the mine to monitor the short-term NO<sub>x</sub> levels during blasting. Data showed NO<sub>x</sub> levels ranging from non-detectable to 21.4 parts per million (ppm) (measured 361 feet from the blast). The Wright Area EIS briefly describes the Thunder Basin Coal Company study and then explains that,

While disagreement still exists regarding acceptable exposure levels, a large amount of actual data are now available from which informed decisions can be made regarding blasting practices. The data show clearly that reduction in blast (agent) size and increases in setback distances are effective methods for mitigating the frequency and extent of public exposure to blasting clouds. See Appendix F for additional information about studies that were conducted to evaluate the levels of public exposure to NO<sub>x</sub>.<sup>16</sup>

Appendix F to the EIS actually only contains a few short paragraphs that discuss the safe setbacks that were recommended as part of the 2002 study and augmented by data subsequently collected at the Eagle Butte, North Antelope Rochelle, Buckskin and Cordero Rojo mines during blasting events.<sup>17</sup> The data collected are not included in this analysis. If there truly is a large amount of data ensuring that safe setback distances are understood and adhered to, the BLM needs to provide more details on that information in this context. Furthermore, the safe setbacks recommended by the study, which BLM relies on heavily to approve the Wright Area EIS, are not as well regarded by the WDEQ. According to Doug Emme, WDEQ's Blasting Engineer, the safe setbacks identified by the Thunder Basin Coal Company study were not supported by WDEQ.<sup>18</sup> Again, if monitoring data and other important information on NO<sub>2</sub> levels during blasting events are available, they need to be included in more detail in the EIS in order to show what the impacts are to the public. The fact that blasting events can easily impact people in their homes and businesses and children at school bus stops makes it very important that the BLM seriously consider public health and safety in this matter.

The need to focus on public health and to ensure adequate monitoring is underscored by

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<sup>15</sup> BLM, Final EIS for Wright Area Coal Lease Applications, July 2010, ES-41-46.

<sup>16</sup> BLM, Final Wright Area EIS, 3-82.

<sup>17</sup> BLM, Wright Area Final EIS, App. F, Supplemental Air Quality Information, July 2010, F-18.

<sup>18</sup> Doug Emme, WDEQ, email communication to Cindy Copeland, 15 February 2013.

scientific evidence showing that the public would be better protected if the 1-hour NO<sub>2</sub> standard were set at an even lower level. In EPA's proposal for the NO<sub>2</sub> primary NAAQS, EPA proposed to set the level of the new 1-hour standard within the range of 80 to 100 ppb and solicited comment on standard levels as low as 65 ppb and as high as 150 ppb.<sup>19</sup> In the end, EPA finalized the standard at 100 ppb, but that was set at the upper limit of the recommendations from the Clean Air Science Advisory Board (CASAC). In advising EPA on the level of the 1-hour NO<sub>2</sub> standard, CASAC wrote that, "The evidence reviewed in the REA [Risk and Exposure Assessment] indicates that adverse health effects have been documented in clinical studies of persons with asthma at 100 ppb and the REA finds "...strong support for a level at or below 100 ppb..." CASAC firmly recommends that the upper end of the range not exceed 100 ppb, given the findings of the REA."<sup>20</sup>

Comments on EPA's proposed NO<sub>2</sub> NAAQS submitted by the American Lung Association, Earthjustice, Environmental Defense Fund and the Natural Resources Defense Council, recommend that EPA set the level of the 1-hour NO<sub>2</sub> standard at no more than 50 ppb with a 99<sup>th</sup> percentile averaging time. These comments summarize epidemiological studies reviewed by EPA in the Risk and Exposure Assessment and the Integrated Science Assessment, as well as documented by CASAC, that point to adverse health effects at levels much lower than 100 ppb. These groups commented to EPA that rather than setting the level of the 1-hour NO<sub>2</sub> standard at the upper end of the range of health impacts, the level of the NAAQS should be placed below the mean concentrations.<sup>21</sup>

Rather than look to the highest concentrations during the study period, EPA should look at the mean concentrations at which effects occurred (as well as 1 standard deviation below the mean) and set a standard below this level that incorporates a margin of safety to protect against the adverse effects. Given that harm occurred at much lower concentrations, a standard based on the highest levels only cannot possibly protect public health.<sup>22</sup>

Indeed, the primary NO<sub>2</sub> NAAQS is currently under review by EPA.<sup>23</sup> Given that 1-hour NO<sub>2</sub> concentrations in the Powder River Basin are being recorded at levels in the range of documented adverse health effects, these data should be taken seriously regardless of whether there are currently exceedances or violations of the 1-hour NO<sub>2</sub> NAAQS.

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<sup>19</sup> EPA, Primary National Ambient Air Quality Standard for Nitrogen Dioxide, Proposed Rule, 15 July 2009, 74 FR 34404.

<sup>20</sup> Science Advisory Board letter to EPA Administrator Johnson, Clean Air Scientific Advisory Committee's (CASAC) Review Comments on EPA's Risk and Exposure Assessment to Support the Review of the NO<sub>2</sub> Primary National Ambient Air Quality Standard, 16 December 2008, 2.

<sup>21</sup> ALA, Earthjustice, EDF, NRDC, "Comments to the U.S. Environmental Protection Agency on the Proposed Rule for the Primary National Ambient Air Quality Standard for Nitrogen Dioxide," 14 September 2009, 7-16.

<sup>22</sup> Ibid, 11.

<sup>23</sup> EPA, 10 February 2012, 77 FR 7149.



## **B. The Wright Area EIS Must Include a Quantitative Analysis of the 1-hour NO<sub>2</sub> NAAQS:**

The Wright Area EIS includes annual NO<sub>2</sub> data and modeling results for the annual standard, which previously was the only NO<sub>2</sub> standard. However, on February 9, 2010, EPA promulgated a final rule for a 1-hour NO<sub>2</sub> NAAQS. This new standard is set at 100 ppb, based on a 3-year average of 98<sup>th</sup> percentile yearly data.<sup>24</sup> The Wright Area EIS must be revised to account for the 1-hour standard in order to adequately protect human health. Given the nature of the short-term spikes in NO<sub>2</sub> due to cast blasting operations at the mines, an analysis of the 1-hour standard is especially critical. And while the BLM has assessed the 1-hour NO<sub>2</sub> impacts in Montana for the Coal Review, the predicted impacts are extremely elevated with no explanation of those high levels. Quantitative modeling of NO<sub>2</sub> is essential for the Wright Area in order to accurately assess the impacts of the coal mines.

The BLM did not conduct NO<sub>2</sub> or NO<sub>x</sub> modeling for the Wright Area EIS but instead summarized the NO<sub>x</sub> modeling conducted for the most recent permit applications for the Black Thunder, Jacobs Ranch and North Antelope Rochelle mines as well as results from the Coal Review. The WDEQ has not conducted 1-hour NO<sub>2</sub> modeling for any of the mines in the Wright Area, thus underscoring the need for BLM to do a quantitative analysis of the impacts that coal mines have on air quality in the area. According to the EIS, emissions scenarios in the permits would be similar to emissions under the mine expansions analyzed in the EIS because mining rates and operations would be relatively equal. At the time, the current permit for the Black Thunder mine was a permit issued in 2008 with a maximum coal production rate of 135 million tons per year. Since the EIS was finalized, the Jacobs Ranch Mine merged with the Black Thunder Mine and the maximum permitted coal production was set at 190 million tons per year.

The 2008 Black Thunder permit projects that NO<sub>2</sub> emission rates for 2015 and 2017 are 4,507 tons per year and 4,743 tons per year, respectively.<sup>25</sup> In WDEQ's December 15, 2010 Permit Application Analysis for the merging of the Jacobs Ranch Mine with the Black Thunder Mine, the predicted 2014 and 2015 NO<sub>x</sub> emissions from blasting at the Black Thunder Mine are 3,155 tons per year and 3,254 tons per year, respectively (see Table 3). Annual NO<sub>x</sub> emissions from the haul trucks used at the mine are expected to be 2,612 tons per year in 2014 and 2,663 tons per year in 2015. Total NO<sub>x</sub> emissions for the Black Thunder Mine are projected to be 6,558 tons per year in 2014 and 6,713 tons per year in 2015.<sup>26</sup> It should be noted that while these emissions projections from the 2010 permit are based on NO<sub>x</sub> emissions, NO<sub>2</sub> emissions would be some component of these

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<sup>24</sup> EPA, Primary National Ambient Air Quality Standards for Nitrogen Dioxide, Final Rule, 29 February 2010, 75 FR 6474.

<sup>25</sup> BLM, Wright Area EIS, 3-83.

<sup>26</sup> WDEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 33, table 10-8.

figures. The modeling analysis for the Coal Review assumed a 75 percent NO<sub>2</sub> to NO<sub>x</sub> ratio for maximum impacts.<sup>27</sup> The emission rates used in the modeling relied on in the EIS (such as the Coal Review) need to be updated to reflect current predictions.

**Table 3. Annual NO<sub>x</sub> Emissions Projections for Black Thunder Mine, used in 2014 and 2015 Permit Modeling Analyses<sup>28</sup>**

| <b>Emission Source</b> | <b>2014 NO<sub>x</sub> Emission Rate (tpy)</b> | <b>2015 NO<sub>x</sub> Emission Rate (tpy)</b> |
|------------------------|--|--|
| Haul Trucks            | 2,612  | 2,663  |
| Graders                | 62   | 62   |
| Dozers                 | 261  | 264  |
| Scrapers               | 64   | 64   |
| Water Trucks           | 132  | 133  |
| Locomotives            | 273  | 273  |
| Blasting               | 3,155  | 3,254  |
| <b>Totals</b>          | <b>6,558</b>                                   | <b>6,713</b>                                   |

According to the EIS, the background NO<sub>2</sub> concentrations used for both the Black Thunder permit and the Jacobs Ranch permit modeling were 14 micrograms per cubic meter (µg/m<sup>3</sup>) and the background concentration used for the North Antelope Rochelle permit modeling was 20 µg/m<sup>3</sup>.<sup>29</sup> The 2010 Black Thunder permit modeling also used 14 µg/m<sup>3</sup> as the background NO<sub>2</sub> concentration and explains that this was taken from the Belly Ayr monitoring site data.<sup>30</sup> Appendix F to the EIS also lists an annual NO<sub>2</sub> background concentration of 25 µg/m<sup>3</sup> which is the average of 2005-2008 mean values from the monitor located 15 miles south of Gillette (this monitor is listed in Table 2 as site number 456).<sup>31</sup> Although this background concentration is identified in Appendix F, it is not clear what purpose it served for this analysis, as it was not mentioned again. Furthermore, the background concentrations provided in the EIS are based on annual NO<sub>2</sub> concentrations, rather than 1-hour values. The BLM must analyze both the annual and 1-hour NO<sub>2</sub> NAAQS.

According to the EPA’s Guideline on Air Quality Models (Appendix W Modeling Guidance), “[b]ackground air quality includes pollutant concentrations due to: (1) Natural sources; (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.” See 40 CFR 51, Appendix W, Section 8.2.1. The background concentration is meant to represent natural sources, minor sources and distant major sources that contribute to the existing air quality in the area but that aren’t included in the

<sup>27</sup> AECOM, Inc for BLM, “Update of Task 3A Report for the Powder River Basin Coal Review Cumulative Air Quality Effects for 2020,” December 2009, 3-2.

<sup>28</sup> WDEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 33, table 10-8.

<sup>29</sup> BLM, Wright Area EIS, 3-82.

<sup>30</sup> WDEQ Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 34.

<sup>31</sup> BLM, Wright Area EIS, Appendix F, F-4, Table F-1.

modeling. The Appendix W Modeling Guidance, and subsequent guidance and clarifications, are applicable to the BLM's application in air quality assessments for federal land management decisions in addition to State Implementation Plan and Prevention of Significant Deterioration applications. Indeed Appendix W notes that the guidance is applicable to Federal Agencies with land management responsibilities.<sup>32</sup> In 2010 EPA issued guidance on combining modeled results and monitored background concentrations to determine compliance with the 1-hour NO<sub>2</sub> NAAQS;<sup>33</sup> the BLM must adhere to this guidance. When determining compliance with the 1-hour NAAQS, the BLM should add the overall highest hourly representative background concentration to the modeled design value that is based on the form of the standard (*i.e.*, the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations averaged across the number of years modeled).

Under the 2008 Black Thunder permit, the maximum modeled annual NO<sub>x</sub> concentrations along the permit boundary were 46.3 µg/m<sup>3</sup> (24.6 ppb<sup>34</sup>) in 2015 and 52.5 µg/m<sup>3</sup> (28 ppb) in 2017. Modeling conducted for the Jacobs Ranch 2006 permit showed maximum annual NO<sub>x</sub> concentrations at the permit boundary, by State Highway 450, of 50.0 µg/m<sup>3</sup> (26.6 ppb) and a maximum permit boundary NO<sub>x</sub> concentration of 55 µg/m<sup>3</sup> (29.2 ppb) in 2013. The most recent North Antelope Rochelle mine permit was issued during 2008. Annual NO<sub>x</sub> modeling shows permit boundary maximum concentrations for 2012 of 50.6 µg/m<sup>3</sup> (26.9 ppb) and 55.2 µg/m<sup>3</sup> (29.4 ppb) in 2017.<sup>35</sup> Again, these concentrations are all based on the annual NO<sub>2</sub> NAAQS and should be updated to show compliance with the 1-hour NO<sub>2</sub> NAAQS.

The December 15, 2010 Black Thunder Permit Application Analysis also includes a projected emissions inventory for all four of the mines in the Wright Area EIS (termed the South Group of Mines). The total NO<sub>x</sub> emissions from the mines are projected to be 12,213 tons per year in 2014 and 12,034 tons per year in 2015 (see Table 4). Regional emissions for Northeast Wyoming were also included in the modeling analysis for this permit application. The total projected emissions for all sources of NO<sub>x</sub> in the region for 2014/2015 are 24,165 tons per year.<sup>36</sup> These projected inventories show that the coal mines contribute significantly to the NO<sub>x</sub> pollution problem in the region, of which blasting emissions and haul trucks are the main contributors.

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<sup>32</sup> 40 CFR Part 51, Appendix W, "Guideline on Air Quality Models," Section 1.0.

<sup>33</sup> EPA Memorandum, "Applicability of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard", June 28, 2010 at 18.

<sup>34</sup> The conversions made here from µg/m<sup>3</sup> to ppb assume an ambient pressure of 1 atmosphere and 77 degrees Fahrenheit.

<sup>35</sup> BLM, Wright Area EIS, 3-83 and 3-84.

<sup>36</sup> WDEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 33, table 10-9 and 34, table 10-10.

**Table 4. South Group of Mines NO<sub>x</sub> Emissions used in WAAQS Modeling Analyses (tpy)<sup>37</sup>**

| Year | Black Thunder | NARM  | Antelope | School Creek | Total  |
|------|---------------|-------|----------|--------------|--------|
| 2014 | 6,558         | 3,321 | 1,295    | 1,039        | 12,213 |
| 2015 | 6,713         | 3,128 | 1,050    | 1,143        | 12,034 |

The Wright Area EIS relies on the Powder River Basin Coal Review to assess the impacts of mining in the Wright Area. The EIS concluded that air quality modeling indicated the Wright Area mines would be in compliance with the “...short-term NO<sub>2</sub> air standards for the 2015 and 2020 modeled air quality impacts.”<sup>38</sup> However, this conclusion is largely unsupported given that the BLM has not done a quantitative analysis of the 1-hour NO<sub>2</sub> impacts for Wyoming and the analysis of the 1-hour NO<sub>2</sub> standard for Montana predicts violations. The EIS also explains that, “All applicants have indicated that they propose to mine the respective LBA tracts at a rate equal to or below the mines’ current air quality permit levels.”<sup>39</sup> It is important to note an error in the modeled demonstration table in the EIS that presents results from the Coal Review. Table 4-11 of the EIS, “Projected Maximum Potential Near-field Impacts (µg/m<sup>3</sup>)” lists annual NO<sub>2</sub> base year (2004) impacts correctly at 31.3 µg/m<sup>3</sup>, however the 2020 lower development results are listed as **30.5** µg/m<sup>3</sup> and the upper development results are listed as **30.6** µg/m<sup>3</sup>.<sup>40</sup> The results in the Coal Review show that under the 2020 lower development scenario, the result should be **80.5** µg/m<sup>3</sup> and the 2020 upper development scenario should be **80.6** µg/m<sup>3</sup>,<sup>41</sup> suggesting that an error was made in transcribing these data.

**C. The BLM Must Include Adequate Plans to Protect and Restore NO<sub>2</sub> Air Quality As Part of the EIS:**

The BLM has not fully evaluated the air quality impacts from the activities analyzed under the EIS and has not proposed adequate enforceable mitigation measures to assure no adverse impacts on air quality are occurring or will occur in the affected area. The BLM’s mandate under the Federal Land Policy and Management Act (FLPMA) to “provide for compliance” with the air quality standards gives the agency the authority to regulate sources on the land it leases in order to prevent violations of applicable air quality standards. Additionally, the BLM has sole authority to allow pollution sources to locate on its land—that is, the BLM has sole authority in the first instance to allow or disallow sources of emissions such as coal mines. At the basic level, this would allow the BLM to stop any additional leases from taking place if those projects would further

<sup>37</sup> Wyoming DEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 33, table 10-9.

<sup>38</sup> BLM, Final Wright Area EIS, 4-46.

<sup>39</sup> Ibid, 4-46.

<sup>40</sup> Ibid, 4-47, Table 4-11.

<sup>41</sup> AECOM, Inc., Coal Review Task 3A, ES-6, Table ES-1.

degrade the environment at an unacceptable level. The BLM should recognize and implement this underlying authority, as necessary, so as to meet its statutory obligation to provide for compliance with the CAA and related laws and, more fundamentally, to ensure air quality and public health is protected throughout the Wright Area and all other affected areas in the region.

Rather than including enforceable mitigation measures in the EIS, the BLM has referred to voluntary actions taken by the mines to reduce NO<sub>2</sub> impacts, including several forms of monitoring weather and atmospheric conditions before blasting operations are conducted, public notifications, reducing blast sizes, if possible, and road closures, when necessary. In reference to the proposed leases under this EIS, the BLM states that,

The mines would continue to use cast blasting, and there are currently no plans to change blasting procedures or blast sizes associated with mining of the LBA tracts. According to WDEQ, permit conditions designed to control or limit public exposure to NO<sub>2</sub> and flyrock from blasting operations would be no less stringent for mining operations on the LBA tracts than the permit conditions that are in place for blasting operations on the existing Black Thunder, Jacobs Ranch, and North Antelope Rochelle Mine leases.<sup>42</sup>

EPA comments on the draft Wright Area EIS pointed out that voluntary blasting restrictions to reduce impacts from cast blasting have not always been implemented and stated that, “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.”<sup>43</sup> Yet, the BLM did not include any enforceable mitigation measures in its final EIS. Instead, the EIS notes that, “The primary control measure for mitigating exposures to offsite residences is to avoid overburden cast blasting when wind direction or atmospheric conditions are unfavorable. Such approaches are employed at the Black Thunder, Jacobs Ranch, and North Antelope Rochelle Mines and will continue to be employed.”<sup>44</sup> If these measures are indeed included in the individual mine permits, they can easily be included in the EIS as well. However, it should be noted that inspection of the November 10, 2008 North Antelope Rochelle mine permit did not show any such blasting control measures.

**D. NO<sub>2</sub> Annual Modeling in the Powder River Basin Coal Review Likely Underpredicts Impacts in the Wright Area and Does not Adequately Address the 1-hour NO<sub>2</sub> NAAQS:**

The Powder River Basin Coal Review focuses on a study area that includes Montana and Wyoming portions of the Powder River Basin. As mentioned above, the Coal Review is

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<sup>42</sup> BLM, Final Wright Area EIS, 3-83.

<sup>43</sup> EPA, Region 8, letter from Larry Svoboda, Director, NEPA Program, to Sarah Bucklin, BLM, Casper Field Office, 10 September 2009, 2.

<sup>44</sup> BLM, Final Wright Area EIS, 3-81.

relied on in the Wright Area EIS for the air quality modeling demonstration conducted for the annual NO<sub>2</sub> and the PM<sub>2.5</sub> NAAQS. Task 3 of the Coal Review analyzes predicted future cumulative impacts. In the 2009 update to the Coal Review Task 3A, the year 2004 was used as the base year and 2020 is used for future year projections.<sup>45</sup>

The Coal Review used CALPUFF dispersion modeling to demonstrate attainment with both the NO<sub>2</sub> and PM<sub>2.5</sub> NAAQS. While CALPUFF modeling demonstrates long-range transport, including impacts on Class I areas, AERMOD is the EPA, "...preferred model for dispersion for a wide range of applications..."<sup>46</sup> The Coal Review explains that, "The CALPUFF model is a Lagrangian puff model with the capability to simulate regional-scale, long-range dispersion as well as local-scale, short-range dispersion (Scire et al. 2000a)."<sup>47</sup> Although EPA acknowledges that short-range dispersion can be demonstrated using CALPUFF, in a 2008 memorandum, EPA explains that it has, "...serious concerns about the use of the CALPUFF model for near-field applications..."<sup>48</sup> EPA goes on to explain that, "The EPA-preferred model for near-field regulatory applications (less than 50 kilometers) for simple and complex terrain is AERMOD."<sup>49</sup> Because there is concern about the near-field impacts from NO<sub>2</sub> concentrations from the coal mines, it is important that the appropriate modeling methodology is used in order to assess predicted impacts. The BLM must use the AERMOD modeling system to demonstrate the NO<sub>2</sub> impacts in the Wright Area from the coal mines. And, in fact, other recent Environmental Impact Statements and Resource Management Plans (RMPs) have included much more comprehensive modeling assessments of impacts, including near-field modeling analyses. For example, both the Red Cliff Mine Draft EIS and the White River RMP both used CALPUFF modeling to assess far-field impacts while AERMOD was used to assess near-field impacts.<sup>50</sup>

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<sup>45</sup> AECOM, Inc., Coal Review, Task 3A, 1-2.

<sup>46</sup> EPA, Memorandum from Tyler Fox, Leader, Air Quality Modeling Group to Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard", 28 June 2010, 16.

<sup>47</sup> AECOM, Inc., Coal Review, 2-1.

<sup>48</sup> EPA, Memorandum from Richard Wayland, Director, Air Quality Assessment Group, to Regional Air Division Directors, "Clarification of Regulatory Status of CALPUFF for Near-field Applications," 13 August 2008, 1, <http://www.epa.gov/ttn/scram/guidance/clarification/clarification%20of%20regulatory%20status%20of%20calpuff.pdf>.

<sup>49</sup> EPA, Memorandum from Richard Wayland, Director, Air Quality Assessment Group, to Regional Air Division Directors, "Clarification of Regulatory Status of CALPUFF for Near-field Applications," 13 August 2008, 1, <http://www.epa.gov/ttn/scram/guidance/clarification/clarification%20of%20regulatory%20status%20of%20calpuff.pdf>.

<sup>50</sup> BLM, Red Cliff Coal Mine Project Draft EIS, Appendix H: Air Quality Analysis Modeling Report, 6 January 2009, H-1, [http://www.blm.gov/co/st/en/BLM\\_Programs/land\\_use\\_planning/rmp/red\\_cliff\\_mine/documents.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/red_cliff_mine/documents.html) and BLM, White River Oil and Gas Development Draft RMPA/EIS, 30 August 2012, 4-18, [http://www.blm.gov/co/st/en/BLM\\_Programs/land\\_use\\_planning/rmp/white\\_river/ogdraftmpa.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/white_river/ogdraftmpa.html)

*Background NO<sub>2</sub> Concentrations Used in the Coal Review Modeling Demonstration Should Represent Cumulative Impacts in the Area and Represent 1-hour NO<sub>2</sub> Concentrations*

The annual NO<sub>2</sub> background concentration used in the Coal Review is 5 µg/m<sup>3</sup> based on 2002 data from the Thunder Basin National Grasslands monitoring site.<sup>51</sup> In comments dated April 22, 2008 from the EPA, Region 8 NEPA program to the BLM regarding the draft EIS for the West Antelope II Coal Lease Application, EPA explains that the use of the Thunder Basin National Grassland monitor as a background concentration site should be replaced with the Antelope Site 3 monitor in order to be more representative of background concentrations.<sup>52</sup> These comments from EPA were again reiterated in a September 10, 2009 letter to BLM.<sup>53</sup> For the Wright Area EIS, the BLM should use a more conservative background concentration that represents cumulative impacts in the Wright Area. The BLM should also include a quantitative analysis of the 1-hour NO<sub>2</sub> NAAQS, including a background concentration that represents cumulative impacts in the area.

In EPA's 2011 memorandum providing additional clarification of modeling guidelines for the NO<sub>2</sub> NAAQS, the Agency emphasizes the importance of an appropriate background concentration to be use in cumulative impact assessments. EPA states that,

The goal of the cumulative impact assessment should be to demonstrate with an adequate degree of confidence in the result that the proposed new or modified emissions will not cause or significantly contribute to violations of the NAAQS. In general, the more conservative the assumptions on which the cumulative analysis is based, the more confidence there will be that the goal has been achieved and the less controversial the review process will be from the perspective of the reviewing authority.<sup>54</sup>

Under Appendix W modeling guidelines, the background concentration should be based on 5 years of National Weather Service meteorological data or at least 1 year of site specific data.<sup>55</sup> In applying the modeling guidelines to the 1-hour NO<sub>2</sub> standard, EPA's 2011 memorandum explains that background concentrations should be based on the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour values averaged over the

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<sup>51</sup> ENSR Corporation for BLM, Air Quality Technical Support Document for the Powder River Basin Coal Review, February 2006, 4-8, Table 4-2.

<sup>52</sup> EPA, Region 8, letter from Larry Svoboda, Director, NEPA Program, to Sarah Bucklin, BLM, Casper Field Office, 22 April 2008, 4.

<sup>53</sup> EPA, Region 8, letter from Larry Svoboda, Director, NEPA Program, to Sarah Bucklin, BLM, Casper Field Office, 10 September 2009, 3.

<sup>54</sup> EPA, Memorandum from Tyler Fox, Leader, Air Quality Modeling Group to Regional Air Division Directors, "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard," 1 March 2011, 12.

<sup>55</sup> 40 CFR Part 51, Appendix W, "Guideline on Air Quality Models," Section 8.3.

most recent three years of monitoring data.<sup>56</sup> The BLM must include background concentrations for both the annual and 1-hour NO<sub>2</sub> NAAQS. In conclusion, for a representative background concentration, the Coal Review should use monitoring data from the Tracy Ranch monitor. These data should be used for the 1-hour NO<sub>2</sub> NAAQS as well as the annual NAAQS.

### *A Complete Emissions Inventory Must be Provided for the Coal Review*

It is unclear how emissions for the coal mines were represented in the modeling analysis conducted for the Coal Review. The Coal Review updated Task 3A report from 2009 explains that 2004 data were used for all coal production-related sources.<sup>57</sup> This suggests that actual emissions data were used for the modeling demonstration, rather than federally enforceable permit limits or maximum operating capacity for the sources. However, a footnote in the modeling protocol for the Coal Review, which is dated 2005, states that the Coal Review used permit limits for the coal mines to model the sources, “at a fraction (such as 65 percent to 70 percent) of their potential to emit, as an estimate of actual emissions.”<sup>58</sup> The Coal Review does not provide any 2004 emissions inventory data. A table in the technical support document includes 2002 emissions data for the coal mines<sup>59</sup>, but given the prior conflicting statements about the inventory, it is unclear how these data were used. The data in this table are much lower than emissions reported elsewhere (see Tables 3 and 4 above). Regardless of what the actual emissions are for the coal mines, NO<sub>2</sub> modeling should be representative of maximum potential emissions rather than actual emissions for any particular year.

EPA’s 2010 memorandum explaining modeling guidance for the 1-hour NO<sub>2</sub> NAAQS puts forth expectations for the emissions inventories to be used in the modeling demonstrations. Because the 1-hour NO<sub>2</sub> standard is a short-term standard, data that is based on actual operations may not be sufficient for background sources and data based on permitted emission limits and operating capacity is more appropriate. This means that source data for the emission inventory must be from either SIP approved emission limits or federally enforceable permit limits (either from emission rates assuming design capacity of a source or federally enforceable capacity limitation). A load analysis is also important for short-term standards; a load analysis of 100% should be conducted as part of the modeling demonstration, along with lower loads, such as 50% or 75%, in order to assess the maximum ground-level concentrations.<sup>60</sup>

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<sup>56</sup> EPA, Memorandum from Tyler Fox, Leader, Air Quality Modeling Group to Regional Air Division Directors, “Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard,” 1 March 2011, 17.

<sup>57</sup> Coal Review, 2-6.

<sup>58</sup> ENSR Corporation, Dispersion Modeling Protocol for Ambient Air Quality Impact Assessment, March 2004, 1-4, footnote 1.

<sup>59</sup> ENSR Corporation, Coal Review TSD, 121, Table PRBCoalReviewMineLinks2002\_Link.

<sup>60</sup> EPA, Memorandum from Tyler Fox, Leader, Air Quality Modeling Group to Regional Air Division Directors, “Applicability of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard”, 28 June 2010, Attachment A, 28.



For an hourly standard, other operating scenarios of relatively short duration such as “startup” and “shutdown” should be assessed since these conditions may result in maximum hourly ground-level concentrations, and the control efficiency of emission control devices during these operating conditions may also need to be considered in the emission estimation.<sup>61</sup>

As an extension of this requirement to assess short duration operating scenarios such as “startup” and “shutdown,” elevated NO<sub>2</sub> scenarios from cast blasting operations at the mines should also be modeled.

According to the Coal Review, the reasonable further development (RFD) coal production related sources were included in the 2020 analysis, as were coal bed natural gas (CBNG) sources. Existing power plants in the study area and the Dave Johnson Plant were scaled up from an 88% capacity factor input for 2004 to 90% capacity factor for 2020. Future power plant emissions were based on permitted allowable emission limits, where available.<sup>62</sup> The Coal Review states that this is a conservative approach, which it is. As explained above, EPA modeling guidelines encourage that modeling analyses be based on conservative approaches and that major sources should be modeled at design capacity or allowable emission levels. The Coal Review should include a detailed emissions inventory of the sources to properly document the data used for the modeling demonstration.

*The Coal Review Does Not Include a Comprehensive Regional Inventory for Use in Determining Cumulative Air Quality Impacts*

In addition to a comprehensive emissions inventory of the coal mines, the BLM must prepare an inventory of all air pollution sources expected to impact the same areas impacted by emissions from the coal mines. These sources include any State- and Federal-permitted sources including sources located in Indian Country, any state oil and gas commission permitted wells, as well as all reasonably foreseeable development (RFD) sources (*e.g.*, other NEPA projects, proposed major sources, etc.). The BLM must include any emissions from NEPA projects in the Powder River Basin and other areas in Wyoming, Montana, Colorado and South Dakota that could be impacting the same area as the impacted area of the development. The remaining development in any NEPA-approved projects in the area must be included in the RFD inventory. The BLM must make sure that the projected growth in all of the adjacent planning areas, as a whole, is accounted for in the RFD inventory. The RFD inventory should include all sources recently permitted or which have recently submitted complete PSD permit applications but which are not yet operating, that will have an impact on the same areas impacted by the proposed development. The regional inventory must include all emissions from

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<sup>61</sup> EPA, Memorandum from Tyler Fox, Leader, Air Quality Modeling Group to Regional Air Division Directors, “Applicability of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard”, 28 June 2010, Attachment A, 28.

<sup>62</sup> AECOM, Inc., Coal Review, 2-6 – 2-8.

development projects, including existing and reasonably foreseeable development projects.

### *Annual NO<sub>2</sub> Modeling Results Likely Underpredict Impacts*

The annual NO<sub>2</sub> modeling results presented in the Coal Review for Wyoming near-field receptors predict a maximum level around 80 µg/m<sup>3</sup> in 2020 for the lower and upper development scenarios compared to the annual standard of 100 µg/m<sup>3</sup> (53 ppb), while the contribution from the coal mines alone are around 40 µg/m<sup>3</sup> to 45 µg/m<sup>3</sup> for the lower and upper development scenarios, respectively.<sup>63</sup> While these levels are below the annual NO<sub>2</sub> NAAQS, there are a few important considerations. First, because of the nature of the cast blasting conducted at the coal mines, a modeling analysis for the short-term 1-hour NO<sub>2</sub> standard will be much more informative in showing impacts to the NAAQS. Secondly, the emissions inventory appears to be based on emissions data that are extremely low and indeed, much lower than emissions data reported by the mines themselves in some cases. As explained above, the modeling demonstration must show a worst-case maximum potential level in order to ensure that air quality in the area is not adversely affecting human health. Additionally, even levels lower than the current NAAQS very possibly could be causing adverse impacts according to scientific evidence that the NO<sub>2</sub> NAAQS should be set at a lower level.

The Coal Review's maximum near-field projected impacts for the annual NO<sub>2</sub> standard in Montana are 3.3 µg/m<sup>3</sup> for the 2004 base year, 2.5 µg/m<sup>3</sup> for the 2020 lower development scenario and 2.6 µg/m<sup>3</sup> for the 2020 upper development scenario. The Coal Review did model scenarios in Montana for the 1-hour standard. The 1-hour predicted impacts for Montana are extremely high, at 409 µg/m<sup>3</sup> for the 2004 base year, 440.1 µg/m<sup>3</sup> for the 2020 lower development scenario and 442.7 µg/m<sup>3</sup> for the 2020 upper development scenario.<sup>64</sup> These levels exceed the 1-hour NO<sub>2</sub> NAAQS of 100 ppb (188 µg/m<sup>3</sup>), promulgated by EPA in 2010. The modeling demonstration in the Coal Review must be reevaluated to reconcile these modeled violations with the level of the NAAQS and the BLM must address any projected NAAQS violations.

## **III. The BLM Must Address Ozone Pollution in the Wright Area**

### **A. Ozone Monitoring Data Show Dangerous Levels of Pollution in the Powder River Basin**

The level of the 8-hour ozone (O<sub>3</sub>) NAAQS is 75 parts per billion (ppb or 0.075 parts per million (ppm)), set on March 27, 2008.<sup>65</sup> EPA is currently reviewing the ozone standard and a new, more conservative standard is expected to be promulgated during 2013. Based

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<sup>63</sup> AECOM Inc., Coal Review, 3-4, figure 3-1.

<sup>64</sup> AECOM Inc., Coal Review, ES-6, Table ES-1.

<sup>65</sup> EPA, 73 FR 16436, effective 27 May 2008.

on increasing evidence showing adverse health impacts from ozone at lower levels the Clean Air Scientific Advisory Committee (CASAC) has made recommendations to EPA. In its First External Review Draft of the “Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards” EPA made a preliminary conclusion that, “With regard to CASAC advice, we note that the CASAC O<sub>3</sub> Panel has repeatedly recommended setting the level of the 8-hour O<sub>3</sub> standard no higher than 70 ppb, within a range of 60 to 70 ppb, which is below the level of the current standard (i.e., 0.075 ppm or 75 ppb).”<sup>66</sup> In considering the scientific evidence now available on short-term O<sub>3</sub> exposures, EPA Staff determined that,

...we reach the preliminary conclusion that the available evidence clearly calls into question the adequacy of the current standard and provides strong support for considering potential alternative standards to increase public health protection, especially for at risk groups. This preliminary conclusion places considerable weight on the array of O<sub>3</sub>-related respiratory effects that have been reported following short-term exposures to O<sub>3</sub> concentrations below the level of the current standard, including clear evidence from controlled human exposure studies of lung function decrements, respiratory symptoms and pulmonary inflammation, as well as evidence of clearly adverse effects from epidemiologic studies, including respiratory hospital admissions and emergency department visits, and premature mortality.<sup>67</sup>

In a March 12, 2009 letter from Governor Freudenthal to EPA Region 8 detailing the 8-hour ozone designation recommendations from the state, the design values used for the Campbell County (Gillette 456) and Thunder Basin National Grassland ozone monitors, while not showing violations, indicate high values. The design value for Campbell County was 0.067 ppm (67 ppb) for the 2005-2007 3-year average, while the 2006-2008 3-year average design value was 0.066 ppm (66 ppb). The 2005-2007 design value for Thunder Basin National Grassland was 0.069 ppm (69 ppb), while the 2006-2008 design value was 0.073 ppm (73 ppb).<sup>68</sup> If EPA lowers the level of the 8-hour ozone NAAQS later this year to 0.070 ppm (70 ppb), as is expected, this level would constitute a violation in the Thunder Basin National Grassland area.

As Table 5 shows, these elevated values have continued in more recent years with first maximum values reaching 75 ppb at both Gillette monitors, 88 ppb at Thunder Basin Grassland, 79 ppb at Devil’s Tower and 66 ppb at Natrona. All of the highest ozone values for these years occurred during the typical summertime ozone season. The 3-year average design value for Gillette 456 is 61 ppb for 2009-2011 and 64 ppb for 2010-2012. The 2009-2011 design value for Thunder Basin Grassland is 61 ppb and the 2010-2012

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<sup>66</sup> EPA, OAQPS, Health and Environmental Impacts Division Ambient Standards Group, Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards, First External Review Draft, August 2012, 4-45.

<sup>67</sup> Ibid, 4-43.

<sup>68</sup> Governor Freudenthal, 12 March 2009 letter to Carol Rushin, Acting Regional Administrator, EPA Region 8.

design value is 65 ppb. At Devil’s Tower, the 2009-2011 design value is 58 ppb while the 2010-2012 design value is 64 ppb.<sup>69</sup> In the National Park Service’s “2005-2009 5-Year Average Air Quality Conditions” report, ozone conditions at Devil’s Tower National Monument, a Class II area, are listed as moderate.<sup>70</sup>

**Table 5. Powder River Basin Ozone Monitoring Data 2009-2012<sup>71</sup>**

| <b>Monitor Site</b>              | <b>Year</b> | <b>1<sup>st</sup> Maximum 8-Hour O<sub>3</sub> Value (ppb)</b> | <b>Date</b> | <b>4<sup>th</sup> Maximum 8-Hour O<sub>3</sub> Value (ppb)</b> | <b>Date</b> |
|----------------------------------|-------------|--|-------------|--|-------------|
| Gillette 456                     | 2009        | 65   | 22-Jun-09   | 60   | 24-Jun-09   |
| Gillette 456                     | 2010        | 67   | 21-Aug-10   | 61   | 14-May-10   |
| Gillette 456                     | 2011        | 63   | 29-Jul-11   | 62   | 2-Jun-11    |
| Gillette 456                     | 2012        | 75   | 6-Jun-12    | 69   | 2-Jul-12    |
| Gillette 800                     | 2012*       | 75   | 6-Jun-12    | 65   | 23-Jun-12   |
| Thunder Basin National Grassland | 2009        | 71   | 13-Aug-09   | 62   | 24-Jun-09   |
| Thunder Basin National Grassland | 2010        | 69   | 21-Aug-10   | 63   | 30-Jun-10   |
| Thunder Basin National Grassland | 2011        | 67   | 31-Jul-11   | 61   | 5-Aug-11    |
| Thunder Basin National Grassland | 2012*       | 88   | 6-Jun-12    | 71   | 28-Jun-12   |
| Devil's Tower                    | 2009        | 66   | 22-Jun-09   | 61   | 25-Jun-09   |
| Devil's Tower                    | 2010        | 71   | 21-Aug-10   | 58   | 29-Jun-10   |
| Devil's Tower                    | 2011        | 64   | 31-Jul-11   | 57   | 30-May-11   |
| Devil's Tower                    | 2012*       | 79   | 27-Aug-12   | 77   | 31-Jul-12   |
| Natrona                          | 2011        | 63   | 6-Aug-11    | 61   | 25-Jul-11   |
| Natrona                          | 2012*       | 66   | 13-Jul-12   | 62   | 13-Aug-12   |
| Broadus                          | 2010        | 64   | 25-Jul-10   | 56   | 8-Aug-10    |
| Broadus                          | 2011        | 57   | 2-Jun-11    | 54   | 21-Apr-11   |
| Broadus                          | 2012*       | 61   | 6-Jun-12    | 56   | 14-Jul-12   |

\*2012 data are not final until May 2013

In addition to local sources causing ozone pollution in the Powder River Basin, the oil and gas development in other parts of the state likely contributes to ozone levels in this area. WDEQ’s April 28, 2011 Ambient Monitoring Network Assessment for 2010 modeled the impacts of the LaBarge Platform and Hiawatha Gas Fields using forward

<sup>69</sup> Note that 2012 data are not final until May 2013.

<sup>70</sup> National Park Service, Air Resources Division, “2005-2009 5-Year Average Air Quality Conditions,” <http://www.nature.nps.gov/air/who/npsPerfMeasures.cfm>

<sup>71</sup> EPA, AirData, Interactive Map, [http://www.epa.gov/airquality/airdata/ad\\_maps.html](http://www.epa.gov/airquality/airdata/ad_maps.html)

trajectories and found medium levels of impact in the Powder River Basin.<sup>72</sup> Considering the increasing oil and gas development in the region, the impacts to the Powder River Basin from these sources would only multiply. In an area where the ozone levels are dangerously close to the current level of the NAAQS, the impacts from outside sources need to be considered closely.

Any increase in emissions of ozone precursors will exacerbate the negative health effects of ozone in the region and is almost certain to threaten the area's compliance with EPA's the ozone standard. The BLM must establish strict and enforceable mitigation measures for NO<sub>x</sub> and VOC emissions, the key ozone precursors, in the area in order to protect human health and to avoid violations of the ozone NAAQS. These mitigation measures should be considered, in detail, as alternatives in the EIS pursuant to NEPA. In order to protect human health and to fulfill its responsibility to provide for compliance with the ozone standard in this EIS, the BLM must ensure that this value does not increase further and instead make a plan within this EIS to keep ozone below harmful levels. Accordingly, the BLM should fully consider the CASAC recommendations that an appropriate, science-based ozone standard should be in the range of 60-70ppb and EPA's impending revision of the ozone NAAQS when evaluating the human health impacts from ozone pollution in the region.

## **B. The BLM Must Provide for Compliance with the Ozone NAAQS**

As part of the air impact analyses described above, the BLM must complete an analysis of impacts on ground level ozone concentrations. Ozone precursor emissions (NO<sub>x</sub> and VOCs) could have a significant impact on the region's compliance with ambient ozone standards in the near future. Considering the elevated ozone concentrations in the region and the health and environmental impacts that can occur, it is imperative that the EIS disclose to the public the environmental impacts that could occur due to ozone formation from the coal mines.<sup>73</sup>

Cast blasting and haul trucks are the major sources of NO<sub>x</sub> emissions at the coal mines. Other sources include graders, dozers, scrapers, water trucks and locomotives. In WDEQ's December 15, 2010 Permit Application Analysis for the merging of Jacobs Ranch Mine with Black Thunder Mine, total NO<sub>x</sub> emissions are projected to be 6,558 tons per year in 2014 and 6,713 tons per year in 2015.<sup>74</sup> The December 15, 2010 Black Thunder Permit Application Analysis also includes a projected emissions inventory for all four of the mines in the Wright Area EIS. The total NO<sub>x</sub> emissions from the mines are

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<sup>72</sup> WDEQ, Air Quality Division, Wyoming Ambient Monitoring Program Network Assessment 2010, 28 April 2011, 37-38.

<sup>73</sup> See *Smog Underestimated in Southwestern U.S.* at <http://www.pnas.org/misc/archive100603.html#HL1>. See also "Extensive regional atmospheric hydrocarbon pollution in the southwestern United States" by Aaron S. Katzenstein, Lambert A. Doezema, Isobel J. Simpson, Donald R. Blake, and F. Sherwood Rowland, available at the URL listed above.

<sup>74</sup> WDEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 33, table 10-8.

projected to be 12,213 tons per year in 2014 and 12,034 in 2015 (see Table 3 above). Regional emissions for Northeast Wyoming were also included in the modeling analysis for this permit application. The total projected emissions for all sources of NO<sub>x</sub> in the region for 2014/2015 are 24,165 tons per year (see Table 4 above).<sup>75</sup> These projected inventories show that the coal mines contribute significantly to the NO<sub>x</sub> pollution problem in the region, of which, blasting emissions and haul trucks are the main contributors.

The fact that the coal mines are in lightly populated areas does not lessen the importance of protecting the air quality for those people who live there, most importantly for sensitive populations, including children, the elderly and those with respiratory conditions. Exposure to ozone is a serious concern as it can cause or exacerbate respiratory health problems, including shortness of breath, asthma, chest pain and coughing, decreased lung function and even long-term lung damage.<sup>76</sup> According to a report by the National Research Council “short-term exposure to current levels of ozone in many areas is likely to contribute to premature deaths.”<sup>77</sup> The CASAC recommended substantially lowering the 8-hour standard but the EPA did not abide by the committee’s recommendations. Specifically, the CASAC put forth a unanimous recommendation to lower the 8-hour standard to somewhere between 60-70 ppb.<sup>78</sup> The committee concluded that EPA needs to substantially reduce the primary 8-hour standard to protect human health, especially in sensitive populations. So, even ozone concentrations at levels as low as 60 ppb can be considered harmful to human health and the BLM should consider this when evaluating the air impacts in the Wright Area EIS. At the very least, the BLM must demonstrate that this project will not contribute to violations of the ozone NAAQS.

Ozone pollution can cause adverse effects to the physical environment as well.<sup>79</sup> Ozone pollution is absorbed by plants and can cause leaf discoloration, reduced photosynthesis, and reduced growth as well as make plants more susceptible to disease, pests and environmental stresses. Ozone effects on trees are thought to accumulate over time such that whole forests or ecosystems can be affected. Many plant species have been identified by the Federal Land Managers as being sensitive to ozone pollution, including subalpine fir, trembling aspen, and huckleberry in the Flat Tops Wilderness Area. See Appendix 3A of Federal Land Managers’ AQRV Group (FLAG) report.<sup>80</sup>

And yet, no analysis of ozone impacts was conducted for this EIS. Even considering the fact that we don’t know the resultant impacts that could occur without completing a modeling analysis, *any* increase in emissions of ozone precursors will certainly

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<sup>75</sup> WDEQ, Air Quality Division, Permit Application Analysis AP-10986, 15 December 2010, 33, table 10-9 and 34, table 10-10.

<sup>76</sup> See EPA’s National Ambient Air Quality Standards for Particulates and Ozone, 62 FR 38,856 (July 18, 1997).

<sup>77</sup> <http://www.nationalacademies.org/morenews/20080422.html>

<sup>78</sup> EPA-CASAC-LTR-07-001, Clean Air Scientific Advisory Committee’s (CASAC) Peer Review of the Agency’s 2<sup>nd</sup> Draft Ozone Staff Paper, October 24, 2006

<sup>79</sup> As discussed in U.S. National Park Service, Air Quality in Our National Parks, 2002, Chapter 2.

<sup>80</sup> Available at <http://www.nature.nps.gov/air/Permits/flag/index.cfm>

exacerbate the negative health effects of ozone in the region and is almost certain to threaten the region's compliance with the current and future ozone standard. The BLM has asserted in the EIS that voluntary NO<sub>x</sub> controls for the mines will reduce ozone levels in the Wright Area (see 3-89 of the Wright Area EIS). Although the BLM has asserted that NO<sub>x</sub> reductions will occur, these are not enforceable and furthermore, the Agency has provided no data showing that any reductions will effectively limit dangerous ozone concentrations.

The EPA recently addressed the need for quantitative impact assessments under NEPA. The EPA explicitly recommended, for the proposed West Tavaputs Natural Gas Full Field Development Plan DEIS, that the BLM "prepare a Supplemental Draft EIS that includes modeled demonstrations of both this project and cumulative pollutant emissions sources from other activities in the Uinta Basin demonstrating whether the proposed action will contribute to violations of the ozone NAAQS."<sup>81</sup> The Utah State Division of Air Quality has also previously commented on the BLM's failure to demonstrate compliance with all of the NAAQS, including ozone, by noting that the RMP did not present an ozone analysis.<sup>82</sup>

According to EPA's Guideline on Air Quality Models,

The use of photochemical grid models is the recommended means for identifying strategies needed to correct high ozone concentrations in such areas. Such models need to consider emissions of volatile organic compounds (VOC), nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO), as well as means for generating meteorological data governing transport and dispersion of ozone and its precursors.<sup>83</sup>

Again, the BLM must assess compliance with all CAA requirements, including the ozone NAAQS, as required under FLPMA. Furthermore, because the WDEQ has not done any ozone modeling for the Wright Area, this underscores the need for the BLM to quantitatively assess the ozone impacts in the area. Several photochemical air quality models are available for use with ozone; the BLM should assess the options and determine which model will work best for the Powder River Basin. One such model, Comprehensive Air quality Model with extensions (CAMx), "...simulates air quality over many geographic scales. The model treats a wide variety of inert and chemically active pollutants, including ozone, particulate matter, inorganic and organic PM<sub>2.5</sub>/PM<sub>10</sub>, and mercury and other toxics. CAMx also has plume-in-grid and source apportionment capabilities."<sup>84</sup> There is sufficient agreement among state and federal agencies that detailed modeling analyses are required at the planning stage and, in fact, several recent NEPA actions have included quantitative modeling assessments of ozone impacts. For

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<sup>81</sup> February 4, 2008 letter from Larry Svoboda, EPA region 8, to William Stringer, BLM Vernal Field Office, Re: Final Environmental Impact Statement (EIS) for EOG Resources Inc., Chapita Wells-Stagecoach Area Natural Gas Development, CEQ #20070549, p. 3.

<sup>82</sup> See Vernal RMP revision. BLM's Response to Comments by Resource, AQ75, p. 24.

<sup>83</sup> 40 CFR, Part 51, App. W, Guideline on Air Quality Models, 5.1

<sup>84</sup> EPA, <http://www.epa.gov/scram001/photochemicalindex.htm>.

example, the Continental Divide – Creston Natural Gas Project DEIS in Southwest Wyoming uses CAMx for its far-field ozone modeling.<sup>85</sup> The recent Draft RMP/EIS for the Colorado River Valley Field Office includes an independent assessment of impacts to ozone from the proposed development under the draft RMP.<sup>86</sup> Additionally, the White River Draft RMPA/EIS uses CAMx modeling to assess the impacts of the ozone concentrations in future years.<sup>87</sup>

Given the fact that there are elevated ozone levels in and near the Powder River Basin, the BLM must perform a comprehensive ozone modeling analysis for the Powder River Basin that assesses the impacts of the proposed development along with all other existing and reasonably foreseeable future development in the area and must specify enforceable VOC and NO<sub>x</sub> mitigation measures in the EIS that ensure modeled ozone concentrations do not result in exceedances of the NAAQS at all modeled receptors in the region. The BLM cannot adequately analyze and assess ozone impacts without conducting quantitative modeling.

#### **IV. Particulate Matter Emissions in the Area Are on the Rise and Such Emissions Should be Prevented**

##### **A. Dangerous Levels of PM<sub>2.5</sub> Have Been Recorded in the Area, yet Not Adequately Addressed by the BLM**

In 2006, EPA lowered the short-term PM<sub>2.5</sub> standard from 65 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) to 35  $\mu\text{g}/\text{m}^3$  because scientific information showed that the pollutant is a health concern at levels lower than what the previous standard allowed.<sup>88</sup> PM<sub>2.5</sub> can become lodged deep in the lungs or can enter the blood stream, worsening the health of asthmatics and even causing premature death in people with heart and lung disease. PM<sub>2.5</sub> is also a major contributor to visibility impairment. See the EPA's staff paper on particulate matter (EPA-452/R-05-005a, December 2005) as well as the EPA's Air Quality Criteria Document for Particulate Matter (EPA/600/P-99/002aF and EPA/600/P-99/002bF, October 2004) for more detailed information on the health effects of PM<sub>2.5</sub>.<sup>89</sup> Even PM<sub>2.5</sub> concentrations lower than the current NAAQS are a concern for human health. The CASAC, in their letter to the EPA on the revised PM<sub>2.5</sub> standard, unanimously recommended that the 24-hour PM<sub>2.5</sub> standard be lowered from 65  $\mu\text{g}/\text{m}^3$  to 30-35  $\mu\text{g}/\text{m}^3$

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<sup>85</sup> BLM, Continental Divide – Creston Natural Gas Project  
[http://www.blm.gov/wy/st/en/info/NEPA/documents/rfo/cd\\_creston.html](http://www.blm.gov/wy/st/en/info/NEPA/documents/rfo/cd_creston.html)

<sup>86</sup> BLM, Colorado River Valley Draft Resource Management Plan Revision,  
[http://www.blm.gov/co/st/en/BLM\\_Programs/land\\_use\\_planning/rmp/kfo-gsfo/crv.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/kfo-gsfo/crv.html)

<sup>87</sup> BLM, White River Oil and Gas Development Draft RMPA/EIS, 30 August 2012, 4-19,  
[http://www.blm.gov/co/st/en/BLM\\_Programs/land\\_use\\_planning/rmp/white\\_river/ogdraftmpa.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/white_river/ogdraftmpa.html)

<sup>88</sup> 71 FR 61144, effective December 18, 2006.

<sup>89</sup> See [http://www.epa.gov/ttn/naaqs/standards/pm/data/pmstaffpaper\\_20051221.pdf](http://www.epa.gov/ttn/naaqs/standards/pm/data/pmstaffpaper_20051221.pdf) and  
<http://cfpub2.epa.gov/ncea/cfm/recordisplay.cfm?deid=87903>



and that the annual standard be lowered from 15  $\mu\text{g}/\text{m}^3$  to 13-14  $\mu\text{g}/\text{m}^3$ .<sup>90</sup> EPA set the standard on the high end of the CASAC recommended range for the short-term standard and chose not to lower the annual standard at all. On December 14, 2012, EPA promulgated a new NAAQS for the primary  $\text{PM}_{2.5}$  annual standard that lowers the level of the standard to 12  $\mu\text{g}/\text{m}^3$ , averaged over three years. BLM should ensure that WDEQ adopts this new annual NAAQS in order to ensure that air quality in the Wright Area is properly protected. The BLM must conduct new analyses in light of this more protective standard.

Table 6 shows first maximum and 98<sup>th</sup> percentile  $\text{PM}_{2.5}$  24-hour values from monitors in the Powder River Basin from recent years. Many of the monitors have incomplete data from one or more quarters, but these data show some high maximum  $\text{PM}_{2.5}$  values that should not be ignored. According to the WDEQ annual monitoring network review for 2012, the Belle Ayr Mine, Buckskin Mine and Black Thunder Mine  $\text{PM}_{2.5}$  monitors in the Powder River Basin are located to represent the north, middle and south group of mines, while the Antelope Mine monitor is located to represent background data.<sup>91</sup> The WDEQ monitoring network review reports that the annual average arithmetic means for each of the four mine monitors between 2009 and 2011 to range between 3.3  $\mu\text{g}/\text{m}^3$  and 5.3  $\mu\text{g}/\text{m}^3$ .<sup>92</sup>

**Table 6. Powder River Basin 24-hour  $\text{PM}_{2.5}$  Monitoring Data and Annual Arithmetic Mean<sup>93</sup>**

| Monitor Site        | County, State | Monitor Number (POC) | Year | 1 <sup>st</sup> Maximum Value ( $\mu\text{g}/\text{m}^3$ ) | 1 <sup>st</sup> Maximum Date | 98th Percentile ( $\mu\text{g}/\text{m}^3$ ) |
|---------------------|---------------|----------------------|------|--|------------------------------|--|
| Buckskin Mine North | Campbell, WY  | 1                    | 2009 | 15.9   | 25-Jan-09                    | 11.5   |
| Buckskin Mine North | Campbell, WY  | 3                    | 2010 | 12.1   | 5-Dec-10                     | 10   |
| Buckskin Mine North | Campbell, WY  | 3                    | 2011 | 42.4   | 29-Jun-11                    | 15.5   |
| Gillette College    | Campbell, WY  | 1                    | 2011 | 14.7   | 5-Nov-11                     | 9  |
| Gillette College    | Campbell, WY  | 1                    | 2012 | 56.5   | 4-Jul-12                     | 21.3   |
| Belle Ayr Mine      | Campbell, WY  | 1                    | 2008 | 19.9   | 2-Jul-08                     | 14.5   |

<sup>90</sup> EPA-CASAC-LTR-06-003, Clean Air Scientific Advisory Committee Recommendations Concerning the Final National Ambient Air Quality Standards for Particulate Matter, September 29, 2006, [http://yosemite.epa.gov/sab/SABPRODUCT.NSF/1C69E987731CB775852571FC00499A10/\\$File/casac-ltr-06-003.pdf](http://yosemite.epa.gov/sab/SABPRODUCT.NSF/1C69E987731CB775852571FC00499A10/$File/casac-ltr-06-003.pdf), included as Exhibit 2.

<sup>91</sup> WDEQ, Wyoming Ambient Air Monitoring Annual Network Plan 2012, 20 June 2012 [http://deq.state.wy.us/aqd/downloads/AirMonitor/Network\\_Plan\\_2012\\_Rev\\_1.pdf](http://deq.state.wy.us/aqd/downloads/AirMonitor/Network_Plan_2012_Rev_1.pdf), 32.

<sup>92</sup> WDEQ, Wyoming Ambient Air Monitoring Annual Network Plan 2012, 20 June 2012 [http://deq.state.wy.us/aqd/downloads/AirMonitor/Network\\_Plan\\_2012\\_Rev\\_1.pdf](http://deq.state.wy.us/aqd/downloads/AirMonitor/Network_Plan_2012_Rev_1.pdf), 41.

<sup>93</sup> EPA, AirData, Interactive Map, [http://www.epa.gov/airquality/airdata/ad\\_maps.html](http://www.epa.gov/airquality/airdata/ad_maps.html)

| <b>Monitor Site</b>   | <b>County, State</b> | <b>Monitor Number (POC)</b> | <b>Year</b> | <b>1<sup>st</sup> Maximum Value (µg/m<sup>3</sup>)</b> | <b>1<sup>st</sup> Maximum Date</b> | <b>98th Percentile (µg/m<sup>3</sup>)</b> |
|-----------------------|----------------------|-----------------------------|-------------|--|------------------------------------|---|
| Belle Ayr Mine        | Campbell, WY         | 1                           | 2009        | 22.5   | 21-Feb-09                          | 11.6                                      |
| Belle Ayr Mine        | Campbell, WY         | 1                           | 2010        | 10.1   | 3-Mar-10                           | 10.1                                      |
| Belle Ayr Mine        | Campbell, WY         | 3                           | 2010        | 32.9   | 28-Jul-10                          | 18.1                                      |
| Belle Ayr Mine        | Campbell, WY         | 3                           | 2011        | 26.3   | 18-May-11                          | 20.4                                      |
| Black Thunder Mine    | Campbell, WY         | 1                           | 2008        | 10.7   | 25-Jan-08                          | 10.7                                      |
| Black Thunder Mine    | Campbell, WY         | 2                           | 2008        | 10.6   | 25-Jan-08                          | 10.6                                      |
| Black Thunder Mine    | Campbell, WY         | 1                           | 2009        | 9.6  | 11-Mar-09                          | 9.5                                       |
| Black Thunder Mine    | Campbell, WY         | 1                           | 2010        | 10.5   | 21-Mar-10                          | 10.5                                      |
| Black Thunder Mine    | Campbell, WY         | 2                           | 2009        | 10.3   | 24-Jul-09                          | 9.8                                       |
| Black Thunder Mine    | Campbell, WY         | 2                           | 2010        | 8.4  | 9-Mar-10                           | 8.4                                       |
| Black Thunder Mine    | Campbell, WY         | 3                           | 2010        | 23.2   | 5-Dec-10                           | 12.3                                      |
| Black Thunder Mine    | Campbell, WY         | 3                           | 2011        | 43.8   | 5-Aug-11                           | 13.9                                      |
| Antelope Site 3       | Converse, WY         | 1                           | 2008        | 16.3   | 2-Jul-08                           | 9.2                                       |
| Antelope Site 3       | Converse, WY         | 1                           | 2009        | 27.8   | 12-Dec-09                          | 7   |
| Antelope Site 3       | Converse, WY         | 1                           | 2010        | 13.2   | 30-Mar-10                          | 13.2                                      |
| Antelope Site 3       | Converse, WY         | 3                           | 2010        | 16.1   | 6-Dec-10                           | 6.1                                       |
| Antelope Site 3       | Converse, WY         | 3                           | 2011        | 17.3   | 24-Aug-11                          | 10.9                                      |
| Birney - Tongue river | Rosebud, MT          | 3                           | 2010        | 12.2   | 6-Mar-10                           | 10.9                                      |
| Birney - Tongue river | Rosebud, MT          | 3                           | 2011        | 50.9   | 25-Aug-11                          | 17.3                                      |
| Birney - Tongue river | Rosebud, MT          | 3                           | 2012        | 41.3   | 5-Jul-12                           | 29.3                                      |

| Monitor Site | County, State    | Monitor Number (POC) | Year | 1 <sup>st</sup> Maximum Value ( $\mu\text{g}/\text{m}^3$ ) | 1 <sup>st</sup> Maximum Date | 98th Percentile ( $\mu\text{g}/\text{m}^3$ ) |
|--------------|------------------|----------------------|------|--|------------------------------|--|
| Broadus      | Powder River, MT | 3                    | 2010 | 16.8   | 27-Aug-10                    | 13.5   |
| Broadus      | Powder River, MT | 3                    | 2011 | 32.6   | 6-Sep-11                     | 21.4   |
| Broadus      | Powder River, MT | 3                    | 2012 | 32.2   | 15-Sep-12                    | 25.2   |

**B. The Wright Area EIS PM<sub>2.5</sub> Analysis Must Include an Emissions Inventory and the EIS Must Explain and Address Projected PM<sub>2.5</sub> Violations:**

The Wright Area EIS refers to the dispersion modeling conducted as part of past permit applications for the Jacobs Ranch, Black Thunder and North Antelope Rochelle mines. Appendix F of the EIS provides the “Assumed Background Air Pollutant Concentrations” for all pollutants. In this table, the annual PM<sub>2.5</sub> background concentration is 6.4  $\mu\text{g}/\text{m}^3$  while the PM<sub>2.5</sub> 24-hour value is 18.9  $\mu\text{g}/\text{m}^3$ . These data are from 2005-2008 values collected at the Black Thunder mine monitor.<sup>94</sup> Although these background concentrations are identified in Appendix F, it is not clear what purpose they served for this analysis, as they were not mentioned again. The 2010 Black Thunder permit application analysis identifies an annual background value for PM<sub>2.5</sub> at the Black Thunder mine monitor of 6.54  $\mu\text{g}/\text{m}^3$ , however there is no 24-hour background concentration provided.<sup>95</sup> While background PM<sub>2.5</sub> values are not at the level of the NAAQS currently, it is likely that those levels will increase with continued development in the Wright Area. According to the EPA’s Guideline on Air Quality models, “[b]ackground air quality includes pollutant concentrations due to: (1) Natural sources; (2) nearby sources other than the one(s) currently under consideration; and (3) unidentified sources.” See 40 CFR 51, Appendix W, Section 8.2.1. The background concentration is meant to represent natural sources, minor sources and distant major sources that contribute to the existing air quality in the area but that aren’t included in the modeling.

PM<sub>2.5</sub> dispersion modeling for the Black Thunder mine permit application used the ISCLT model to predict a maximum annual PM<sub>2.5</sub> impact in 2014 of 9.8  $\mu\text{g}/\text{m}^3$  and 10.3  $\mu\text{g}/\text{m}^3$  in 2015.<sup>96</sup> No emissions inventory is provided for this analysis, nor is there any PM<sub>2.5</sub> emissions inventory information provided in the Wright Area EIS.

The fine particulate impacts from the Wright Area coal mines need to be characterized in order to understand the air quality impacts to the area. Currently, there is no PM<sub>2.5</sub> emissions inventory for these sources, but given the projected growth in particulate

<sup>94</sup> BLM, Wright Area EIS, Appendix F, F-4, Table F-1.

<sup>95</sup> Thunder Basin Coal Company Permit Application Analysis, 15 December 2010, 30.

<sup>96</sup> Ibid.

emissions from increased development at the mines, this must be properly analyzed by the BLM. As the Wright Area EIS explains,

The estimated average overburden thickness is generally greater in each of the LBA tracts than within the current leases, but the thickness of the coal in the LBA tracts is about the same as in the existing mine areas (see Table 3-7). The acquisition and mining of the LBA tracts by the applicant mines could result in an increase in fugitive emissions per ton of coal mined above current levels due to the increased volume of overburden that would have to be removed to recover the coal.<sup>97</sup>

Because PM<sub>2.5</sub> is an important component of fugitive emissions, which are expected to increase as a result of mine expansions, the analysis in the Wright Area EIS must include a PM<sub>2.5</sub> emissions inventory.

The Wright Area EIS relies on the Powder River Basin Coal Review to assess the impacts of mining in the Wright Area. The EIS concluded that air quality modeling indicated that the Wright Area mines would be in compliance with the annual and 24-hour PM<sub>2.5</sub> NAAQS.<sup>98</sup> Table 4-11 of the EIS, “Projected Maximum Potential Near-field Impacts ( $\mu\text{g}/\text{m}^3$ ),” shows that annual PM<sub>2.5</sub> projected values for Wyoming are 13.4  $\mu\text{g}/\text{m}^3$  for the base year (2004), 16.3  $\mu\text{g}/\text{m}^3$  for both the 2020 lower and upper coal development scenarios.<sup>99</sup> All of these values exceed the December 14, 2012 annual PM<sub>2.5</sub> NAAQS set at 12  $\mu\text{g}/\text{m}^3$ , and the projected values for the 2020 lower and upper development scenarios exceed the previous annual standard of 15  $\mu\text{g}/\text{m}^3$ , which was the standard at the time this EIS was developed. The BLM must explain how it concluded that based on the Coal Review’s modeling demonstration, the Wright Area mines would be in compliance with the annual PM<sub>2.5</sub> NAAQS when the data show otherwise. Likewise, the 24-hour PM<sub>2.5</sub> demonstration predicts a value of 87.6  $\mu\text{g}/\text{m}^3$  for the 2004 base year and 218.4  $\mu\text{g}/\text{m}^3$  for both the 2020 lower and upper development scenarios.<sup>100</sup> These values exceed the 24-hour PM<sub>2.5</sub> standard of 65  $\mu\text{g}/\text{m}^3$  enormously. And yet again, the BLM concluded that the modeling in the Coal Review demonstrated compliance with the NAAQS. The BLM must explain the basis for this rationale.

### **C. The BLM Must Include Adequate Plans to Protect and Restore Air Quality in the Area As Part of the EIS**

The EIS lists the particulate control measures included in the permits for the mines that are considered Best Available Control Methods (BACM). Additional voluntary particulate control measures that are considered BACT are also mentioned. Lastly, the Natural Events Action Plan (NEAP) for PM<sub>10</sub> emissions from coal mines in the Powder

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<sup>97</sup> Ibid.

<sup>98</sup> BLM, Wright Area EIS, 4-46.

<sup>99</sup> BLM, Wright Area EIS, 4-47, Table 4-11.

<sup>100</sup> Ibid.

River Basin is explained.<sup>101</sup> But the EIS itself does not include any enforceable particulate control measures, although the BLM suggests additional measures that could be taken;

The increase in fugitive dust emissions could potentially be moderated somewhat if removal of the larger volume of overburden material results in a slower rate of mining advancement through the LBA tracts. This would potentially decrease the number of acres disturbed annually and cause haul distances to increase more slowly.<sup>102</sup>

The BLM has not fully evaluated the air quality impacts from the activities analyzed under the EIS and has not proposed adequate enforceable mitigation measures to assure no adverse impacts on air quality are occurring or will occur in the affected area. The BLM's mandate under FLPMA to "provide for compliance" with the air quality standards gives the agency the authority to regulate sources on the land it leases in order to prevent violations of applicable air quality standards. Additionally, the BLM has sole authority to allow pollution sources to locate on its lands and minerals—that is, the BLM has sole authority in the first instance to allow or disallow sources of emissions such as coal mines. At the basic level, this would allow the BLM to stop any additional leases from taking place if those projects would further degrade the environment at an unacceptable level. The BLM should recognize and implement this underlying authority, as necessary, so as to meet its statutory obligation to provide for compliance with the CAA and related laws and, more fundamentally, to ensure air quality and public health is protected throughout the Wright Area and all other affected areas in the region.

#### **D. The PM<sub>2.5</sub> Analysis in the Coal Review is Inadequate in Several Regards and BLM has not Adequately Addressed the Fact that the Review Projects Violations**

The Powder River Basin Coal Review focuses on a study area that includes Montana and Wyoming portions of the Powder River Basin. As mentioned above, the Wright Area EIS relies on the Coal Review for the air quality modeling demonstration conducted for the annual NO<sub>2</sub> and the PM<sub>2.5</sub> NAAQS. Task 3 of the Coal Review analyzes predicted future cumulative impacts. In the 2009 update to the Coal Review Task 3A, the year 2004 was used as the base year and 2020 is used for future year projections.<sup>103</sup>

The Coal Review used CALPUFF dispersion modeling to demonstrate attainment with both the NO<sub>2</sub> and PM<sub>2.5</sub> NAAQS. As explained in more detail in the NO<sub>2</sub> section of these comments, while the CALPUFF modeling demonstrates long-range transport, including impacts on Class I areas, AERMOD is the, "...preferred model for dispersion for a wide range of applications..."<sup>104</sup> Thus, the BLM should use the AERMOD model to

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<sup>101</sup> BLM, Wright Area EIS, 3-73 – 3-77.

<sup>102</sup> BLM, Wright Area EIS, 3-58.

<sup>103</sup> AECOM Inc., Coal Review, Task 3A, 1-2.

<sup>104</sup> EPA, Memorandum from Tyler Fox, Leader, Air Quality Modeling Group to Regional Air Division Directors, "Applicability of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard", 28 June 2010, 16.

demonstrate the PM<sub>2.5</sub> impacts in the Wright Area from the coal mines. Recent Environmental Impact Statements and Resource Management Plan (RMPs) updates have included much more comprehensive modeling assessments of impacts, including near-field modeling analyses. For example, both the Red Cliff Mine Draft EIS and the White River RMP both used CALPUFF modeling to assess far-field impacts while AERMOD was used to assess near-field impacts.<sup>105</sup>

### *The BLM Must Identify PM<sub>2.5</sub> Background Concentrations for the Coal Review Modeling Demonstration*

The Coal Review does not identify PM<sub>2.5</sub> background concentrations for the annual or the 24-hour NAAQS that represent cumulative impacts in the Powder River Basin. Under Appendix W modeling guidelines, the background concentration should be based on 5 years of National Weather Service meteorological data or at least 1 year of site specific data.<sup>106</sup> The BLM must include background concentrations for both the annual and 24-hour PM<sub>2.5</sub> NAAQS. In order to include all impacts from sources in the area, the PM<sub>2.5</sub> modeling demonstration must include background concentrations.

### *The BLM Must Provide a PM<sub>2.5</sub> Emissions Inventory for the Wright Area*

It is unclear how PM<sub>2.5</sub> emissions for the coal mines were represented in the modeling analysis conducted for the Coal Review. The Coal Review updated Task 3A report from 2009 explains that 2004 data were used for all coal production-related sources.<sup>107</sup> This suggests that actual emissions data were used for the modeling demonstration, rather than federally enforceable permit limits or maximum operating capacity. However, a footnote in the modeling protocol for the Coal Review, which is dated 2005, states that the Coal Review used permit limits for the coal mines to model the sources, “at a fraction (such as 65 percent to 70 percent) of their potential to emit, as an estimate of actual emissions.”<sup>108</sup> A table in the technical support document includes 2002 PM<sub>10</sub> emissions data for the coal mines<sup>109</sup>, but given the prior conflicting statements about the inventory, it is unclear how these data were used. For the most part, the PM<sub>10</sub> data in this table are much lower than emissions reported elsewhere (see Table 3 above). Regardless of what the actual emissions are for the coal mines, modeling should be representative of maximum potential emissions rather than actual emissions for any particular year.

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<sup>105</sup> BLM, Red Cliff Coal Mine Project Draft EIS, Appendix H: Air Quality Analysis Modeling Report, 6 January 2009, H-1, [http://www.blm.gov/co/st/en/BLM\\_Programs/land\\_use\\_planning/rmp/red\\_cliff\\_mine/documents.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/red_cliff_mine/documents.html) and BLM, White River Oil and Gas Development Draft RMPA/EIS, 30 August 2012, 4-18, [http://www.blm.gov/co/st/en/BLM\\_Programs/land\\_use\\_planning/rmp/white\\_river/ogdrafrmpa.html](http://www.blm.gov/co/st/en/BLM_Programs/land_use_planning/rmp/white_river/ogdrafrmpa.html)

<sup>106</sup> 40 CFR Part 51, Appendix W, “Guideline on Air Quality Models,” Section 8.3.

<sup>107</sup> AECOM Inc., Coal Review, 2-6.

<sup>108</sup> ENSR Corporation, Dispersion Modeling Protocol for Ambient Air Quality Impact Assessment, March 2004, 1-4, footnote 1.

<sup>109</sup> AECOM Inc., Coal Review TSD, 121, Table PRBCoalReviewMineLinks2002\_Link.

According to the Coal Review, because PM<sub>2.5</sub> emission rates were not “uniformly available in the provided inventory,” PM<sub>10</sub> monitoring data from the Lame Deer, Montana monitor were used to estimate PM<sub>2.5</sub> impacts. Following this methodology, “[t]he annual average ratio of ambient PM<sub>2.5</sub> to PM<sub>10</sub> was calculated to be 0.35 during 2005, which is the only recent year with data recovery over 80 percent for both PM<sub>2.5</sub> and PM<sub>10</sub>.”<sup>110</sup> The various information provided about the PM emissions inventory renders it extremely difficult to understand exactly what is included in the emissions inventory and how the sources in the Powder River Basin, especially the coal mines, were modeled in the Coal Review.

According to the Coal Review, the reasonable further development (RFD) coal production related sources were included in the 2020 analysis, as were coal bed natural gas (CBNG) sources. Existing power plants in the study area and the Dave Johnson Plant were scaled up from 88% capacity factor input for 2004 to 90% capacity factor for 2020. Future power plant emissions were based on permitted allowable emission limits, where available.<sup>111</sup> The Coal Review states that this is a conservative approach, which it is. EPA modeling guidelines encourage that modeling analyses be based on conservative approaches and that major sources should be modeled at design capacity or allowable emission levels. The Coal Review should include a detailed emissions inventory of the sources to properly document the data used for the modeling demonstration.

### *The EIS Does Not Include a Comprehensive Regional Inventory for Use in Determining Cumulative Air Quality Impacts*

In addition to a comprehensive emissions inventory of the coal mines, the BLM must prepare an inventory of all air pollution sources expected to impact the same area impacted by emissions from the coal mines. These sources include any State- and Federal-permitted sources including sources locating in Indian Country, any state oil and gas commission permitted wells as well as all reasonably foreseeable development (RFD) sources (*e.g.*, other NEPA projects, proposed major sources, etc.). The BLM must include any emissions from NEPA projects in the Powder River Basin and other areas in Wyoming, Montana, Colorado and South Dakota that could be impacting the same area as the impacted area of the development. The remaining development in any NEPA-approved projects in the area must be included in the RFD inventory. The BLM must make sure that the projected growth in all of the adjacent planning areas, as a whole, is accounted for in the RFD inventory. The RFD inventory should include all sources recently permitted or which have recently submitted complete PSD permit applications but which are not yet operating, that will have an impact on the same areas impacted by the proposed development. The regional inventory must include all emissions from development projects, including existing and reasonably foreseeable development projects.

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<sup>110</sup> AECOM Inc., Coal Review, 2-5.

<sup>111</sup> *Ibid*, 2-6 – 2-8.

### *PM<sub>2.5</sub> Modeling in the Coal Review Predicts Violations of the Annual and 24-hour NAAQS*

The Coal Review presents 2004 base year and 2020 lower development and upper development scenario results for the modeling demonstration. Table ES-1 of the Coal Review, “Projected Maximum Potential Near-field Impacts ( $\mu\text{g}/\text{m}^3$ ),” for Wyoming shows that annual PM<sub>2.5</sub> projected values are 13.4  $\mu\text{g}/\text{m}^3$  for the base year (2004) and 16.3  $\mu\text{g}/\text{m}^3$  for both the 2020 lower and upper coal development scenarios.<sup>112</sup> All of these values exceed the December 14, 2012 annual PM<sub>2.5</sub> NAAQS set at 12  $\mu\text{g}/\text{m}^3$ , and the projected values for the 2020 lower and upper development scenarios exceed the previous annual standard of 15  $\mu\text{g}/\text{m}^3$ , which was the standard at the time the Coal Review was developed. Likewise, the 24-hour PM<sub>2.5</sub> demonstration predicts a value of 87.6  $\mu\text{g}/\text{m}^3$  for the 2004 base year, 218.4  $\mu\text{g}/\text{m}^3$  for the 2020 lower development scenario and 218.5  $\mu\text{g}/\text{m}^3$  for the upper development scenario.<sup>113</sup> These values exceed the 24-hour PM<sub>2.5</sub> standard of 65  $\mu\text{g}/\text{m}^3$  enormously. The BLM must explain the results of this modeled demonstration. These high projected values could mean extreme adverse air quality impacts for the Powder River Basin and the Wright Area. The predicted concentrations for the near-field modeling for Montana are below the level of the NAAQS in all cases.

### *The BLM Must Consider Secondary PM<sub>2.5</sub> Formation in its Modeling Analysis*

The PM<sub>2.5</sub> modeling conducted by the BLM only considered primary PM<sub>2.5</sub> (directly emitted from combustion point sources and from fugitive sources) as a ratio of PM<sub>10</sub> monitored data. Emissions of NO<sub>x</sub>, VOCs, SO<sub>2</sub> and ammonia can form, after emitted into the atmosphere, into PM<sub>2.5</sub> and this could potentially be a significant component of ambient PM<sub>2.5</sub> concentrations. Estimates of PM<sub>2.5</sub> formation from these precursors should also be included in the BLM’s modeling analysis. All of the sources of the primary pollutants that contribute to secondary PM<sub>2.5</sub> formation – e.g., NO<sub>x</sub>, SO<sub>x</sub> and VOC - from the planning area development must be accounted for in the BLM’s assessment of PM<sub>2.5</sub> impacts.

While the discipline of secondary PM<sub>2.5</sub> modeling is still evolving there *are* tools available to support such an analysis. The EPA provides access to certain photochemical modeling applications, including modeling of secondary PM, for regulatory applications. Specifically, the EPA recently developed a model based on the Community Multi-scale Air Quality (CMAQ) model to support the development of the PM<sub>2.5</sub> NAAQS. According to the EPA, the model has been shown to “reproduce the results from an individual modeling simulation with little bias or error” and “provides a wide breadth of model outputs, which can be used to develop emissions control scenarios”.<sup>114</sup> The

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<sup>112</sup> AECOM Inc., Coal Review, ES-6, Table ES-1.

<sup>113</sup> Ibid.

<sup>114</sup> See [http://www.epa.gov/scram001/reports/pmnaaqs\\_tsd\\_rsm\\_all\\_021606.pdf](http://www.epa.gov/scram001/reports/pmnaaqs_tsd_rsm_all_021606.pdf)



Comprehensive Air quality Model with extensions (CAMx) is another tool available to assess secondary PM<sub>2.5</sub> formation. CAMx has source apportionment capabilities and can assess a wide variety of inert and chemically reactive pollutants, including inorganic and organic PM<sub>2.5</sub> and PM<sub>10</sub>. The Regional Modeling System for Aerosols and Deposition (REMSAD) can also model concentrations of both inert and chemically reactive pollutants on a regional scale, “including those processes relevant to regional haze and particulate matter”.<sup>115</sup> These are just some examples of current models with the capability to assess secondary PM<sub>2.5</sub> impacts.

It is imperative that the BLM use the available tools to assess the impact of emissions from the coal mines that contribute to secondary PM<sub>2.5</sub> formation. Resulting PM<sub>2.5</sub> concentrations will be higher when considering the additional impacts from secondary PM<sub>2.5</sub>. Including the secondary PM<sub>2.5</sub> impacts in the BLM’s analysis is critical to understanding the best way to mitigate health impacts from fine particle pollution in the Wright Area.

## **Conclusion**

In conclusion, while the EIS provides insight into current air quality and projected future conditions in the Wright Area, there are several key components missing from this analysis. The BLM has not provided a comprehensive emissions inventory for the Wright Area. The BLM has not analyzed impacts to the 1-hour NO<sub>2</sub> NAAQS, nor is there proper monitoring of maximum short-term concentrations in the Wright Area. Modeling for the annual NO<sub>2</sub> standard likely underpredicts impacts, although it shows modeled violations of the NAAQS, which the BLM fails to address. The BLM has failed to conduct a quantitative ozone analysis in either the EIS or the Coal Review despite the fact that ozone levels in the Powder River Basin are near the level of the NAAQS. The BLM has failed to adequately address impacts to annual and 24-hour PM<sub>2.5</sub> concentrations, notably the BLM has not addressed the fact that modeling projects violations of both NAAQS.

The fact that the Wyoming Department of Environmental Quality (WDEQ) has inadequately addressed the impacts of coal mining to air quality, notably in that it has not maintained adequate inventories, has not adequately modeled impacts to the NAAQS, and has not emplaced enforceable emission limits to ensure that the NAAQS are fully protected, only compounds the shortcomings in the BLM’s analysis. The BLM must acknowledge the existing air quality concerns in the Wright Area and recognize that increased mining activities in the area will result in unhealthy increases in nitrogen dioxide, ozone, and particulate pollution that have significant detrimental effects on human health and the environment.

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<sup>115</sup> See <http://remsad.saintl.com/>

## CINDY S. COPELAND

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### FOCUS AREA

Outstanding background in environmental policy with a focus on air quality and climate change. Extensive experience with air pollution reduction control strategies and scenarios.

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### SKILLS

Over 10 years of experience working on air quality issues

Technical and Policy areas of expertise

- Analyzing and characterizing air emissions from a variety of air pollution sources
- Determining air emissions reduction potentials from control technology scenarios
- Reviewing new, existing and modified state air quality regulations to determine if they meet federal Clean Air Act requirements
- Reviewing proposed federal and state air quality rules and policy to determine if they are as rigorous and stringent as possible
- Thorough experience with the requirements of particulate matter control through state implementation plan requirements under the Clean Air Act

Communication skills

- Numerous presentations made to state and tribal air quality officials
  - Extensive experience in negotiations over highly technical and politicized issues
  - Experienced and thorough in writing both technical and policy documents
  - Testified at hearings for federal and state rulemakings
  - Experience with press statements and presentations
  - Preparing briefings for high level management
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### EXPERIENCE

**Environmental Consultant.** (January 2006-present)

- Extensive policy and technical analyses of federal and state actions concerning air quality and climate
- Represent environmental groups at stakeholder meetings

**Program Associate.** Environmental Defense, Boulder, Colorado (March 2004-September 2005)

- Assisted with a variety of policy and technical air quality reviews
- Coordinated and contributed to official organization reports on air quality and climate
- Represented organization in state stakeholder and rulemaking processes
- Authored extensive regulatory and technical letters commenting on EPA and state actions
- Testified at state and federal regulatory hearings on proposed rule changes

**Teaching Assistant.** University of Colorado, Boulder, Colorado (Spring Semester 2003)

- Instructed two undergraduate sections of a weather lab
- Graded student work products

**Environmental Protection Specialist.** U.S. Environmental Protection Agency, Region 8, Denver, Colorado

(January 1998-August 2002)

- Acted as the Environmental Protection Agency Region 8 Particulate Matter Program Manager
- Participated in development of air pollution control regulations for Colorado, Montana, Utah, Wyoming, North Dakota, South Dakota and 27 local Tribal governments
- Represented all EPA Regions as the Regional lead on particulates and collaborated with the EPA's headquarters office on policy development and implementation
- Received the EPA Bronze award for being the lead program person on the redesignation of the Denver PM<sub>10</sub> nonattainment area to attainment/maintenance.
- Presented information updates and issues to State and Tribal environmental divisions, including State Air Directors and State Air Quality Boards
- Presented public outreach on outdoor air, indoor air, and asthma
- Reviewed, evaluated and approved state air quality plan revisions
- Responded to state, local and private inquiries to requirements and implementation of the Clean Air Act
- Coordinated and conducted internal and external meetings to evaluate, resolve, and implement solutions to issues with technical, legal, and managerial personnel
- Served on the Region 8 agricultural task team

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**EDUCATION**

**Master of Science.** University of Colorado Environmental Studies Program (2004)

Thesis: *Facing Climate Change in New Mexico*

**Bachelor of Arts.** Willamette University, Salem, Oregon (1997)

Major: Politics

Minor: Environmental Science

Senior Thesis: *Global Climate Change: The International and United States Responses*