

BEFORE THE REGIONAL FORESTER  
OF THE ROCKY MOUNTAIN REGION  
OF THE UNITED STATES FOREST SERVICE

WILDEARTH GUARDIANS,	)	
	)	
Appellant,	)	Appeal of the Decision Notice/
	)	Finding of No Significant Impact for
v.	)	Federal Coal Lease COC-61357
	)	Modification, Tract 4
CHARLES S. RICHMOND, Supervisor,	)	(August 21, 2008)
Grand Mesa-Uncompahgre-Gunnison	)	
National Forest,	)	
	)	
Deciding Official.	)	
	)	

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**APPELLANT'S STATEMENT OF REASONS  
AND REQUEST FOR RELIEF**

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Submitted via email and certified U.S. Mail, October 14, 2008  
Certified Receipt No. 7007 2560 0002 6461 7832

## **DECISION APPEALED**

Appellant WildEarth Guardians file this appeal of the August 21, 2008 Decision Notice and Finding of No Significant Impact (DN/FONSI) approving the Federal Coal Lease COC-61357 Modification, Tract 4 (“Lease Modification”) pursuant to 36 C.F.R. § 215 and 5 U.S.C. § 555(b). The decision being appealed – as described on pages 3-4 of the DN/FONSI – is the Forest Service’s consent to modify coal lease COC-61357. This decision will add 142 acres of Forest Service surface lands to the lease. DN/FONSI at 1.

This decision is timely filed pursuant to 36 C.F.R § 215.15. Notice of the ROD was published in the Grand Junction Daily Sentinel on August 27, 2008. See Proof of Publication, attached as Exh. 1. Forty-five days from August 27 is Saturday, October 11. The first federal working day following October 11 is Tuesday October 14. The appeal deadline is thus 11:59 PM on October 14, 2008. See 36 C.F.R § 215.15(a) & (b).

## **APPELLANT**

WildEarth Guardians is a Santa Fe, New Mexico-based nonprofit organization with offices in Denver and members throughout the American West. WildEarth Guardians is dedicated to protecting and restoring the wildlife, wild places, and wild rivers of the American West, and to safeguarding the Earth’s climate. WildEarth Guardians has members throughout the American West, including Colorado, that utilize the region that will be affected by the Lease Modification. WildEarth Guardians and its members work to reduce harmful air pollution to safeguard public health, welfare, and the environment. WildEarth Guardians and its members have an interest in ensuring that coal mining in the North Fork of the Gunnison proceeds responsibly, in a manner that both safeguards public health, welfare, and the environment and promotes economic development. On September 15, 2008, Rocky Mountain Clean Air Action officially merged with WildEarth Guardians. Rocky Mountain Clean Air Action submitted

comments on the Lease Modification on May 23, 2008. Members of WildEarth Guardians use lands in the area of the Lease Modification for recreational, aesthetic, and educational purposes and intend to continue doing so.

### **STATEMENT OF REASONS**

#### **I. THE FOREST SERVICE FAILED TO ANALYZE AND DISCLOSE THE EFFECTS OF THE LEASE MODIFICATION TOGETHER WITH THE PROPOSED LEASING OF THE ELK CREEK EAST TRACT.**

Before the Forest Service approved the Lease Modification, the Bureau of Land Management (BLM) announced it had begun its National Environmental Policy Act (NEPA) review of Oxbow Mining's proposal for a lease by application of 786 acres for the Elk Creek East Tract. See letter of B. Sharrow, BLM (Aug. 20, 2008), attached as Exh. 2. The Elk Creek East Tract is directly adjacent to the Lease Modification, is part of the same coal seam, would be mined by the same company, would prolong the life of the same mining operation, and underlies the same watershed.

Despite these facts, and despite the fact that BLM is a "cooperating agency" on the Lease Modification Environmental Assessment (EA), the Forest Service failed to even mention the East Creek Elk Tract, or consider it either as an action likely to have cumulative effects together with the Lease Modification, or to evaluate the impacts of these the two proposals together as a connected action in the Lease Modification EA. The Forest Service's failure to evaluate the impacts of these two proposals together or to consider their cumulative effects violates NEPA.

#### **A. NEPA Requires Agencies to Analyze and Disclose the Cumulative Impacts of the Proposed Action Together with Reasonably Foreseeable Future Actions.**

An agency must analyze and disclose three types of impacts in its environmental review documents: (1) direct; (2) indirect; and (3) cumulative. 40 C.F.R. § 1508.25. Cumulative impact is defined as "the impact on the environment which results from the incremental impact

of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7. “Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” Id.

Meaningful cumulative impact analysis must identify and discuss the following: “(1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions – past, present, and proposed, and reasonably foreseeable – that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate.” Grand Canyon Trust v. F.A.A., 290 F.3d 339, 345 (D.C. Cir. 2002).

To fulfill NEPA’s purposes, other actions must be analyzed as cumulative where they are reasonably foreseeable. “NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather it is designed to require such analysis as soon as it can reasonably be done.” Kern v. United States Bureau of Land Management, 284 F.3d 1062, 1072 (9th Cir. 2002).

Where a proposal is in the planning stage, it must be considered in the cumulative impacts analysis. See, e.g., Muckleshoot Indian Tribe, 177 F.3d 800, 812 (9th Cir 1999) (finding land exchange proposed before decision in question was “reasonably foreseeable”); Neighbors of Cuddy Mtn v. United States Forest Service, 137 F.3d 1372, 1380 (9th Cir. 1998) (finding proposed timber sales “reasonably foreseeable”); Tenakee Springs v. Clough, 915 F.2d 1308, 1313 (9th Cir. 1990) (citing notice of intent to prepare NEPA document in the Federal Register as evidence of reasonably foreseeable proposals). For instance, in Muckleshoot Indian Tribe, the

Court found a land exchange “was not remote or highly speculative,” when the proposal had been announced before the agency issued the final EIS challenged. Id. at 812. Forest Service NEPA regulations are in accord, defining “reasonably foreseeable future actions” as those “Federal or non-Federal activities, not yet undertaken, for which there are ... identified proposals.” 36 C.F.R. § 220.3 (emphasis added).

**B. NEPA Requires Agencies to Analyze and Disclose in a Single NEPA Document those Actions that Are Connected or Similar.**

Regulations implementing the National Environmental Policy Act (NEPA) require an agency to consider connected actions – those “closely related” – and similar actions in an EIS. 40 C.F.R. § 1508.25(a)(1); (a)(3). The purpose of the ‘connected action’ requirement “is to prevent an agency from dividing a project into multiple actions, each of which individually has an insignificant environmental impact, but which collectively have a substantial impact.” Great Basin Mine Watch v. Hankins, 456 F.3d 955, 969 (9th Cir. 2006). A connected action is defined as being “closely related” to other actions, and are considered “connected” if they:

- (i) Automatically trigger other actions which may require environmental impact statements;
- (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously;
- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

Id. Similar actions are those that “when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.” 40 C.F.R. § 1508.25(a)(3).

**C. The Elk Creek East Tract Lease by Application Is a Reasonably Foreseeable Future Action.**

The development of the East Creek Elk Tract for coal mining is a reasonably foreseeable future action. BLM issued a scoping notice on August 20, 2008, before the Forest Service

approved the Lease Modification. See Exh. 2 at 1. BLM’s NEPA website indicates that its NEPA review was “[i]nitiating” even earlier, on July 11, 2008, and that Oxbow Mining originally submitted it to BLM in 2007. BLM, Uncompahgre Field Office Internet NEPA Register, Current Actions (October 3, 2008) at 6, available at [www.blm.gov/co/st/en/BLM\\_Information/nepa/ufo.html](http://www.blm.gov/co/st/en/BLM_Information/nepa/ufo.html) (last viewed Oct. 14, 2008), attached as Exh. 3. The East Creek Elk Tract lease-by-application thus meets the definition of an “identified proposal” under Forest Service regulations, thus requiring the Forest Service to consider the cumulative impact of the two projects together.<sup>1</sup>

The Elk Creek East Tract is directly adjacent to the Lease Modification. See Exh. 2 at 3 (map). BLM’s Elk Creek East Tract scoping notice acknowledges that “[t]he adjacent federal coal lease COC61357 is currently undergoing NEPA analysis with regard to a lease modification (Tract 4) that involves 148 acres that are adjacent to the northwest side of the” Elk Creek East Tract lease-by-application. Id. at 1. And because the Lease Modification and the Elk Creek East Tract are directly adjacent to one other, mining in Elk Creek East Tract will underlie (and undermine) the same watershed – Elk Creek – that the Lease Modification underlies. See Exh. 3.

Oxbow Mining seeks the Elk Creek East Tract to exploit the same seam of coal reserves that the company will mine in the Lease Modification. See id. at 1 (Oxbow Mining applied for the Elk Creek East Tract “as a logical extension east of its D-Seam working in their Elk Creek Mine.”). As such, gaining BLM’s approval to mine the Elk Creek East Tract will extend the life of the same mine that the Lease Modification also seeks to extend.

**D. The EA Fails to Address the Cumulative Impacts of the Lease Modification Together with the Elk Creek East Tract.**

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<sup>1</sup> The Forest Service cannot argue it had no knowledge of BLM’s East Creek Elk Tract proposal before it issued its Lease Modification EA. BLM was involved in the preparation of the Lease Modification EA; in fact, it was designated a “cooperating agency.” EA at i.

Given that BLM “initiated” the NEPA process for the Elk Creek East Tract in July 2008, and mailed its official scoping notice to the public before the Forest Service issued its EA and DN/FONSI, mining of the Elk Creek East Tract was an “identified proposal” that the Forest Service was required by law and its regulations to consider in its analysis of cumulative effects of the Lease Modification. The Lease Modification EA fails to do so, in violation of law.

The Lease Modification EA fails to identify the Elk Creek East Tract lease-by-application, and the mining that will follow, as reasonably foreseeable actions. In fact, the EA fails to identify even one reasonably foreseeable future action in the EA’s section devoted to addressing “Past, Present and Reasonably Foreseeable Actions.” See EA at 19-21 (EA Section 3.1, identifying some past actions to be addressed in cumulative effects analysis, but no foreseeable future actions).<sup>2</sup> The EA also fails to contain a “table ... showing ... reasonably foreseeable future actions,” despite the EA’s assurance that one can be found in Chapter 3. EA at 7-8.

The EA fails to identify any specific foreseeable actions or address any foreseeable future impacts, despite the fact that cumulative effects are likely, given that the area proposed for mining in the Elk Creek East Tract is directly adjacent to the Lease Modification area; that both the Lease Modification area and the Elk Creek East Tract area underlie Elk Creek; and that

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<sup>2</sup> The EA states that it will “incorporate a reasonably foreseeable development plan (RFDP) in order to address cumulative impacts.” EA at 20. Earthjustice requested the RFDP incorporated into the EA from the GMUG National Forest and received three maps, and no other analysis or explanation of reasonably foreseeable development. The maps display: (1) some projected “centerlines” for mining north and west of the Lease Modification area; and (2) projected subsidence to the north of the Lease Modification area. See Map, Lease COC 61357, North East Lease Modification, Tract 4, D-Seam (Mar. 18, 2008) (showing projected centerlines), attached as Exh. 4; Map, Sketch showing: Acres Influenced by Subsidence Outside Lease Boundary (May 8, 2008), attached as Exh. 5; Diagram, Sketch showing: Extent of Surface Effects due to Subsidence (May 8, 2008), attached as Exh. 6;. None of these maps show any anticipated development to the east and south of the Lease Modification area, as proposed in the Elk Creek East Tract lease.

mining the Elk Creek East Tract will undoubtedly prolong and expand many of the impacts of mining at the Lease Modification. Road construction, ATV use, bore holes, test wells, and subsidence may all occur in the Elk Creek East Tract, directly adjacent to the Lease Modification area, and compounding impacts from subsidence caused in the latter area.

While the EA arguably once mentions the possibility of some unspecified additional mining in the area of the Elk Creek East Tract, the EA's vague statements with respect to one resource utterly fails to meet NEPA's requirements for an analysis of cumulative impacts. See EA at 43-44 (discussing potential cumulative impacts to surface water at Elk Creek in one very general sentence concerning water quality: "Subsequent mining in exploration areas south and east of the modification could lead to indirect effects on water quality (e.g. sedimentation)."). The EA fails to analyze or disclose impacts to any other resource or even mention leasing or mining in the Elk Creek East Tract area for any other resource.

In short, the Lease Modification EA fails to address the cumulative impacts of the proposed action together with the reasonably foreseeable development of the directly adjacent, 786-acre Elk Creek East Tract. This failure violates NEPA.

**E. The Elk Creek East Tract Lease by Application Is a Connected and Similar Action to the Lease Modification that Should Have Been Addressed in a Single NEPA Document.**

Oxbow Mining has plans to mine the coal seam adjacent to the Lease Modification. Areas planned for mining include those west of the Lease Modification (longwall panels 15-20), and those south and east of the Lease Modification (Elk Creek East Tract). All are part of the company's larger plan for removal of federal and private minerals at the Elk Creek Mine. These actions are "interdependent parts of a larger action" that "depend on the larger action for their justification," namely the Elk Creek Mine's operations, making them "connected actions." 40 C.F.R. § 1508.25(a)(1). Also, they are actions that "when viewed with other reasonably



foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.” 40 C.F.R. § 1508.25(a)(3). Clearly, the Lease Modification and the East Creek Elk Tract lease share common geography, as they are directly adjacent to one another. NEPA requires the Forest Service and/or BLM to review all of these actions together in a single NEPA document. The failure of federal agencies to review these two actions together violates NEPA.

## **II. THE FOREST SERVICE VIOLATED NEPA BY FAILING TO ADEQUATELY DISCLOSE OR MITIGATE IMPACTS OF THE LEASE MODIFICATION ON CLIMATE, OR TO CONSIDER ALTERNATIVES TO LESSEN SUCH IMPACTS.**

### **A. Global Warming Threatens the West’s Environment, Economy, and Quality of Life.**

The “harms associated with climate change are serious and well recognized.” Massachusetts v. EPA, 127 S. Ct. 1438, 1455 (2007). The Council on Environmental Quality’s (CEQ’s) Draft Guidance on climate change unequivocally states that climate change is a “reasonably foreseeable” impact of greenhouse gas emissions “as that phrase is understood in the context of NEPA and the CEQ regulations” and that “[a]s a result, climate change should be considered in NEPA documents.” CEQ Draft Guidance Regarding Consideration of Global Climatic Change in Environmental Documents Prepared Pursuant to the National Environment Policy Act, Oct. 8, 1997, at 4, available at [www.mms.gov/eppd/compliance/reports/ceqmemo.pdf](http://www.mms.gov/eppd/compliance/reports/ceqmemo.pdf) (last viewed October 14, 2008).

Indeed, the impacts of climate change to Colorado are and will be significant. In his Climate Action Plan issued in November 2007, Colorado Governor Bill Ritter, Jr., summarized:

Global warming is our generation’s greatest environmental challenge. The scientific evidence that human activities are the principal cause of a warming planet is clear, and we will see the effects here in Colorado. But the seeds of change are also here in Colorado, in our scientific and business communities, and in each of us individually. This Colorado Climate Action Plan is a call to action. It sets out measures that we in our

state can adopt to reduce emissions of greenhouse gases by 20 percent by 2020, and makes a shared commitment with other states and nations to even deeper emissions cuts by 2050.

Why is this important? For Colorado, global warming will mean warmer summers and less winter snowpack. The ski season will be weeks shorter. Forest fires will be more common and more intense. Water quality could decline, and the demand for both agricultural and municipal water will increase even as water supplies dwindle.

See Colorado Climate Action Plan (November 2007), attached as Exh. 7.

The Colorado Climate Action Plan details the present and future impacts of climate change to this state. Some of these impacts are indirect, caused by “the displacement of millions of people living in coastal areas, thawing of arctic ecosystems and accelerated loss of usable lands to deserts.” Id. at 7. Critically, the Colorado Climate Action Plan states that “the direct risks to the state are very serious.” Id. These “direct risks” are numerous, including current observations of shorter and warmer winters, with thinner snowpack and earlier spring runoff, with less precipitation overall, and more of that precipitation falling as rain, not snow. Id. Droughts are longer, and there are more wildfires “burning twice as many acres each year than before 1980.” Beetle infestations are now “[w]idespread” and there is also a “[r]apid spread of West Nile virus.” Id. In addition to these observed impacts, “[i]n the coming decades, scientists project that Colorado and neighboring western states will see”:

- 3-4 degree temperatures increases by 2030, with more frequent and longer-lasting summer heat extremes;
- even “[l]onger and more intense wildfire seasons” with fires “projected to claim more land each year than the year before”;
- “Midwinter thawing and much earlier melting of snowpack” with resultant “flooding,” “ski season[s]” shortened by “three to six weeks,” and “added stress on reservoirs”;
- “Much lower flows in rivers in the summer months and a greater vulnerability to drought with consequent impacts to the ability of “[a]lready over-used river systems” to satisfy “existing water rights and future growth,” degradation of water quality, and a potential “decline” in “[h]ydropower production”;

- Slower recharge in groundwater aquifers, with an overall decline of 20% projected for the Ogallala aquifer if temperatures increase by more than 5 degrees F.
- “Movement of plant and animal species to higher elevations and latitudes” and the fragmentation of high-elevation habitat. “Many of today’s high-elevation species will face localized or total extinction”;
- “Insect attaches in forests” caused by warmer winter temperatures that will “reduce winterkill of beetles,” warmer summer temperatures that will “allow faster insect lifecycles,” and forests rendered vulnerable by “summer droughts”;
- “Less snow cover and more winter rain on farm lands” whereby the “[p]elting rain on bare ground will increase soil erosion”; and, if that isn’t enough:
- “More weeds.”

Id. These impacts are obviously dramatic, and will extend across state lines, as noted by the Climate Action Plan.

Further, recent reports indicate that global warming is having a disproportionate impact on the American West and Colorado, raising temperatures here faster than the rest of the world. The Rocky Mountain Climate Organization and the Natural Resources Defense Council released a report in March 2008 indicating that temperatures in the American West were rising 70% faster than the world-wide average. The report noted:

Already, decreases in snowpack, less snowfall, earlier snow melt, more winter rain events, increased peak winter flows, and reduced summer flows have been documented. Scientists have recently attributed more than half of these changes in the West between 1950 and 1999 to the effects of heat-trapping pollutants.

As global warming continues, the IPCC also predicts more intense and longer droughts ....

See “Hotter and Drier: The West’s Changed Climate” at v (March 2008), excerpts attached as Exh. 8.<sup>3</sup>

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<sup>3</sup> The full report is available at [www.rockymountainclimate.org/website%20pictures/Hotter%20and%20Drier.pdf](http://www.rockymountainclimate.org/website%20pictures/Hotter%20and%20Drier.pdf) (last viewed Oct. 14, 2008).

Responding to these findings, Colorado Governor Bill Ritter, Jr., recently issued a groundbreaking Executive Order calling for, among other things, a 20% reduction in greenhouse gases below 2005 levels by 2020 and an 80% reduction below 2005 levels by 2050. According to Governor Ritter, “Many sectors of Colorado’s economy, including agriculture, recreation, skiing, and tourism, could experience significant changes and impacts if emissions are not reduced.” Executive Order D 004 08, “Reducing Greenhouse Gas Emissions in Colorado” (April 22, 008) at 1, attached as Exh. 9.

Methane is a significant contributor to global warming. “Coal mine emissions account for approximately ten percent of worldwide methane emissions,” a number that is expected to rise. L. Lyman, “Coalbed Methane: Crafting a Right to Sell From an Obligation to Vent,” 78 U. of Colorado L. Rev. 613, 615 (2007). Methane is over 20 times more effective in trapping heat in the atmosphere than carbon dioxide over a 100-year period.

**B. The Forest Service Failed to Consider a Range of Reasonable Alternatives to Lessen the Lease Modification’s Impacts of Global Warming.**

NEPA requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternatives uses of available resources.” 42 U.S.C. § 4332(2)(E). To achieve these ends, an EIS must “[r]igorously explore and objectively evaluate all reasonable alternatives.” 40 C.F.R. § 1502.14; Utahns for Better Transp., 305 F.3d at 1166 (emphasis added). The alternatives analysis is “the heart” of any environmental review pursuant to NEPA. 40 C.F.R. § 1502.14. Here, the Forest Service failed to rigorously explore and objectively evaluate alternatives that would reduce or eliminate methane emissions via flaring or capture.

The Forest Service failed to consider an alternative that would evaluate capturing or flaring of methane that is vented to the atmosphere through the mine’s ventilation system

(ventilation air methane), or is otherwise vented to the atmosphere. See EA at 17, 26. The EA dismisses a capture alternative with the statement that: “This method would likely require additional infrastructure and further studies to evaluate the economic feasibility from this mine. The relatively low levels of methane released by this mine may make this cost prohibitive.” EA at 26 (emphasis added). The “further study” required – and prematurely dismissed by the EA – is the alternatives analysis required by NEPA. Further, the very uncertainty about the cost of a methane capture alternative underlines that further study is required, since capture is occurring (and thus is presumably cost-effective) at other coal mines in the US and around the world.<sup>4</sup>

The EA fails to address at all an alternative that would limit the greenhouse impacts by combusting ventilation air methane. Technologies have emerged in recent years that permit coal

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<sup>4</sup> There is a long history of capturing methane at working coal mines. Jim Walter Resources has been capturing coal mine methane from its Alabama mines since 1979 through its Black Warrior Methane subsidiary. These facilities capture methane from gob wells. Jim Walter Resources, Inc., webpage, [www.jimwalterresources.com/Subs.html](http://www.jimwalterresources.com/Subs.html), attached as Exh. 10 (last viewed Oct. 14, 2008). In Pennsylvania, RAG American Coal Co. in 2003 received approval to capture and process methane. “The recovered methane will be processed and sold to a natural gas pipeline.” Penn. Dep’t of Environmental Protection, “DEP Issues Air Quality Plan Approval for Methane Recovery Project,” (Nov. 6, 2003) at 2, attached as Exh. 11. A 2007 EPA presentation documents 10 capture and utilization projects at active mines in the United States, including: natural gas pipeline injection, mine air heating, and coal drying. P. Franklin, US EPA Coalbed Methane Outreach Program, “Coal Mine Methane Recovery & Utilization in the United States” (Sep. 25, 2007), at 8-11, attached as Exh. 12. This document also reports that technology is available to harness ventilation air methane, which typically occurs at concentrations of less than 1%. Id. at 15. Additional documentation of methane utilization projects is available in the EPA Coalbed Methane Outreach Program Technical Options Series, the Coalbed Methane Outreach Program’s website, [www.epa.gov/coalbed/resources/technical\\_options.html](http://www.epa.gov/coalbed/resources/technical_options.html) (last viewed Oct. 14, 2008).

In addition to those projects in the U.S., numerous projects around the globe capture and utilize methane, including: “natural gas pipeline injection, electric power production, co-firing in boilers, district heating, mine heating, coal drying, vehicle fuel, flaring, and manufacturing/industrial uses[.]” Methane to Markets website, [www.methanetomarkets.org/coalmines/coalmines-bkgrd.htm](http://www.methanetomarkets.org/coalmines/coalmines-bkgrd.htm), at 2<sup>nd</sup> printed page (last viewed Oct. 14, 2008), attached as Exh. 13. In fact, EPA is making grants and providing technical workshops to promote responsible use of coal mine methane in other countries. U.S. Agency for Int’l Development, “U.S. Government Accomplishments in Support of the Methane to Markets Partnership” (Sep. 2007), excerpt attached as Exh. 14.

mines to combust coal mine ventilation air methane even at very low concentrations. For example, in Australia, one coal mine is using ventilation air to generate power.<sup>5</sup> Further, in the United States, two ongoing projects show that the global warming impacts of ventilation air methane can be reduced. First, EPA and others report ventilation air methane combustion technology has been successfully tested at a closed coal mine in West Virginia.<sup>6</sup> Second, the Mine Safety Health Administration earlier this year approved the use of technology to eliminate ventilation air methane at an active coal mine in Alabama.<sup>7</sup>

The EA's statement that the Forest Service cannot require flaring (or any other mitigation measure like flaring or capture of ventilation air methane) is incorrect. See EA at 26 (Forest Service and other agencies "cannot currently require or request flaring or capture as a mitigation measure" because "methane is not regulated" and because no methane "standards [have] been promulgated by EPA."). The Forest Service has the authority and duty to protect its lands from the impacts of global warming. For example, under the Mineral Leasing Act, coal leases of

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<sup>5</sup> See Press Release, "NSW Premier Morris Iemma Opens World-First Power Generation Project At BHP Billiton's West Cliff Mine," (Sept. 14, 2007), attached as Exh. 15 ("the project is the first demonstration of commercial power generation solely from mine ventilation air."); BHP Billiton website, "World's First Power Plant To Use Coal Mine Ventilation Air As Fuel," attached as Exh. 16, available at [www.bhpbilliton.com/bb/sustainableDevelopment/caseStudies/2008/worldsFirstPowerPlantToUseCoalMineVentilationAirAsFuel.jsp](http://www.bhpbilliton.com/bb/sustainableDevelopment/caseStudies/2008/worldsFirstPowerPlantToUseCoalMineVentilationAirAsFuel.jsp) (last viewed Oct. 14, 2008).

<sup>6</sup> See J. Somers & L. Schultz, "Thermal Oxidation of Coal Mine Ventilation Air Methane (VAM)," presented at 12th U.S./North American Mine Ventilation Symposium (June 9 -11, 2008), at 12-14, attached as Exh. 17 (study of Windsor Mine in West Virginia showed ventilation air methane could be safely oxidized at low concentrations); U.S. Department of Energy, Project Facts, "Capture and Use of Coal Mine Ventilation - Air Methane," (April 2008), attached as Exh. 18 (noting that technology used at Windsor Mine "effectively reduced methane emissions by more than 95 percent over a range of methane concentrations (0.3–0.9 percent) and flow rates").

<sup>7</sup> See Exh. 17 (Somers) at 8-9; Biothermica, Press Release, "Key Approval Granted for First-of-Kind Coal Mine Methane Mitigation Project in North America" (Apr. 28, 2008), attached as Exh. 19, available at [www.biothermica.com/brochure\\_pdf/comm\\_vamjwr\\_en.pdf](http://www.biothermica.com/brochure_pdf/comm_vamjwr_en.pdf) (last viewed Oct. 14, 2008).

Forest Service land “may be issued only upon consent of the” Forest Service and “only ... upon such conditions as [the Forest Service] may prescribe with respect to the use and protection of the nonmineral interests in those lands.” 30 U.S.C. § 201(a)(3)(A)(iii). Further, the Surface Mining Control and Reclamation Act (SMCRA) provides the Forest Service with the authority to “protect[] ... non-mineral resources” of its land proposed to be impacted by underground mining of federal coal resources. 30 C.F.R. § 740.4(e)(2). Both of these provisions provide the Forest Service with the authority to limit the global warming impacts of coal mining on its lands.<sup>8</sup>

Even if the Forest Service could not require flaring or capture of methane, it must examine all reasonable alternatives that involve such actions. The Forest Service may not refuse to evaluate a methane capture (or methane flaring, or destruction of ventilation air methane) alternative by claiming that implementing methane capture would be outside its jurisdiction. NEPA requires that “agencies shall ... [i]nclude reasonable alternatives not within the jurisdiction of the lead agency.” 40 C.F.R. § 1502.14(c).

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<sup>8</sup> The Forest Service also states that “[t]he likelihood of flaring or methane capture occurring is very low for this lease modification as the coal lessee and the gas lessee are different companies.” EA at 26 (emphasis omitted). A recent decision of the Interior Department casts doubt on whether split ownership of a gas lease and a coal lease represents a hurdle to the sale of coal mine methane. See Vessels Coal Gas, Inc., 175 IBLA 8 (June 26, 2008),

**C. The Forest Service Failed To Include “A Reasonably Complete Discussion” of Mitigation Measures.**

NEPA requires that agencies mitigate the adverse environmental impacts of their actions. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 351-52 (1989); Holy Cross Wilderness Fund v. Madigan, 960 F.2d 1515, 1522 (10th Cir. 1992). Mitigation measures are also required by NEPA’s implementing regulations, 40 C.F.R. §§ 1502.14(f), 1502.16(h). The Tenth Circuit has held that an agency’s analysis of mitigation measures “must be ‘reasonably complete’ in order to ‘properly evaluate the severity of the adverse effects’ of a proposed project prior to making a final decision.” Colo. Env’tl Coal. v. Dombek, 185 F.3d 1162, 1173 (10<sup>th</sup> Cir. 1999) (quoting Robertson, 490 U.S. at 352). A “perfunctory description” of mitigation measures, without “supporting analytical data” analyzing their efficacy, is inadequate to satisfy NEPA’s requirements that an agency take a “hard look” at possible mitigating measures. Neighbors of Cuddy Mountain v. U.S. Forest Serv., 137 F.3d 1372, 1380 (9<sup>th</sup> Cir. 1998). Moreover, in its final decision documents, an agency must “[s]tate whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not.” 40 C.F.R. § 1505.2(c).

The Forest Service failed to consider capture or flaring, or destruction of ventilation air methane, as measures to mitigate the impacts of global warming. As noted above, the Forest Service dismissed such measures without basis.

In addition, the EA notes, but then inexplicably fails to analyze, a mitigation measure that would require Oxbow Mining to offset the impact of global warming impacts: “Offset mitigation of the release of methane is possible and may or may not be reasonable due to the quantities of methane released. Off-set mitigation has not been considered at this mine.” EA at 26 (emphasis added). Thus despite the fact that offset mitigation “is possible and may ... be



reasonable,” the Forest Service – with no explanation – simply declines to consider it. Further, the Forest Service fails to explain why offset mitigation “may not be reasonable.” Id. Given that the agency noted that offset mitigation “may or may not be reasonable due to the quantities of methane released,” the agency was required to determine whether such mitigation measure was appropriate in its NEPA document. The Forest Service’s failure to address a potential mitigation measure that may be reasonable for no reason and based on a lack of evidence is a violation of NEPA, and is arbitrary and capricious.

**D. The Forest Service Failed to Disclose Indirect and Cumulative Impacts of Coal Burning on Global Warming.**

As noted above, an agency must analyze and disclose direct, indirect, and cumulative impacts from a proposed actions in NEPA documents. 40 C.F.R. § 1508.25. Cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7.

The Lease Modification will indirectly and cumulatively impact global warming in at least three ways. First, release of ventilation air methane will worsen warming, as discussed above.

Second, the Lease Modification will permit the mining of coal under 148 acres of federal lands, and of additional coal under the six longwall panels to the north and west of the Lease Modification area. The total amount of coal recovered will be approximately 1.4 million tons. EA at 75.<sup>9</sup> Between 95% and 100% of this coal will be burned. Id. (“The approximate

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<sup>9</sup> “BLM calculates a recoverable reserve for the modification to be 581,000 tons plus 795,000 tons gained on original lease. Total additional tons recovery realized is calculated to be 1,376,000 tons.”

breakdown of market destinations for the coal is ... Electric Utilities 80 - 85% ... Cement & Lime Manufacturing 12 - 16% ... Other Manufacturing 3 - 5%.”). Burning coal mined as a result of the Forest Service’s approval of the Lease Modification will pump significant amounts of CO<sub>2</sub> into the atmosphere. Transporting the coal will also require the combustion of fuel that adds to global warming.

Third, the purpose of the project is “to allow for a more safe and logical mine design.” EA at 2. In fact, Oxbow Mining has stated that the modification is “necessary to reorient the north main entries relative to the adjacent panel orientation and to improve mine geometry and stability for mine safety.” Letter of J. Kriger, Oxbow Mining to J. Dudash, Colorado Division of Reclamation, Mining and Safety (Apr. 24, 2008) at 1, attached as Exh. 20. The Lease Modification will permit the mining of longwalls 15-20 in the mine, which cover about 1,000 acres. All of this coal will also be burned, emitting even more CO<sub>2</sub>.

Despite the fact that burning coal will have significant environmental impacts, the Forest Service fails to even attempt to quantify these impacts. Instead, the EA alleges that:

It is impossible to quantify emissions related to coal that is burned at coal fired power plants with regard to the coal in the lease modification as it will be mixed with other less compliant coals all over the United States to meet air quality standards. Coal fired power plants will continue to release CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>2</sub> at the current rates.

EA at 24. This statement is wrong for a number of reasons.

First, it is not “impossible” to estimate the quantity of CO<sub>2</sub> emissions from the 1.4 million tons of coal that will be mined and sold as a result of approval of the Lease Modification. In fact, this is something that EPA does as a matter of course. The U.S. EPA, which regulates air emissions, has long used a system for estimating the quantity of airborne pollutants using “emissions factors.” An emission factor is a “representative value that attempts to relate the

quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.” See US EPA, Emissions Factors & AP 42, [www.epa.gov/ttn/chief/ap42/index.html](http://www.epa.gov/ttn/chief/ap42/index.html), attached as Exh. 21 (last viewed Oct. 14, 2008). EPA has developed a formula for “Default CO<sub>2</sub> Emission Factors For U. S. Coals,” including high volatile bituminous coal which will be mined from the D seam. See U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources (1998) at 1.1-42, excerpts attached as Exh. 22, and available at [www.epa.gov/ttn/chief/ap42/ch01/final/c01s01.pdf](http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s01.pdf) (last viewed Oct. 14, 2008). Further, the Energy Information Agency estimated in 1994 that one pound of coal will produce between two to three tons of CO<sub>2</sub>. See B.D. Hong and E. R. Slatick, Carbon Dioxide Emission Factors for Coal (originally published in Energy Information Administration, *Quarterly Coal Report, January-April 1994*, DOE/EIA-0121(94/Q1) (Washington, DC, August 1994)) at 2, attached as Exh. 23, and available at [www.eia.doe.gov/cneaf/coal/quarterly/co2\\_article/co2.html](http://www.eia.doe.gov/cneaf/coal/quarterly/co2_article/co2.html) (last viewed Oct. 14, 2008). Thus, approval of the Lease Modification could result in 3 million tons or more of CO<sub>2</sub> being released into the atmosphere. The fact that coal from the lease modification will be mixed with other coals does not somehow make it impossible for the Forest Service to estimate the amount of CO<sub>2</sub> emissions, since those emissions are largely a factor of coal content, which Oxbow Mining undoubtedly has already estimated. See EA at 117 (estimating coal quality). Further EPA has concluded that CO<sub>2</sub> emissions do not depend on how the coal is combusted in a power plant. Exh. 22 at 1.1-5 (“Nearly all of the fuel carbon (99 percent) in coal is converted to CO<sub>2</sub> during the combustion process. This conversion is relatively independent of firing configuration.”).

Second, the EA appears to argue that it need not disclose the indirect or cumulative impacts of CO<sub>2</sub> emissions from mining the Lease Modification area because “[c]oal fired power

plants will continue to release CO<sub>2</sub> ... at the current rates.” EA at 24. The Forest Service provides utterly no support for this assertion – no analysis of market forces, no discussion of the elasticity of demand for coal, or anything else. The EA’s statement also utterly ignores that there will be indirect impacts from the Lease Modification: 1.4 million tons of coal will be burned. That coal would not be burned were it not for the Forest Service’s consent. No CO<sub>2</sub> will be emitted from the coal underlying the Lease Modification absent the agencies’ approvals. And while the Forest Service obviously does not control the global market for coal, the addition of the coal underlying the Lease Modification will just as obviously make that coal available for burning. Federal courts have held that even where nonfederal factors – such as the demand for coal from power plants – will influence the extent of the impacts, federal agencies are required by NEPA to evaluate the impacts of their actions. For example, in Ctr. for Biological Diversity v. National Highway Traffic Safety Admin., 538 F.3d 1172 (9th Cir. 2008), the Ninth Circuit Court of Appeals stated that while “climate change is largely a global phenomenon that includes actions that are outside of [the agency’s] control ... that does not release the agency from the duty of assessing the effects of its actions on global warming within the context of other actions that also affect global warming.” Id. at 1217 (quotation omitted, alteration and emphasis in original). The effects of the Forest Service’s actions are clear – this 1.4 million tons of coal will be burned that otherwise would stay in the ground. The Forest Service’s failure to even attempt to address those affects violates NEPA.<sup>10</sup>

Finally, even if the Forest Service is correct that it is “impossible” to quantify CO<sub>2</sub> emissions that will result from the Lease Modification, the agency failed to comply with NEPA’s

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<sup>10</sup> The EA also fails to disclose CO<sub>2</sub> production as an “irreversible or irretrievable commitment of resources,” as required by NEPA. EA at 91; 42 U.S.C. § 4332(2)(C)(v) (requiring disclosure of “any irreversible and irretrievable commitment of resources).

duties to address the lack of availability of such information. Courts have long recognized that “reasonable forecasting and speculation is implicit in NEPA.” Dubois v. U.S. Dept. of Agriculture, 102 F.3d 1273, 1286 (1st Cir. 1996). “[T]he government’s inability to fully ascertain the precise extent of the effects of mineral leasing in a national forest is not, however, a justification for failing to estimate what those effects might be before irrevocably committing to the activity.” Conner, 848 F.2d at 1450.

NEPA’s implementing regulations describe how an agency should proceed in the face of incomplete or missing information. Where information is not available concerning a reasonably foreseeable environmental consequence, 40 C.F.R. § 1502.22(b) requires a NEPA document to include: (1) a statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information; (3) a summary of relevant existing credible scientific evidence; and (4) the agency’s evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. “The duty of the agency is to use theories or research methods to assess the impacts of the proposed action in the absence of an answer to [a central] question.” Cabinet Resource Group v. United States Fish and Wildlife Serv., 465 F. Supp. 2d 1067, 1100 (D. Mont. 2006). Here, the Forest Service simply stated that the task of determining CO<sub>2</sub> emissions was “impossible” with no supporting documentation and without taking any of the steps required by NEPA’s regulations. The Forest Service’s actions thus violate NEPA.

### **III. THE FOREST SERVICE FAILED TO ANALYZE AND DISCLOSE POTENTIAL IMPACTS OF PERMITTING MINING WITH MORE THAN 2000 FEET OF OVERBURDEN.**

The EA vaguely alludes to the potential dangers of coal mining with more than 2,000 feet of overburden. See EA at 73 (noting that more than half the coal in the Lease Modification area

is under more than 2,000 feet of overburden, which “may prove to be difficult to recover.”); *id.* at 72 (“Although this high overburden has greater ground stresses associated with it, the BLM criteria of coal recovery calculations considers a full development of north mains the entire projected length of the modification.”). However, the EA does not explain why such mining may “prove difficult” or what the impact of “greater ground stresses” may be.

However, it appears that mining below 2,000 feet may “prove difficult” because it will increase the danger of “roof stresses, wall stresses and coal bursts in the mine.” Greg Lewicki and Associates, Raton Basin Coal Mine Feature Inventory (July 2001) at 4-5, excerpts attached as Exh. 24, available at [oil-gas.state.co.us/Library/RatonBasin/Lewicki\\_Final\\_Report.pdf](http://oil-gas.state.co.us/Library/RatonBasin/Lewicki_Final_Report.pdf) (last viewed Oct. 14, 2008). In short, mining at such depths may pose a danger to those working there. The Forest Service, however, fails to identify or assess these risks to human life. Its failure to do so violates NEPA.

#### **IV. THE FOREST SERVICE FAILED TO ADEQUATELY ADDRESS EITHER THE IMPACTS OF THE LEASE MODIFICATION ON WATER QUALITY OR CLEAN WATER ACT COMPLIANCE.**

The EA fails to adequately address the potentially significant impacts of the coal lease modification and expanded mining at the Elk Creek Mine to surface water quality in accordance with 40 C.F.R. § 1502.16. Furthermore, the DN/FONSI fails to ensure compliance with key Clean Water Act requirements.

Of particular concern, the EA entirely fails to address the fact that the North Fork of the Gunnison River, as well as many of its tributaries and the main fork of the Gunnison River downstream, is impaired due to selenium pollution. Indeed, Colorado Water Quality Control Commission (WQCC) Regulation No. 93 lists all of the North Fork of the Gunnison River from Black Bridge above Paonia to the confluence with the Gunnison, and the Gunnison River from the Uncompahgre River to the Colorado River, as impaired because of selenium. *See* 5 C.C.R.

1002-93 § 93.3. Furthermore, the WQCC Regulation No. 93 lists Hubbard Creek from the National Forest boundary to the North Fork of the Gunnison River as impaired due to selenium. Hubbard Creek is located directly west of the proposed coal lease modification and the EA indicates that this stream will be impacted by expanded mining activities at the Elk Creek Mine.

Information relied on by the Forest Service indicates that selenium discharge from the Elk Creek Mine is very likely. A 2007 hydrology report prepared by Oxbow Mining, LLC and cited in the EA discloses that selenium has been detected in water quality samples taken from Hubbard Creek, Lower Elk Creek, Upper Elk Creek, Sanborn Creek, Lower Coal Gulch, Lower Hawk's Nest Creek, and even the North Fork of the Gunnison River at Somerset. See Oxbow, 2007 Annual Hydrology Report (2007) at Exhibit 1; EA at 96 (citing Oxbow 2007 hydrology report). This information strongly indicates that selenium pollution from the Elk Creek Mine is extremely likely.

Notwithstanding this information, the EA entirely fails to analyze and assess whether expanded mining at the Elk Creek Mine will ensure compliance with selenium water quality standards and protect waters that are already impaired by selenium pollution. The discussion of surface water impacts is utterly silent on the issue of potential selenium impacts from the Elk Creek Mine. EA at 38-44. This is troubling given the many streams in the area that are currently in violation of selenium water quality standards. This is further troubling because the Forest Service itself discloses in the EA that, "Water discharge from the mine to surface streams could impact the quality of water in the receiving streams." EA at 43.

Although the Forest Service may claim that state water quality permitting requirements will adequately address any direct, indirect, and cumulative selenium impacts from the coal lease modification, this does not appear to be the case. Of concern is that the Colorado Water Quality

Control Division (WQCD) has not yet developed a Total Maximum Daily Load (TMDL) for the North Fork of the Gunnison River, or for that matter, even for the Gunnison River. See list of TMDLs for Gunnison River and Lower Dolores River drainages, [www.cdphe.state.co.us/wq/Assessment/TMDL/gunnison.html](http://www.cdphe.state.co.us/wq/Assessment/TMDL/gunnison.html) (last viewed Oct. 14, 2008). Thus, the State of Colorado has not determined appropriate selenium loads for these water bodies. This means the Forest Service cannot possibly assume that the WQCD will issue a water quality discharge permit that will ensure compliance with selenium water quality standards in Hubbard Creek, the North Fork of the Gunnison River, and other stream segments that may be impacted by expanded mining activities at the Elk Creek Mine.

Regardless, the Forest Service has an independent duty to ensure actions that it authorizes comply with Colorado water quality regulations. Section 313 of the Clean Water Act requires the Forest Service to ensure activities under its jurisdiction comply with state water quality standards. See 33 U.S.C. § 1323(a). Colorado WQCC Regulation No. 31 limits selenium concentrations to no more than 4.6 micrograms/liter. See 5 C.C.R. 1002-31, Table III. Given that the Forest Service itself discloses that expanded mining activities at the Elk Creek Mine “could impact the quality of water in the receiving streams,” the agency has a duty to demonstrate in the EA that selenium water quality standards will be met to ensure compliance with both NEPA and the Clean Water Act. The Forest Service has failed to comply with this duty and the DN/FONSI must be reversed.

**V. THE FOREST SERVICE MUST RESPOND TO EACH ISSUE RAISED ON APPEAL.**

The Forest Service has a duty to fully respond to each issue raised in this appeal. In prior administrative appeal decisions regarding coal lease modifications, the Rocky Mountain Regional Office has entirely ignored issues raised pursuant to 36 C.F.R. § 215, arguing that such



issues had no relation to the Forest Service's decision to consent to coal leasing. For example, in response to an administrative appeal filed by our organization over a coal lease modification at the West Elk Coal Mine, also located in Gunnison County, the Rocky Mountain Regional Office summarily dismissed all issues, stating, "None of the issues brought forth by the appellants were directed at the decision to authorize changes in certain lease stipulations and to authorize the construction, reconstruction and use of certain Forest Service roads and trails necessary for the installation of the proposed methane drainage wells." See Appeal Decision Regarding Deer Creek Shaft and E Seam Drainage Wells Project FEIS, File Code 1570 (2008-02-04-0015) (June 2, 2008). Such a response is not only unreasonable it is unlawful as well for a number of reasons.

First, the Forest Service has a duty under the Administrative Procedure Act to provide a full response to issues raised in this appeal. See 5 U.S.C. § 555(e). Second, the Forest Service has a duty under the Mineral Leasing Act and SMCRA to protect the non-mineral resources of its land that may be impacted by underground coal mining. See 30 U.S.C. § 201(a)(3)(A)(iii) and 30 C.F.R. § 740.4(e)(2). In this case, every issue raised in this appeal relates to the Forest Service's duties under the Mineral Leasing Act and SMCRA. Put simply, every issue raised in this appeal relates to questions over whether the agency has adequately analyzed, assessed, and mitigated impacts to the extent needed to fulfill its duties under the Mineral Leasing Act and SMCRA.

Furthermore, to the extent that this appeal questions agency compliance with NEPA, the Clean Water Act, and related laws, such questions are entirely within the scope of the Forest Service's review authority. Indeed, the Forest Service cannot consent to coal leasing and mining activities before complying with NEPA and demonstrating that such consent will not violate the

Clean Water Act and other related laws. NEPA requires that each federal agency must analyze and disclose the impacts of proposed federal actions prior to taking such action. Again, every issue raised in this appeal relates to whether the Forest Service has acted reasonably, knowledgeably, and legally with regard to consenting to the coal leasing modification at issue. Consequently, the Forest Service is legally obligated to respond in full to each issue raised in this appeal.

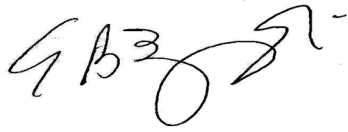
### **REQUEST FOR RELIEF**

Based on the foregoing Statement of Reasons, Appellants hereby request the following relief:

1. The Regional Forester must set aside the Decision Notice providing consent to Federal Coal Lease COC-61357 Modification, Tract 4.
2. If the Forest Service intends to consent to the Federal Coal Lease COC-61357 Modification, Tract 4, it must prepare NEPA documentation (including opportunities for public involvement and appeal) that complies fully with NEPA, SMCRA, the Mineral Leasing Act, the Clean Water Act, and the Administrative Procedure Act, and that addresses all of the issues raised in this appeal.
3. Any decision on this appeal must include a full response to each issue raised in the Statement of Reasons.
4. The Regional Forester must direct Forest Supervisor Charles S. Richmond to refrain from committing any further agency resources to consenting to the Federal Coal Lease COC-61357 Modification, Tract 4 unless and until the Forest Service complies with all applicable law, as described in paragraphs 1-3, above.

Appellants further request that all communications concerning this appeal be delivered to both: (1) Edward B. Zukoski, appellant's attorney; and (2) Jeremy Nichols, representative of appellant WildEarth Guardians. We provide their addresses below. We look forward to meeting with Supervisor Richmond to attempt to informally resolve this appeal, as provided by 36 C.F.R. § 215.17(a).

Respectfully submitted October 14, 2008 on behalf of Appellant WildEarth Guardians, by



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## TABLE OF EXHIBITS

- Exhibit 1. Proof of Publication (Aug. 27, 2008)
- Exhibit 2. Letter of B. Sharrow, BLM (Aug. 20, 2008)
- Exhibit 3. BLM, Uncompahgre Field Office Internet NEPA Register, Current Actions (October 3, 2008)
- Exhibit 4. Map, Lease COC 61357, North East Lease Modification, Tract 4, D-Seam (Mar. 18, 2008)
- Exhibit 5. Map, Sketch showing: Acres Influenced by Subsidence Outside Lease Boundary (May 8, 2008),
- Exhibit 6. Diagram, Sketch showing: Extent of Surface Effects due to Subsidence (May 8, 2008)
- Exhibit 7. Governor Bill Ritter, Jr., *Colorado Climate Action Plan: A Strategy to Address Global Warming* (Nov. 2007)
- Exhibit 8. NRDC and Rocky Mountain Climate Organization, "Hotter and Drier: The West's Changed Climate" (March 2008) (excerpts)
- Exhibit 9. Executive Order D 004 08, "Reducing Greenhouse Gas Emissions in Colorado" (April 22, 008)
- Exhibit 10. Jim Walter Resources, Inc., webpage, [www.jimwalterresources.com/Subs.html](http://www.jimwalterresources.com/Subs.html) (last viewed Apr. 23, 2008)
- Exhibit 11. Penn. Dep't of Environmental Protection, "DEP Issues Air Quality Plan Approval for Methane Recovery Project," (Nov. 6, 2003)
- Exhibit 12. P. Franklin, US EPA Coalbed Methane Outreach Program, "Coal Mine Methane Recovery & Utilization in the United States" (Sep. 25, 2007)
- Exhibit 13. Methane to Markets website, [www.methanetomarkets.org/coalmines/coalmines-bkgrd.htm](http://www.methanetomarkets.org/coalmines/coalmines-bkgrd.htm) (last viewed April 25, 2008)
- Exhibit 14. U.S. Agency for Int'l Development, "U.S. Government Accomplishments in Support of the Methane to Markets Partnership" (Sep. 2007)
- Exhibit 15. Press Release, "NSW Premier Morris Iemma Opens World-First Power Generation Project At BHP Billiton's West Cliff Mine," (Sept. 14, 2007)

- Exhibit 16. BHP Billiton website, “World’s First Power Plant To Use Coal Mine Ventilation Air As Fuel”
- Exhibit 17. J. Somers & L. Schultz, “Thermal Oxidation of Coal Mine Ventilation Air Methane (VAM),” presented at 12th U.S./North American Mine Ventilation Symposium (June 9 - 11, 2008)
- Exhibit 18. U.S. Department of Energy, Project Facts, “Capture and Use of Coal Mine Ventilation - Air Methane,” (April 2008)
- Exhibit 19. Biothermica, Press Release, “Key Approval Granted for First-of-Kind Coal Mine Methane Mitigation Project in North America” (Apr. 28, 2008)
- Exhibit 20. Letter of J. Kriger, Oxbow Mining to J. Dudash, Colorado Division of Reclamation, Mining and Safety (Apr. 24, 2008)
- Exhibit 21. US EPA, Emissions Factors & AP 42, [www.epa.gov/ttn/chief/ap42/index.html](http://www.epa.gov/ttn/chief/ap42/index.html)
- Exhibit 22. U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources (1998) (excerpts)
- Exhibit 23. B.D. Hong and E. R. Slatick, Carbon Dioxide Emission Factors for Coal (originally published in Energy Information Administration, *Quarterly Coal Report, January-April 1994*, DOE/EIA-0121(94/Q1) (Washington, DC, August 1994))
- Exhibit 24. Greg Lewicki and Associates, Raton Basin Coal Mine Feature Inventory (July 2001)