Headquarters
1216 Lincoln Street
Eugene, Oregon 97401
(541) 485-2471
info@westernlaw.org

Offices
Helena, Montana
Santa Fe, New Mexico
Taos, New Mexico
Portland, Oregon
Seattle, Washington

Defending the West www.westernlaw.org

Western Environmental Law Center

Sent via electronic mail (protest only) and USPS (protest and exhibits)

August 8, 2016

Bureau of Land Management
Attn: Gina Jones
Uncompahgre Field Office
2465 South Townsend Avenue
Montrose, Colorado 81401
Email: bullmteis@blm.gov

RE: Protest of Bull Mountain Unit Master Development Plan Final Environmental Impact Statement (DOI-BLM-CO-SO50-2013-0022-EIS)

Dear Ms. Jones,

The Western Environmental Law Center, along with Citizens for a Healthy Community ("CHC"), High Country Conservation Advocates ("HCCA"), WildEarth Guardians ("Guardians"), Rocky Mountain Wild ("RMW"), Rocky Mountain Recreation Initiative, the Western Slope Conservation Center ("WSCC"), and Wilderness Workshop (together, "Citizen Groups") submit the following protest in response to the Bureau of Land Management ("BLM") Uncompahgre Field Office ("UFO") Final Environmental Impact Statement ("FEIS") for the Bull Mountain Unit Master Development Plan ("MDP"), DOI-BLM-CO-SO50-2013-0022-EIS.

The Bull Mountain Unit MDP, proposed by SG Interests I, Ltd. (SGI), describes the exploration and development of up to 146 natural gas wells, 4 water disposal wells, and associated infrastructure on federal and private mineral leases. On July 8, 2016, BLM issued an FEIS analyzing the proposal, initiating a 30-day public review period before a Record of Decision may be issued. This protest is submitted during this public review period; we hope that Citizen Groups' concerns will be addressed in the Record of Decision.

Citizen Groups hereby incorporate by reference our supplemental information letter, submitted June 3, 2011, providing BLM with new information and circumstances affecting the Bull Mountain Unit ("Unit") (attached as Exhibit 1); comments for the preliminary EA/FONSI for the Bull Mountain Unit (attached as Exhibit 2) and exhibits ("EA Exhibits"), submitted April 23, 2012; our supplemental comments on the Bull Mountain EIS submitted February 14, 2014 (attached as Exhibit 3); and comments on the Bull Mountain Draft Environmental Impact Statement ("DEIS") submitted April 16, 2015 (attached as Exhibit 4).

INTERESTS AND PARTICIPATION OF PARTICIPATING PARTIES

Western Environmental Law Center ("WELC") uses the power of the law to defend and protect the American West's treasured landscapes, iconic wildlife and rural communities. WELC combines legal skills with sound conservation biology and environmental science to address major environmental issues in the West in the most strategic and effective manner. WELC works at the national, regional, state, and local levels; and in all three branches of government. WELC integrates national policies and regional perspective with the local knowledge of our 100+ partner groups to implement smart and appropriate place-based actions.

Citizens for a Healthy Community ("CHC") is a grass-roots organization with more than 375 members formed in 2010 for the purpose of protecting people and their environment from irresponsible oil and gas development in the Delta County region. CHC's members and supporters include organic farmers, ranchers, vineyard and winery owners, sportsmen, realtors, and other concerned citizens impacted by oil and gas development. CHC members have been actively involved in commenting on BLM's oil and gas activities.

High Country Conservation Advocates ("HCCA") is located in Crested Butte, Colorado with over 800 members. HCCA was founded in 1977 to protect the health and natural beauty of the land, rivers, and wildlife in and around Gunnison County now and for future generations. HCCA has engaged on oil, natural gas, and coal bed methane development in Gunnison County for over a decade to prevent irreparable harm to its members' interests. HCCA's members and supporters live in, use, and enjoy the communities and landscapes that the proposed Bull Mountain development would affect.

Rocky Mountain Wild ("RMW") is a conservation advocacy organization focused on protecting wildlands for wildlife throughout the Southern Rocky Mountain region (Colorado, eastern Utah, southern Wyoming, and northern New Mexico). The organization has around 600 members who are passionate about protecting the biodiversity and ecosystem health throughout the region. RMW advocates for its members' interests through participating in administrative processes, collaboration, education, and, when necessary, litigation.

Wilderness Workshop ("WW") is a non-profit organization engaged in research, education, legal advocacy and grassroots organizing to protect the ecological integrity of local landscapes and public lands. WW not only defends pristine public lands from new threats, but also strives to restore the functional wildness of a landscape fragmented by human activity. WW works to protect and preserve existing wilderness areas, advocate for expanding wilderness, defend roadless areas from development that would destroy their wilderness character, and safeguard the ecological integrity of all federal public lands in the vicinity of the White River National Forest. Wilderness Workshop has a long history of participation in forest planning on the White River National Forest, the Grand Mesa Uncompahgre and Gunnison National Forest, and adjacent Bureau of Land Management lands. WW has a long history of engagement with oil and gas issues in and around the Bull Mountain Unit.

WildEarth Guardians ("Guardians") is a western U.S.-based organization dedicated to protecting and restoring the wildlife, wild places, wild rivers, and health of the American West. Headquartered in Santa Fe, Guardians was founded 26 years ago and has offices in Denver and other western states. With the support of more than 44,000 members, including more than 5,000 members in Colorado, Guardians works to defend our public lands from the impacts of climate change and fossil fuel development. Guardians has long been active in efforts to protect public lands in the North Fork Valley of Colorado from the impacts of fossil fuel development.

Rocky Mountain Recreation Initiative ("RMRI") is a small grassroots organization that strives to protect wilderness quality lands and maintain landscape integrity in Colorado by developing policies that promote sustainable development of recreational trails.

Western Slope Conservation Center ("WSCC") is a grass-roots environmental organization based out of Paonia, CO whose mission is to build an active and aware community to protect and enhance the lands, air, water, and wildlife of the Lower Gunnison Watershed. We represent over 450 active members who live in the North Fork Valley and Western Slope.

STATEMENT OF REASONS IN SUPPORT OF CITIZEN GROUPS' PROTEST OF THE BULL MOUNTAIN UNIT MASTER DEVELOPMENT PLAN FINAL ENVIRONMENTAL IMPACT STATEMENT

I. BLM Violated NEPA by Failing to Include the Baseline Condition in the Alternatives, and by Failing to Consider All Reasonable Alternatives.

As detailed in Citizen Groups' DEIS Comments at 89-94, BLM's determination to adopt SG Interest's proposal without considering alternatives that conserve and protect competing resources is arbitrary and capricious, and fails to protect water, air, and wilderness resources, as well as nearby communities reliant on these resources. BLM cannot reasonably choose to prioritize oil and gas development in this way, nor is doing so consistent with its mandate to manage public lands for the *sustained* yield of its resources. *See* 43 U.S.C. § 1701(a)(7).

BLM considered four alternatives: (1) Alternative A (the No Action Alternative), (2) Alternative B (the Proposed Action), (3) Alternative C (the Modified Action), and (4) Alternative D (the BLM's Preferred Action). FEIS at ES-6 to -11. Under the "No Action" Alternative, the Bull Mountain MDP would not be approved, but the private mineral estate would continue to be developed through authorizations approved by the Colorado Oil and Gas Conservation Commission (COGCC). FEIS at ES-6. Alternative A involves up to 55 new natural gas wells on privately owned surface lands targeting private minerals. FEIS at ES-6 to -7. Alternative A "does not respond to the purpose and need" for the proposed action and therefore is not a true alternative. FEIS at ES-6. Alternatives B and C are similar. Both Alternatives B and C involve 146 new gas wells, 4 new compressor stations, and 4 new water disposal wells. FEIS at ES-7. In the DEIS, both Alternatives B and C included the Conditions of Approval listed in Appendix C, and, additionally, forecasted that they *may* involve the BMPs in Appendix C, "selectively applied." DEIS at 2-58. Alternative C involved several additional limitations on development regarding use of pneumatic devices, tanks, and dehydrators; dust abatement; annual

check-ins with BLM; winter big-game species; drainage to wetlands or riparian areas; and noxious weeds. *See* DEIS at 2-59.

In its FEIS, BLM identified a Preferred Alternative, Alternative D, which is similar to Alternatives B and C. Like Alternatives B and C, Alternative D considers the development of 146 wells, and considers development on the federal mineral estate only. However, Alternative D considers slightly fewer well pads (33 well pads, versus 36 or 35 well pads for Alternatives B and C, respectively). Alternative D also adopts design features and mitigation measures from Alternatives B and C, including a Wildlife Habitat Plan proposed for the first time in the FEIS. FEIS at ES-9. (However, it is unclear whether all aspects of the Wildlife Habitat Plan are adopted in Alternative D, *see* Section V, below.) Alternative D also reduces the miles of road and cross-country pipelines constructed; makes closed loop systems the standard, eliminating pits on location and reducing the release of VOCs; and applies remote telemetry to minimize well monitoring trips. These additional features are welcome. However, the BLM's alternatives analysis is still flawed in two important respects.

First, BLM fails to include the "baseline" established in Alternative A in its analysis of Alternatives B, C, or D, resulting in misleading conclusions and thereby making the environmental impacts under Alternatives B, C, and D look better than they actually are. Alternative A considers development on private land. FEIS at ES-6. Alternatives B, C, and D do not include the "baseline" of private development considered in Alternative A; instead, they consider development only on federal lands. *See* FEIS at ES-10 to ES-11. However, the FEIS acknowledges that the private development contemplated by Alternative A will likely still be implemented even if the federal development contemplated by Alternatives B, C, or D is authorized. *Id.* Alternatives B, C, and D should include private development so that there is a fair comparison between the "baseline" and Alternatives B, C, and D. It is not enough for BLM to address the combined effects of private mineral development plus federal mineral development only in its Cumulative Effects analysis. FEIS at N-11; *N. Carolina Wildlife Fed'n v. N. Carolina Dep't of Transp.*, 677 F.3d 596, 602 (4th Cir. 2012).

Second, BLM's failure to consider all reasonable alternatives, including alternatives that conserve and protect competing resources, is arbitrary and capricious. "[T]he heart" of an environmental analysis under NEPA is the analysis of alternatives to the proposed project, and agencies must evaluate all reasonable alternatives to a proposed action." *Colorado Environmental Coalition*, 185 F.3d at 1174 (quoting 40 C.F.R. § 1502.14). CEQ regulations require agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action in comparative form, so as to provide a "clear basis for choice among the options." 40 C.F.R. § 1502.14. Accordingly, BLM should have considered the following set of reasonable alternatives, which were previously suggested and discussed at length by Citizen Groups, *see* DEIS Comments at 91-94:

- An alternative that analyzes and applies the best available information and science through stipulations aimed to protect Endangered Species Act listed species and their habitats.
- An alternative that analyzes and applies best available methane reduction technologies as a stipulation attached to all development within the Bull Mountain Unit.

- An alternative that applies best management practices for oil and gas development as stipulations that attach to all lease parcels.
- A phased development alternative, or an alternative that considers fewer wells, which could be accomplished through well-spacing or stipulations, such as a partial no surface occupancy (NSO) stipulation that prohibits occupancy on part of the lease surface in order to protect special resource values.

Here, BLM made little effort to consider and incorporate diverse resource-protective alternatives. BLM considered but eliminated the possibility of phasing development by time frames or geographic locations. FEIS N-36. As mentioned above, BLM did include several additional air quality measures in its Preferred Alternative, Alternative D, including green completion and closed-loop drilling. *Id.* While consideration and incorporation of these additional measures is an important step toward protecting the region's air quality, BLM's alternatives analysis is still insufficient under NEPA because it ignores several highly reasonable alternatives, foreclosing paths that would provide greater protection to environmental values. Instead, the agency throws its full weight behind the prioritization of oil and gas exploration at the expense of air, water, and wildlife.

II. BLM Failed to Sufficiently Analyze Impacts to Air Quality.

As detailed in Citizen Groups' DEIS Comments at 12-19 and Appendix A (Memorandum from Megan Williams, Independent Air Quality Consultant), and as perpetuated in the FEIS, BLM does not adequately analyze the air quality impacts that could occur as a result of the actions authorized under the MDP and therefore fails to comply with the National Environmental Policy Act (NEPA) and the Federal Land Policy and Management Act (FLPMA). The air analyses included in the FEIS are not a comprehensive assessment of the environmental and public health impacts resulting from an increase in air pollution in an area already heavily impacted by the adverse effects of increasing development. Without such an analysis, including detailed monitoring of local air quality conditions over time, the BLM cannot know what the impacts of the activities proposed in the MDP will be on air quality, human health, and the natural environment, or whether the BLM will prevent significant deterioration in air quality, as required by the Clean Air Act.

For example, with respect to ozone, the FEIS fails to consider the most recent and relevant air quality data and neglects to address and consider that the impacts of climate change will worsen ozone pollution.

On October 26, 2015, EPA published a final rule to revise the NAAQS for ozone to 70 parts per billion (ppb) from the current 75 ppb. National Ambient Air Quality Standards for Ozone, 80 Fed. Reg. 65292 (Oct. 26, 2015). This decision was driven by significant recent scientific evidence that the standard of 75 ppb was not adequately protecting public health. *Id.* at 136. In fact, recent studies have documented decreased lung functioning and airway inflammation in young, healthy adults at ozone concentrations as low as 60 ppb. *Id.* at 146.

The MDP FEIS acknowledges that, according to the "2008 Base Case," there are areas near the Bull Mountain project area in Gunnison County that are above the 70 ppb NAAQS, in the range of 70-76 ppb. FEIS at 4-64. However, elsewhere, the FEIS's analysis of ozone

continues to omit the most recent and relevant air-quality data. For example, BLM presents a background concentration for ozone of 126 micrograms per cubic meter, or 63 ppb. *See* FEIS at Table 3-3. This value is reported as the 8-hour average from the Gothic monitoring site from 2012 to 2014. *Id.* Previously, the MDP DEIS presented a background concentration for ozone of 141 micrograms per cubic meter, or 72 ppb, which was reported as the 8-hour average from the Greasewood Hub monitor from 2009-2010. Recent data from ozone monitors in the region indicate that ozone levels are exceeding the NAAQS of 70 ppb. *See* Appendix A at 7. BLM is not permitted to cherry-pick ozone values in order to present an unrealistically rosy picture of background ozone concentrations. This is not only deceptive to the public, but undermines the validity of all subsequent analysis.

Additionally, climate change is likely to worsen ozone pollution, offsetting the improvements in air quality and public health that would be expected from reductions in emissions of ozone precursors. As described by the EPA in its recent ozone rulemaking:

> In addition to being affected by changing emissions, future O_3 concentrations may also be affected by climate change. Modeling studies in the EPA's Interim Assessment (U.S. EPA, 2009a) that are cited in support of the 2009 Endangerment Finding under CAA section 202(a) (74 FR 66496, Dec. 15, 2009) as well as a recent assessment of potential climate change impacts (Fann et al., 2015) project that climate change may lead to future increases in summer O_3 concentrations across the contiguous U.S. While the projected impact is not uniform, climate change has the potential to increase average summertime O_3 concentrations by as much as 1-5 ppb by 2030, if greenhouse gas emissions are not mitigated. Increases in temperature are expected to be the principal factor in driving any O_3 increases, although increases in stagnation frequency may also contribute (Jacob and Winner, 2009). If unchecked, climate change has the potential to offset some of the improvements in O_3 air quality, and therefore some of the improvements in public health, that are expected from reductions in emissions of O_3 precursors.

80 Fed. Reg. 65292, 65300 (October 26, 2015). For example, climate change impacts include an increase in the area burned by wildfires, which, in turn are sources of O_3 precursors. *Id.* at 65371. The FEIS neglects to address this and other impacts of climate change on ozone pollution.

In addition to impacts from the proposed development, cumulative air quality impacts from sources in and around the proposed development area may result in serious impairments to air quality standards. For example, there is a tremendous concentration of oil and gas development taking place in the region, including in Utah's Uinta Basin and Colorado's Piceance Basin, which has already elevated ozone and PM concentrations, impacted visibility, and seriously degraded air quality in the region. *See* Citizen Comments at Appendix A, 4-14.

Again, the various ozone modeling tools and modeling scenarios used to analyze the formation of ozone in the vicinity of the Bull Mountain Unit each consistently indicate the likelihood for exceedances of the 70 ppm ozone standard adopted by the Environmental Protection Agency in 2015. *See* Appendix A at 7. The communities of Somerset, Paonia, Hotchkiss and Crawford (the North Fork Valley) are directly down valley from the proposed Bull Mountain Unit and other existing oil and gas development in the area. This geographic area

is well known to experience inversions during the winter months, similar to the winter inversions experienced in the Upper Green River basin of Wyoming which has been declared to be in nonattainment for ozone because of oil and gas development in the basin.

The only two ozone monitors operating on the western slope (Rifle and Palisade, Colorado) are located too far away from the North Fork Valley to be reliably used to monitor the potential increased levels of ozone likely to be experienced in this area as a result of the oil and gas activity associated with the Bull Mountain Unit.

Thus, it is imperative that the baseline levels of ozone existing in the North Fork Valley be ascertained prior to the initiation of development under the Bull Mountain MDP. This monitoring must then continue for the duration of oil and gas exploration and production activities in this region. Therefore, in order to protect the health of the citizens in the North Fork Valley, as part of the Record of Decision for this project, SG Interests must be required to confer and cooperate with the Colorado Department of Public Health and Safety/Air Pollution Control Division in order to fund the installation of an air monitoring station in the North Fork Valley that meets the EPA standards for measuring ozone levels on a continuous basis. This monitoring station must be part of Colorado's publicly available statewide air monitoring network and managed by the state of Colorado.

In previous comments, Citizen Groups asked BLM to require mandatory collection of baseline air samples prior to development and ongoing air monitoring to test for chemicals related to drilling and fracking operations, like methane, volatile organic compounds ("VOCs"), and polycyclic aromatic hydrocarbons ("PAHs"). *See* DEIS Comments at 17-18. Baseline air sampling data is an extremely valuable tool that can prevent future impacts of air pollution by promoting best practices, including regular air monitoring of industrial sites, and it can support remediation efforts when incidents occur. BLM dismissed Citizen Groups' suggestion, reasoning that "there are several other operators and sources that influence the air quality of the region through complex operations," concluding that "a project-specific air modeling station would not be effective in this instance." FEIS at N-124. However, the presence of other operators and sources does not make baseline sampling ineffective. On the contrary, baseline sampling could help BLM determine—and make sensible decisions about—the cumulative effects of oil and gas development throughout the North Fork region. It is possible, moreover, to isolate the "fingerprint" of oil and gas development based on the characteristic chemicals such development releases into the environment, so the presence of non-oil and gas sources does not render baseline monitoring ineffective with respect to oil and gas development. Therefore, BLM's statement that air monitoring does not make sense because the presence of other sources would render it ineffective is illogical, and its decision not to include such monitoring in the MDP is arbitrary and capricious.

A. BLM failed to take a "hard look" at climate change.

As urged and detailed in Citizen Groups' DEIS Comments at 19-45, if we are to stem the impacts of climate change and manage for sustainable ecosystems, not only must the BLM take a hard look at greenhouse gas ("GHG") emissions by oil and gas development in the Bull Mountain Unit—including methane—but the agency's decision must be reflective of the challenges we face.

The BLM continues to take a dismissive approach to climate change impacts from the project. The FEIS compares the projected GHG emissions for the proposed action to GHG emissions from the top 5 emitting coal-fired power plants in Colorado. FEIS at 4-61 (cross-referencing Alternative B GHG discussion for Alternative D); 4-54 (Alternative B GHG discussion). However, such a comparison is unhelpful and misleading. As explained by the Council on Environmental Quality, in *Final Guidance for Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*[1] at 9:

> Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact. When considering GHG emissions and their significance, agencies should use appropriate tools and methodologies for quantifying GHG emissions and comparing GHG quantities across alternative scenarios. Agencies should not limit themselves to calculating a proposed action's emissions as a percentage of sector, nationwide, or global emissions in deciding whether or to what extent to consider climate change impacts under NEPA.

To suggest that the agency does not, here, have to account for GHG pollution from oil and gas development authorized by the MDP, would be to suggest that the 13,340 acres of federal subsurface mineral estate in the Bull Mountain Unit is not relevant to protecting against climate change. This sort of flawed, reductive thinking is problematic, and is contradicted by the agency's very management framework that provides a place-based lens to account for specific pollution sources to ensure that the broader public interest is protected.

Moreover, it is ironic that BLM compares the project's emissions to the emissions from coal-fired power plants since, in calculating the project's emissions, the BLM only considered construction and production emissions, but ignored combustion emissions (like those emitted from power plants).

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[1] *See* Council on Environmental Quality, *Final Guidance for Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews* (August 1, 2016), available at: https://www.whitehouse.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf (hereinafter "CEQ Climate Guidance") (attached as Exhibit 49).

The Secretary of the Interior stated, in Secretarial Order 3226, *Evaluating Climate Change Impacts in Management Planning* (January 19, 2001), that "[t]here is a consensus in the international community that global climate change is occurring and that it should be addressed in governmental decision making." Order 3226 established the responsibility of agencies to "consider and analyze potential climate change impacts when undertaking long-range planning exercises, when setting priorities for scientific research and investigations, when developing multi-year management plans, and/or when making major decisions regarding potential utilization of resources under the Department's purview." The GAO, in a 2007 report entitled *Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources*, concluded that the Department of the Interior had not provided specific guidance to implement Secretarial Order 3226, that officials were not even aware of Secretarial Order 3226, and that Secretarial Order 3226 had effectively been ignored. Secretarial Order 3289, *Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources* (September 14, 2009), reinstated the provisions of Order 3226, and recognized that "the realities of climate change require us to change how we manage land, water, fish and wildlife, and cultural heritage and tribal lands and resources we oversee," and acknowledged that the Department of the Interior is "responsible for helping protect the nation from the impacts of climate change."

There remains a fundamental disconnect with regard to how many of our public lands are managed for energy production, particularly in the West, including public lands in the North Fork Valley, and national policies to limit GHG emissions. Federal Defendants cannot take informed action to address climate change, as required by Order 3226 and Order 3289, without taking a hard look at the climate impacts of oil and gas development on our public lands. As stated in Order 3289, BLM must "appl[y] scientific tools to increase understanding of climate change and to coordinate an effective response to its impacts," and "management decisions made in response to climate change impacts must be informed by [this] science."

In previous comments, the Citizen Groups urged BLM to use the Social Cost of Carbon (SCC) protocol to estimate the social, economic, and environmental costs of the proposed action. *See* DEIS Comments at 23-31. The BLM again asserts that it need not quantify these costs: "[A]n SCC analysis is not a required part of a NEPA analysis where there is no clear way to quantify costs and benefits." FEIS at N-96. However, in failing to use the SCC protocol, the BLM has effectively assumed a social price of carbon that is $0. Failure to take social, economic, and environmental impacts of the action into account violates NEPA by relying on a partially disclosed amount of GHG pollution from foreseeable oil and gas development, and fails to take the essential next step required for a hard look: disclosing the impacts that such pollution would have.

As noted above, the BLM also fails to consider the indirect impacts of combustion, as NEPA and CEQ's Climate Guidance demands: "It is BLM's determination that in this particular instance, calculating the SCC from CO2 emissions from the combustion of an unknown quantity of produced oil and gas would be highly speculative but likely would be negligible in relation to the impacts from oil and gas burned on a nationwide or global basis. BLM has provided reasonable estimates and discussion of impacts based on the information available to them at this

time." FEIS at N-96. This is a significant oversight, as the potential GHG emission impacts associated with the combustion of the produced natural gas appears to be substantial. The BLM does not disclose the amount of gas that is estimated to be produced (although this estimate is in the project record), incorrectly deeming this information proprietary. *See* FEIS at K-7.

However, by taking the amount of natural gas produced within the Unit in 2015 from 9 wells (928,815,000 cubic feet), *see* FEIS at 2-30, extrapolating this figure to the 146 wells contemplated by the Bull Mountain MDP (amounting to 135,606,990,000 cubic feet), and using the emission factor for natural gas provided by the EPA,[2] it appears that greenhouse gas emissions would be 7,189,882 metric tons or more under the proposed action. *See* Table 1 below. This is a large amount of GHG emissions that the FEIS does not analyze or assess. Moreover, the BLM does not consider other hydrocarbons that may be produced, nor take into account gas that is flared, vented, or leaked. Direct methane emissions released to the atmosphere are much more powerful than CO2 in terms of their warming effect on the atmosphere.

Table 1: Greenhouse Gas Emissions from Natural Gas Combustion

Hydrocarbon	Amount	GHG Emission Factor	Total GHGs (metric tons)
Natural Gas	135,606,990,000 cubic feet	0.00005302 metric tons/cubic feet	7,189,882 metric tons of GHGs

BLM's obligation to analyze the costs associated with GHG emissions through NEPA was directly affirmed by the court in *High Country Conservation Advocates v. U.S. Forest Service*, 52 F.Supp.3d 1174 (D.Colo. 2014). In his decision, Judge Jackson identified the SCC protocol as a tool to "quantify a project's contribution to costs associated with global climate change." *Id.* at 17.13 To fulfill this mandate, the agency must disclose the "ecological[,] … economic, [and] social" impacts of the proposed action. 40 C.F.R. § 1508.8(b). The agency's failure to consider the SCC is arbitrary and capricious, violates NEPA, and ignores the explicit directive of EO 12866.

The CEQ's Climate Guidance also recently affirmed the inclusion of this type of economic assessment:

> Quantification tools are widely available, and are already in broad use in the Federal and private sectors, by state and local governments, and globally. Such quantification tools and methodologies have been developed to assist institutions, organizations, agencies, and companies with different levels of technical sophistication, data availability, and GHG source profiles. When data inputs are reasonably available to support calculations, agencies should conduct GHG analysis and disclose quantitative estimates of GHG emissions in their NEPA

[2] U.S. Environmental Protection Agency, *Clean Energy*, Calculations and References, http://www.epa.gov/cleanenergy/energy-resources/refs.html. For natural gas, the EPA estimates carbon emissions to average 0.005302 metric tons per therm. One therm of natural gas equals approximately 100 cubic feet, thus carbon emissions would average 0.00005302 metric tons per cubic foot of natural gas combusted.

> reviews. These tools can provide estimates of GHG emissions, including emissions from fossil fuel combustion and estimates of GHG emissions and carbon sequestration for many of the sources and sinks potentially affected by proposed resource management actions.

CEQ Climate Guidance at 12; *see also* 40 C.F.R. § 1508.25(c).

An agency must "consider every significant aspect of the environmental impact of a proposed action." *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council*, 462 U.S. 87, 107 (1983) (quotations and citation omitted). This includes the disclosure of direct, indirect, and cumulative impacts of its actions, including climate change impacts and emissions. 40 C.F.R. § 1508.25(c).

BLM says that "future oil and gas production and GHG emissions associated with the proposed Bull Mtn. Unit project is very small relative to future projected U.S. oil and gas production totals, small compared to future projected Colorado oil and gas production totals and even small compared to future projected central-western Coloardo oil and gas production/GHG emissions." FEIS at N-57. With regard to climate, if BLM makes the argument that emissions from this project are insignificant given the scale of state, national, or regional emissions, then the cumulative impact area for climate impacts must be not just the immediate surroundings (which, here would include other area projects like the 25 wells on five multi-well pads, as described below), but *all* BLM wells in the area of comparison. If the scale of comparison is national, the BLM must consider emissions from the 100,000 active oil and gas wells on BLM lands. If BLM sets a baseline of national, state, or regional emissions to say this project is insignificant, that same baseline should be used to measure GHG emissions.

B. BLM failed to take a "hard look" at methane emissions and waste.

The BLM must take a hard look, and meaningful action, to address the serious issue of methane ("CH_4") emissions and waste in the oil and gas production process. The BLM includes estimated methane emissions for the proposed action in "Bull Mountain Proposed Action Emissions Inventory." AQTSD, Appendix J at B1-1 to B1-42. However, nowhere is there a summary of total methane emissions, or disclosure of the assumptions made with regard to methane leak rates. Instead, the BLM provides methane emissions values for specific sources on disparate pages, without providing or analyzing the total.

The BLM also fails to provide a detailed analysis of measures that could be employed to mitigate these emissions. Colorado's CARPP is a tool that can provide an important state-of-the-art resource to guide the agency's analysis of GHG mitigation measures applicable to the Bull Mountain MDP. In particular, Table V-I identifies Best Management Practices and Air Emission Reduction Strategies for Oil and Gas Development, which displays some emission reduction measures, their potential environmental benefits and liabilities, and feasibility.

Additionally, the agency's quantitative assessment should use the value for methane's short-term (20-year) warming, rather than the value for methane's long-term (100-year) warming, given that 20 years is the relevant time period for this development. Using the longer-

term value undervalues emissions and therefore underestimates the resulting impacts. Even assuming that the 100-year value is relevant here, the agency's current analysis is out-of-step with the latest peer-reviewed science. Specifically, EPA's GHG Inventory – which the UFO has relied upon in its analysis, FEIS at 4-23 – assumes that methane is 21 times as potent as carbon dioxide ("CO_2") over a 100-year time horizon, which is an assumption derived from a 1996 report from the Intergovernmental Panel on Climate Change ("IPCC"). However, as described in Citizen Groups' DEIS Comments at 40-41, the 100-year GWP for methane was updated by the IPCC in a 2013 Report to reflect that methane is 36 times as potent as CO_2. Over a 20-year time period, the IPCC's new research has calculated that methane's GWP is 87 – another substantial increase from its earlier estimate of 72. Indeed, as detailed in Citizen Groups' DEIS Comments at 41, recent peer-reviewed science demonstrates that gas-aerosol interactions amplify methane's impact such that methane is actually 105 times as potent over a twenty-year time period. Choosing the most up-to-date, science-based values is important. These are not just paper calculations; the values chosen make a real difference with regard to agency assumptions regarding the magnitude and severity of impacts. The correct values should be used in the FEIS, but instead are not even acknowledged.

III. BLM Failed to Sufficiently Analyze Impacts to Human Health

Emissions from oil and gas development are not limited only to the combustion stage but, rather, occur throughout the chain of production. These emissions not only impact the critical resource values of the North Fork Valley—as detailed throughout this Protest—but also can result in serious harm to human health. BLM has failed to sufficiently address and analyze these impacts to human health in the Bull Mountain FEIS.

The implementation of methane waste mitigation technologies can both help spur economic benefit and allay some of the harmful health effects of oil and gas development by reducing emissions of NOX, VOCs and other criteria pollutants. Aside from direct health impacts, [3] these emissions can also result in significant increases in ground-level ozone (i.e., ozone precursors), and, consequently, can have a dramatic impact on human health.[4] For

[3] *See, e.g.*, Colorado Department of Public Health and Environment, *2010 Air Quality Data Report* (2010) (attached as Exhibit 5).

[4] *See, e.g.*, GAO Report, *Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks* (Sept. 2012) (attached as Exhibit 6); GAO Report, *Unconventional Oil and Gas Development: Key Environmental and Public Health Requirements* (Sept. 2012) (attached as Exhibit 7); Earthworks, *Natural Gas Flowback: How the Texas Natural Gas Boom Affects Health and Safety* (April 2012) (attached as Exhibit 8); Green River Alliance, *Healthy Air Questionnaire Final Report: Clean Air and Healthy Communities* (2011) (attached as Exhibit 9); Lisa McKenzie, Ph.D., et. al., *Human health and risk assessment of air emissions from development of unconventional natural gas resources* (Feb. 2012) (attached as Exhibit 10); Lisa McKenzie, Ph.D., Testimony on: *Federal Regulation: Economic, job, and energy security implications of federal hydraulic fracturing regulation*, May 2, 2012 (attached as Exhibit 11); Earthworks, *Gas Patch Roulette: How Shale Gas Development Risks Public Health in Pennsylvania*, October 2012 (attached as Exhibit 12).

example, ozone has been shown to decrease lung function – particularly in adolescents and young adults – as well as increase the risk of death from respiratory causes.[5]

The EPA is currently proposing standards to reduce air pollution from oil and natural gas drilling operations. According to the EPA, the oil and gas industry is "the largest industrial source of emissions of volatile organic compounds (VOCs), a group of chemicals that contribute to the formation of ground-level ozone (smog)."[6] Moreover, "[e]xposure to ozone is linked to a wide range of health effects, including aggravated asthma, increased emergency room visits and hospital admissions, and premature death."[7] The oil and natural gas industry is also "a significant source of emission of methane," as well as an emitter of "air toxics such as benzene, ethylbenzene, and n-hexane," which are "pollutants known, or suspected of causing cancer and other serious health effects."[8] The EPA reports that the oil and gas industry:

> emits 2.2 million tons of VOCs, 130,000 tons of air toxics, and 16 million tons of greenhouse gases (methane) each year (40% of all methane emission in the U.S.). The industry is one of the largest sources of VOCs and sulfur dioxide emissions in the United States.[9]

The rapid development of high volume/horizontal drilling in conjunction with hydraulic fracturing has driven expansion of new sources resulting in increased emissions – a change that requires consideration in BLM's FEIS analysis.

Many of the impacts to human health have already been documented in communities subject to industrial scale oil and gas development. For example, in Garfield County, Colorado, residents have experienced health effects they believe to be caused from oil and gas development. "Community concerns range from mild complaints such as dizziness, nausea,

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[5] *See* Ira B. Tager, et. al., *Chronic Exposure to Ambient Ozone and Lung Function in Young Adults*, EPIDEMIOLOGY, Vol. 16, No. 6 (Nov. 2005) (attached as Exhibit 13); Michael Jerrett, Ph.D., et. al., *Long-Term Ozone Exposure and Mortality*, THE NEW ENGLAND JOURNAL OF MEDICINE, 360: 1085-95 (2009) (attached as Exhibit 14).

[6] EPA, *Oil and Natural Gas Pollution Standards: Basic Information, Emissions from the Oil & Natural Gas Industry* (2011), available at: http://www.epa.gov/airquality/oilandgas/basic.html; *see also* Cally Carswell, *Cracking the ozone code – Utah's gas fields*, HIGH COUNTRY NEWS, Sept. 4, 2012 (attached as Exhibit 15).

[7] *See id.*, EPA, *Pollution Standards*.

[8] *Id.*

[9] Letter from American Lung Association, American Public Health Association, American Thoracic Society, Asthma and Allergy Foundation of America, and Trust for America's Health to Lisa Jackson, Administrator, U.S. Environmental Protection Agency (Nov. 30, 2011), at 4 (attached as Exhibit 16).

respiratory problems, and eye and skin irritation to more severe concerns including cancer."[10] Additionally, the community has "environmental concerns related to noise, odors, dust, and 'toxic' chemicals in water and air."[11] After a thorough review of ambient air data across Garfield County, ATSDR determined that, "considering both theoretical cancer risks as well as non-cancer health effects and the uncertainties associated with the available data, it is concluded that the exposures to air pollution in Garfield County pose an indeterminate public health hazard for current exposures."[12] ATSDR further provided that "estimated theoretical cancer risks and non-cancer hazards for benzene [in the community], which is within the oil and gas development area, appear significantly higher than those in typical urban and rural areas, causing some potential concern," and later concluded that "[t]hese elevated levels are an indicator of the increased potential for health effects related to benzene exposure … in the oil and gas development area.[13]

Unfortunately, impacts to human health are not limited only to natural shale gas emissions, but can result from exposure to chemicals necessary for gas extraction – namely, the hundreds of chemicals used in hydraulic fracturing.[14] Indeed, "[b]etween 2005 and 2009, the 14 oil and gas service companies [analyzed by Congress] used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components. Overall, these companies used 780 million gallons of hydraulic fracturing products – not including water added at the well site – between 2005 and 2009."[15] Chemical components include BTEX compounds – benzene, toluene, xylene, and ethylbenzene – which are hazardous air pollutants and known human carcinogens. The UFO has failed to sufficiently consider the human health impacts associated with these extractive practices in the RMP and FEIS.

Leading doctors and scientists studying these issues recognize the unknown risks inherent to fracking. "We don't know the chemicals that are involved, really; we sort of generally know,"

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[10] U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry ("ATSDR"), *Health Consultation: Garfield County, Public Health Implications of Ambient Air Exposures to Volatile Organic Compounds as Measured in Rural, Urban, and Oil & Gas Development Areas* (2008), at 1 (attached as Exhibit 17).

[11] *Id.*

[12] *Id.*

[13] *Id.*

[14] *See* Theo Colborn, et. al., *Comments to the Bureau of Land Management, Uncompahgre Field Office*, THE ENDOCRINE DISRUPTION EXCHANGE, April 20, 2012 (attached as Exhibit 18); Theo Colborn, et. al., *Natural Gas Operations from a Public Health Perspective*, HUMAN AND ECOLOGICAL RISK ASSESSMENT, 17: 1039-1056 (2011) (attached as Exhibit 19).

[15] U.S. CONGRESS, HOUSE OF REPRESENTATIVES, COMMITTEE ON ENERGY AND COMMERCE, *Chemicals Used in Hydraulic Fracturing* (April 2011), at 10 (attached as Exhibit 20).

Vikas Kapil, chief medical officer at National Center for Environmental Health, part of the U.S. Centers for Disease Control and Prevention, said at a conference on hydraulic fracturing.[16] "We don't have a great handle on the toxicology of fracking chemicals."[17]

The Endocrine Disruption Exchange ("TEDX") has, however, documented nearly 1,000 products and chemicals that energy companies use in drilling, fracturing (frac'ing, or stimulation), recovery and delivery of natural gas. Many of these products contain chemicals that are harmful to human health. On its website, TEDX says this:

> To facilitate the release of natural gas after drilling, approximately a million or more gallons of fluids, loaded with toxic chemicals, are injected underground under high pressure. This process, called fracturing (frac'ing or stimulation), uses diesel-powered heavy equipment that runs continuously during the operation. One well can be frac'ed 10 or more times and there can be up to 28 wells on one well pad. An estimated 30% to 70% of the frac'ing fluid will resurface, bringing back with it toxic substances that are naturally present in underground oil and gas deposits, as well as the chemicals used in the frac'ing fluid. Under some circumstances, nothing is recovered.[18]

According to TEDX:

> In the 980 products identified…[for use during natural gas operations], there were a total of 649 chemicals. Specific chemical names and CAS numbers could not be determined for 286 (44%) of the chemicals, therefore, the health effects summary is based on the remaining 362 chemicals with CAS numbers…Over 78% of the chemicals are associated with skin, eye or sensory organ effects, respiratory effects, and gastrointestinal or liver effects. The brain and nervous system can be harmed by 55% of the chemicals. These four health effect categories…are likely to appear immediately or soon after exposure. They include symptoms such as burning eyes, rashes, coughs, sore throats, asthma-like effects, nausea, vomiting, headaches, dizziness, tremors, and convulsions. Other effects, including cancer, organ damage, and harm to the endocrine system, may not appear for months or years later. Between 22% and 47% of the chemicals were associated with these possibly longer-term health effects. Forty-eight percent of the chemicals have health effects in the category labeled 'Other.' The 'Other' category includes such effects as changes in weight, or effects on teeth or bones, for example, but the

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[16] Alex Wayne, *Fracking Moratorium Urged by U.S. Doctors Until Health Studies Conducted*, BLOOMBERG NEWS, January 9, 2012, available at: http://www.bloomberg.com/news/2012-01-09/fracking-moratorium-urged-by-u-s-doctors-until-health-studies-conducted.html.

[17] *Id.*

[18] *See* TEDX webpage describing "Chemicals in Natural Gas Operations," available at: http://endocrinedisruption.org/chemicals-in-natural-gas-operations/introduction.

> most often cited effect in this category is the ability of the chemical to cause death.[19] (emphasis added)

Christopher Portier, director of the CDC's National Center for Environmental Health and Agency for Toxic Substances and Disease Registry further provided that "additional studies should examine whether wastewater from wells can harm people or the animals and vegetables they eat."[20] "We do not have enough information to say with certainty whether shale gas drilling poses a threat to public health."[21]

Indeed, another study demonstrates that animals, especially livestock, are sensitive to the contaminants released into the environment by drilling and by its cumulative impacts.[22] Because animals often are exposed continually to air, soil, and groundwater and have more frequent reproductive cycles, animals can be used to monitor potential impacts to human health – they are natural shale gas drilling's "canary in the coalmine." The study evaluated all available fracking-related reports on sick or dying animals. Although secrecy surrounds the fracking industry, "a few 'natural experiments' have provided powerful evidence that fracking can harm animals."[23] For example:

> Two cases involving beef cattle farms inadvertently provided control and experimental groups. In one case, a creek into which wastewater was allegedly dumped was the source of water for 60 head, with the remaining 36 head in the herd kept in other pastures without access to the creek. Of the 60 head that were exposed to the creek water, 21 died and 16 failed to produce calves the following spring. Of the 36 that were not exposed, no health problems were observed, and only one cow failed to breed. At another farm, 140 head were exposed when the liner of a wastewater impoundment was allegedly slit, as reported by the farmer, and the fluid drained into the pasture and the pond used as a source of water for the cows. Of those 140 head exposed to the wastewater, approximately 70 died and there was a high incidence of stillborn and stunted calves. The remainder of

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[19] *Id.*

[20] Alex Wayne and Katarzyna Klimasinska, *Health Effects of Fracking for Natural Gas Need Study, Says CDC Scientist*, BLOOMBERG NEWS, January 4, 2012, available at: http://www.bloomberg.com/news/2012-01-04/health-effects-of-fracking-for-natural-gas-need-study-says-cdc-scientist.html.

[21] *Id.*

[22] Michelle Bamberger and Robert E. Oswald, *Impacts of Gas Drilling on Human and Animal Health*, NEW SOLUTIONS, VOL. 22(1) 51-77 (2012) (attached as Exhibit 21).

[23] *See* Peter Montague, *Why Fracking and Other Disasters Are So Hard to Stop*, HUFFINGTON POST, Jan. 20, 2012, available at: http://www.huffingtonpost.com/peter-montague/why-fracking-and-other-di_b_1218889.html (last visited Jan. 23, 2012).

> the herd (60 head) was held in another pasture and did not have access to the wastewater; they showed no health or growth problems. These cases approach the design of a controlled experiment, and strongly implicate wastewater exposure in the death, failure to breed, and reduced growth rate of cattle.[24]

The health problems and uncertainties that proliferate in communities where oil and gas development takes place warrant the further collection of data and research, as contemplated under NEPA, before such development can be made possible through the authorization of development through the Bull Mountain FEIS. NEPA requires a hard look at these impacts.

a. BLM Must Conduct a Health Impact Assessment.

BLM did not conduct a health impact assessment, or equivalent analysis, and, as a result, the agency's FEIS does not satisfy NEPA and its implementing regulations. BLM must fully consider the potential human health impacts that may be caused by oil and gas operations approved under the MDP, as required by NEPA. Congress stated that "…it is the continuing responsibility of the Federal Government to use all practicable means…to attain the widest range of beneficial uses of the environment **without degradation, risk to health or safety**, or other undesirable and unintended consequences…" 42 U.S.C. § 4331. NEPA implementing regulations direct agencies to consider "the degree to which the proposed action affects public health or safety." 40 C.F.R. § 1508.27(b). These regulations also state: "Federal agencies shall to the fullest extent possible…. Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment." 40 C.F.R. § 1500.2(f).

NEPA requires that the BLM employ at least the same level of effort to analyze human health impacts as it does to promote industry's interest in development when preparing the RFD and associated analyses regarding projected drilling levels.

A health impact assessment ("HIA") or equivalent analysis would fulfill the regulations governing NEPA, to examine human health impacts "to the fullest extent possible." A HIA would be forward-looking and attempt to identify all of the potential direct, indirect, and cumulative links between a proposed activity and the health and well-being of affected communities, and to develop mitigation measures to minimize harms and maximize benefits. The FEIS does not include this type of analysis of human health impacts.

The U.S. EPA has posted on its website an excellent document on the utility of an HIA as part of the NEPA analysis of federal agencies where public health impacts are at issue.[25]

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[24] *See* Bamberger at 60 (attached above as Exhibit 21).

[25] *See* EPA, Human Health Partners, *Frequently Asked Questions About Integrating Health Impact Assessment into Environmental Impact Statement*, available at: http://www.epa.gov/region9/nepa/PortsHIA/pdfs/FAQIntegratingHIA-EIA.pdf.

HIA "provides a systematic process and methodology to anticipate and proactively address the potential health consequences of a program or policy in order to maximize the potential benefits and minimize adverse outcomes."[26] Steps in the HIA process include:

1. Screening: Determine whether an HIA is necessary, and whether it is likely to be useful.
2. Scoping: Establish the population to which the HIA applies, the scope of health problems to be analyzed, the HIA team, methods to be used in the assessment, and data sources.
3. Assessment: Describe the baseline health status and determinants of health in the population and assess likely impacts through a literature review and qualitative or quantitative analysis.
4. Decision and recommendations to minimize adverse impacts and maximize benefits.
5. Monitoring and reassessment plan: Select a set of outcomes likely to be sensitive/accurate indicators of the changes predicted, such as health outcomes, and develop a plan to monitor and then reassess if needed.

BLM did not conduct these steps, and did not analyze the impacts to the population within the planning area, consider how many people might be exposed to health impacts, analyze where development would take place relative to water sources or residences, or assess the likely impacts to the actual population in the area, including particularly vulnerable populations. It also omitted significant potential impacts.

According to the U.S. Centers for Disease Control, "HIA can be used to evaluate objectively the potential health effects of a project or policy before it is built or implemented. It can provide recommendations to increase positive health outcomes and minimize adverse health outcomes. A major benefit of the HIA process is that it brings public health issues to the attention of persons who make decisions about areas that fall outside of traditional public health arenas, such as transportation or land use."[27]

i. Health data

BLM failed to consider adequately human health impacts, and did not include the most recent and relevant health data. Colborn, et al., *An Exploratory Study of Air Quality Near Natural Gas Operations* (November 9, 2012) (attached as Exhibit 141) detailed that over the course of the year, 61 chemicals were identified in the air samples near natural gas operations in Garfield County, Colorado, including seven chemicals that were detected in every sample:

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[26] *See* Aaron Wernham, *Inupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope*, ECOHEALTH, 2007 (attached as Exhibit 22).

[27] Centers for Disease Control, *Health Impact Assessment*, available at: http://www.cdc.gov/healthyplaces/hia.htm.

toluene, formaldehyde, acetaldehyde, naphthalene, ethane, propane and methane. As reported in the Colborn paper, a search of the government and scientific literature on health effects of chemicals identified in the air samples near natural gas operations revealed that more than half of the 61 chemicals can affect the brain and central nervous system, the liver and metabolic systems. Half of the chemicals can also affect the endocrine system, with impacts on reproductive health, development in the womb, and other endocrine related endpoints. Nearly half were found to affect the immune system, the cardiovascular system, the skin, eyes and other sensory organs, and the respiratory system. Many of the chemicals are carcinogens.

The levels of polycyclic aromatic hydrocarbons ("PAHs") found in Garfield County were over three times higher than were found in the New York City cohort. Scientific literature indicates that children exposed to higher levels of PAHs in utero were more likely to be born preterm, of low birth weight, and with smaller skull circumferences.[28] As the children grew, they showed effects on mental development, IQ, attention and behavioral problems, and obesity.[29] PAHs are not only combustion byproducts but they can volatize directly from petroleum sources, without being burned. They are common in crude oil and are constituents in produced water from oil and natural gas development.[30]

PAHs are known carcinogens and endocrine disruptors. A key feature of endocrine disruptors is that like hormones, they can function at extremely low concentrations, even in parts-per-trillion. Proper hormone signaling is particularly critical for the brain and other organs as they are developing in the womb.

Research on the health impacts of oil and natural gas production is a rapidly evolving topic. BLM neglected to consider major independent, scientific peer-reviewed studies regarding health impacts from natural gas production that were published in that same period, as well as even newer papers published in 2013 and 2014, several of them focused on Colorado. For

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[28] *See* Frederica Perera *et al*., *Molecular Evidence of an Interaction Between Environmental Exposures and Birth Outcomes in a Multiethnic Population,* CHILDREN'S HEALTH (2004) (attached as Exhibit 23).

[29] *See* Frederica Perera *et al*., *Effect of Prenatal Exposure to Airborne Polycyclic Aromatic Hydrocarbons on Neurodevelopment in the First 3 Years of Life among Inner-City Children*, CHILDREN'S HEALTH (2006) (attached as Exhibit 24); Frederica Perera *et al*., *Prenatal Airborn Polycyclic Aromatic Hydrocarbon Exposure and Child IQ at Age 5 years,* PEDIATRICS (2009) (attached as Exhibit 25); Frederica Perera *et al*., *Prenatal Polycyclic Aromatic Hydrocarbon (PAH) Exposure and Child Behavior at Age 6-7 Years*, CHILDREN'S HEALTH (2012) (attached as Exhibit 26); Andrew Rundle, et al., *Association of Childhood Obesity With Maternal Exposure to Ambient Air Polycyclic Aromatic Hydrocarbons During Pregnancy*, AMERICAN JOURNAL OF EPIDEMIOLOGY (2012) (attached as Exhibit 27).

[30] William Orem, *et al., Organic substances in produced and formation water from unconventional natural gas extraction in coal and shale,* INTERNATIONAL JOURNAL OF COAL GEOLOGY (2013) (attached as Exhibit 28).

example, the effects of living near gas operations during prenatal development were demonstrated in a recent study of 124,842 birth records from 1996-2009 in 57 rural Colorado counties (McKenzie, et al., (2014) (attached above as Exhibit 10)). Researchers assigned each mother/infant pair a score based on how many wells were within ten miles of where the mother lived at the time of the baby's birth and how far away the wells were from the residence. The more wells there were in close proximity to the baby during prenatal development, the more likely the baby was to have a congenital heart defect. This linear relationship was statistically significant ($p<0.0001$). As further evidence, 27 of the chemicals found in the air near gas operations in Garfield County, Colorado affect the cardiovascular system. *See* Colborn et al., (attached above as Exhibit 141). The study of birth records also found somewhat weaker evidence for neural tube defects.

The potential for endocrine disruption has been found in a recent water sampling study as well.[31] The researchers measured hormone properties (estrogenicity and androgenicity) of samples they collected from surface and ground water in Garfield County, Colorado. Samples were taken near wells with spills, in river water near gas activity, and also in control sites in Colorado and Missouri. They also measured hormone properties of 12 chemicals used in natural gas operations. Their research identified significantly more hormone activity in water samples from sites near gas activity than from the control sites. In addition, certain chemicals known to be used in gas operations, some of which were detected at the sampling sites by another research team, displayed hormone properties similar to those found in the water samples. Notably, in 2011 Colborn, et al., identified over 130 endocrine disrupting chemicals used by the natural gas industry.

In Colorado, symptoms reported in the state's inspection/incident database by residents living within a half mile of well development included headaches, nausea, upper respiratory irritation, and nosebleeds.[32] In Pennsylvania, the following symptoms were reported by over half the people living near gas development who responded to a health survey. They included fatigue (62%), nasal irritation (61%), throat irritation (60%), sinus problems (58%), burning eyes (53%), shortness of breath (52%), joint pain (52%), feeling weak and tired (52%), severe headaches (51%), and sleep disturbance (51%). The survey was completed by 108 individuals (in 55 households) in 14 counties across Pennsylvania.[33]

These and additional recent studies that were not considered by BLM include:

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[31] Christopher D. Kassotis, *et al., Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region*, ENDOCRINOLGY (2014) (attached as Exhibit 29).

[32] Roxana Z. Witter, *et al., The Use of Health Impact Assessment for a Community Undergoing Natural Gas Development*, FRAMING HEALTH MATTERS (2013) (attached as Exhibit 30).

[33] Nadia Steinzor, *et al*., *Investigating links between shale gas development and health impacts through a community survey project in Pennsylvania*, NEW SOLUTIONS, vol. 23 iss. 1. (2013) (attached as Exhibit 31).

1. Lisa M. McKenzie, et al., (attached above as Exhibit 10).

2. Jessica Gilman, et al., Source signature of volatile organic compounds (VOCs) from oil and natural gas operations in northeastern Colorado, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2013) (attached as Exhibit 39).

3. John L. Adgate, et al., Potential Public Health Hazards, Exposures and Health Effects from Unconventional Natural Gas Development, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2014) (attached as Exhibit 40).

4. Seth Shonkoff, et al., Environmental Public Health Dimensions of Shale and Tight Gas Development, ENVIRONMENTAL HEALTH PERSPECTIVES (2014) (attached as Exhibit 41).

5. Christopher W. Moore, et al., Air Impacts of Increased Natural Gas Acquisition, Processing, and Use: A Critical Review, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2014) (attached as Exhibit 42).

6. Avner Vengosh, et al., The effects of shale gas exploration and hydraulic fracturing on the quality of water resources in the United States, PROCEDIA EARTH AND PLANETARY SCIENCE (2014) (attached as Exhibit 43).

7. Christopher D. Kassotis, et al., (attached above as Exhibit 27).

8. Brian E. Fontenot, et al., An Evaluation of Water Quality in Private Drinking Water Wells Near Natural Gas Extraction Sites in the Barnett Shale Formation, ENVIRONMENTAL SCIENCE & TECHNOLOGY (2013) (attached as Exhibit 44).

9. Sherilyn A. Gross, et al., Analysis of BTEX Groundwater Concentrations from Surface Spills Associated with Hydraulic Fracturing Operations, JOURNAL OF THE AIR & WASTE MANAGEMENT ASSOCIATION (2013) (attached as Exhibit 45).

10. K.D. Retzer, et al., Motor vehicle fatalities among oil and gas extraction workers, ACCIDENT ANALYSIS & PREVENTION (2013) (attached as Exhibit 46).

11. Eric J. Esswein, et al, Occupational exposures to respirable crystalline silica during hydraulic fracturing, JOURNAL OF OCCUPATIONAL AND ENVIRONMENTAL HYGIENE (2013) (attached as Exhibit 47).

12. R.Z. Witter, et al., Occupational exposures in the oil and gas extraction industry: state of the science and research recommendations, AMERICAN JOURNAL OF INDUSTRIAL MEDICINE (2014, in press) (attached as Exhibit 48).

The EPA is currently investigating the potential impacts of hydraulic fracturing on drinking water resources due to concerns about its potential environmental and human health impacts. On June 5, 2015, the EPA released a draft hydraulic fracturing drinking water

assessment. EPA, Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources, *available at*: https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=244651. The EPA found that hydraulic fracturing can affect drinking water, but that there remains considerable uncertainty surrounding the impacts:

> From our assessment, we conclude there are above and below ground mechanisms by which hydraulic fracturing activities have the potential to impact drinking water resources . . .Of the potential mechanisms identified in this report, we found specific instances where one or more mechanisms led to impacts on drinking water resources, including contamination of drinking water wells. The number of identified cases, however, was small compared to the number of hydraulically fractured wells.
>
> This finding could reflect a rarity of effects on drinking water resources, but may also be due to other limiting factors. These factors include: insufficient pre- and post-fracturing data on the quality of drinking water resources; the paucity of long-term systematic studies; the presence of other sources of contamination precluding a definitive link between hydraulic fracturing activities and an impact; and the inaccessibility of some information on hydraulic fracturing activities and potential impacts.

Nevertheless, the BLM ignored the uncertainty of the impacts of hydraulic fracturing on drinking water. To the contrary, the BLM even used as a source a 2004 study from EPA that not only is outdated but has been widely criticized as politically influenced and biased.[34]

ii. Cumulative impacts on human health

[34] EPA, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs*. Office of Groundwater and Drinking Water Protection, Washington, DC. Document #EPA 816-R-04-003 (2004); *see also*, Earthworks, *Our Drinking Water at Risk: What the EPA and the Oil and Gas Industry Don't Want Us to Know about Hydraulic Fracturing* (April, 2005) (attached as Exhibit 32). The 2004 EPA study was a narrow literature review that later investigations revealed to have been shaped by improper industry influences. As the Pulitzer-Prize winning investigative journalism project ProPublica explains "documents obtained by ProPublica show that the EPA negotiated directly with the gas industry before finalizing [its] conclusions, and then ignored evidence that fracking might cause exactly the kinds of water problems now being recorded in drilling states." Abrahm Lustgarten, *Buried Secrets: Is Natural Gas Drilling Endangering U.S. Water Supplies?*, PROPUBLICA (Nov. 13, 2008). Indeed, the study documents a disturbing range of oil and gas-linked water contamination, including pages of "water quality incidents" such as major methane leaks into drinking and surface water and contamination that filled tapwater with "globs of black, jelly-like grease and [made it] smell[] of petroleum." EPA, *Evaluation of Impacts to Underground Sources of Drinking Water by Hydraulic Fracturing of Coalbed Methane Reservoirs Study*, Chapter 6: Water Quality Incidents (2004), available at: http://www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_ch06_water_qual_incidents.pdf (attached as Exhibit 33).

BLM has the responsibility to consider potential impacts on human health from all development, and look at those impacts cumulatively. For example, an individual exposed to both air and water pollution will have different health impacts than an individual exposed only to air pollution.

The assessment of cumulative impacts in NEPA documents is required by Council on Environmental Quality (CEQ) regulations. See 40 C.F.R. §1508.25 (Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act). Oil and gas development involves multiple sources of pollutants and disturbance caused by connected actions, including the operations of wellpads, trucks, wells, compressors, pipelines, tanks, pits, separators, dehydrators, rigs and more. Oil and gas development also includes hundreds of potential pollutants, both man-made and naturally occurring. When considered together, pollutants emitted with common timing and/or common geography may create additional health impacts that should be assessed. Also, oil and gas development may create health impacts from air pollution, water contamination, soil contamination, or a combination of all three. Due to the multiple variables and factors involved in oil and gas development, it is essential that the BLM ensure a health impact assessment that fully considers all cumulative impacts to comply with federal regulations and to appropriately assess health impacts and inform the public.

Many people live downstream of and may rely on water sources in the areas that will be developed through the Bull Mountain MDP. In addition, many people are exposed to the air emissions caused by the Bull Mountain development, in particular regional pollutants like ozone. The Bull Mountain MDP will increase the potential health impacts to the thousands of people that live within the area downstream, including people that rely on drinking water or air that may be impacted by this development.

iii. Ozone

Several studies that measured and/or modeled natural gas related air emissions in various states have identified significant increases in ground level ozone as a result of natural gas development.[35] In Pennsylvania, nitrogen oxide emissions from gas activities were 20-40 times higher than allowable for a single minor source (Litovitz, 2013).

Ozone was once a summertime urban phenomenon but is now being seen increasingly in western rural areas during the winter due to the natural gas boom, so much so that some relatively small cities are no longer in compliance with the federal regulations that set allowable ozone levels.[36]

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[35] *See, e.g.,* Seth Lyman and Howard Shorthill, *Final Report: 2012 Uintah Basin Winter Ozone & Air Quality Study*, UTAH STATE UNIVERSITY, February 1, 2013.

[36] Gabrielle Pétron, *et al*., *Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study* (2012) (attached as Exhibit 34); Gabrielle Pétron, *et al*., *Estimation of emissions from oil and natural gas operations in northeastern Colorado*, Power Point available at: http://www.epa.gov/ttnchie1/conference/ei20/session6/gpetron_pres.pdf.

Ozone can cause difficulty breathing, coughing, and sore throat. It can also inflame and damage the airways. It aggravates lung diseases like asthma, emphysema, and chronic bronchitis. It can make the lungs more susceptible to infection and it can continue to damage the lungs even when the symptoms have disappeared.[37]

Children are particularly vulnerable because their lungs are still developing until about age 18. As their lungs grow in the presence of ozone, their alveoli production is reduced, and they can end up with smaller, more brittle lungs. Women exposed during pregnancy deliver preterm, low birth weight babies with a high probability of developing asthma. In a letter to former EPA Administrator Lisa Jackson, a group of five national medical and public health groups wrote that the most vulnerable individuals, including children, teens, senior citizens, people who exercise or work outdoors, and people with chronic lung diseases like asthma, COPD, and emphysema, are most in danger of being sickened by ozone and that children who grow up in areas of high ozone pollution may never develop their full lung capacity as adults, which can put them at greater risk of lung disease throughout their lives.[38]

iv. Naturally Occurring Radioactive Materials

Processes used to produce oil and gas often generate radioactive waste containing concentrations of naturally occurring radioactive materials (NORM). Radioactive wastes from oil and gas production can be found in produced water, flowback water from hydraulic fracturing, drilling waste including cuttings and mud, and/or sludge. This material can concentrate in pipes, storage tanks and facilities, and on other extraction equipment, and may be left on site or be emitted into the environment. Some of these materials can penetrate the skin and raise the risk of cancer. The FEIS includes no discussion of potential health impacts associated with NORM that may be released into the environment due to oil and gas extraction activities.

IV. BLM Failed to Sufficiently Analyze Impacts to Water Quality and Quantity.

The FEIS's Alternative D includes additional baseline water monitoring. FEIS at C-8. The BLM has stated that under the Preferred Alternative, SG Interests will be required to continue a baseline water quality monitoring program as required by Colorado and include additional requirements to monitor for additional compounds. In addition, the BLM will conduct annual meetings with SG Interests in order for SG Interests to report their water quality monitoring results. We request that the Record of Decision require that the meetings be open to the public and notice of such meetings be posted on the Uncompahgre BLM Field Office web page. In addition, if a written report is submitted by SG Interests to the BLM, this report should also be made available to the public.

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[37] *See* EPA, *Ozone – Good Up High Bad Nearby*, available at: http://www.epa.gov/oar/oaqps/gooduphigh/bad.html#7.

[38] *See* American Lung Association (attached above as Exhibit 16).

Under the water monitoring program as proposed, water wells within 1 mile from a well pad location will be sampled prior to drilling and periodically thereafter. *Id.* Surface waters will be sampled two times a year, at high flow and low flow. *Id.* Water will be analyzed for major ions, trace metals, dissolved gases (including methane), BTEX, TPH, dissolved organic carbon (DOC), nutrients, and field properties including temperature, pH, specific conductance, dissolved oxygen, turbidity, and alkalinity. *Id.*

While we appreciate the BLM's addition in the FEIS of additional baseline monitoring for water, the BLM's consideration of the impact of the project on water resources is still insufficient, in several respects. First, the FEIS identifies numerous potential impacts to surface water quality, including impacts from sedimentation, salinity, and chemical contamination. *See* FEIS at 4-94 to 4-95. However, the FEIS fails to analyze the effect of these impacts on the human environment in general, or the risks these impacts pose to citizens of the North Fork area specifically. Perfunctory references to risks and impacts do not amount to the "hard look" that NEPA demands. *See Natural Res. Def. Council, Inc. v. Hodel*, 865 F.2d 288, 299 (D.C. Cir. 1988). Instead, an EIS must contain an analysis that would aid a decisionmaker in deciding whether, or how, to alter the proposed action to lessen environmental impacts. *See id.* The BLM undertakes no such analysis here.

First, the FEIS gives short shrift to the risk of sedimentation caused by development on erodible soils and the risk of releases from landslide. While acknowledging that there will be significant development on unstable slopes, old landslides, and slopes in excess of 40%, the BLM attempts to ignore the sedimentation that the project will cause, noting that the streams draining the project area normally carry high sediment, and indicating that any "sediment loading rates could be greatly reduced by implementation of best management practices." *See* FEIS at 4-104. The FEIS also fails to address the impacts of sedimentation on the effective life of the Paonia Reservoir, despite acknowledging that the project could lead to increased erosion rates and faster sedimentation of the reservoir, thereby impacting agriculture dependent on the reservoir. *See* FEIS 3-47. This is a far cry from the "hard look" that NEPA requires.

The FEIS also fails to address the impacts of sedimentation on salt-loading and selenium contamination in the Gunnison River. The Gunnison River is already impaired for selenium under the Clean Water Act ("CWA"). *See* FEIS at 3-36. But the FEIS does not address the potential impact of sedimentation on selenium loading, the effect of selenium loading on the already impaired Gunnison River, the effect that selenium has on aquatic species (including ESA listed species and their habitat), or the Memorandum of Understanding ("MOU") that BLM has with the Bureau of Reclamation ("USBR") for the implementation of a Selenium Management Program, in which BLM has agreed to "[e]valuate options to conform to a goal of no net new selenium loading from land exchanges, sales, and other actions involving public lands." Lease Sale EA at 81. Nor does the FEIS address the potential impact of sedimentation on salt-loading, despite acknowledging that "the North Fork Gunnison River is recognized as a major contributor of salt to the Colorado River System," and salinity has become a "major concern" in the Colorado River drainage basin. FEIS at 3-37.

With respect to spills or releases, BLM acknowledges that water quality could be degraded by such accidents. *See* FEIS at 4-94. But the BLM does not address the impact of these

spills or releases on water quality. Instead, the BLM merely says that the use of BMPs, setbacks, and spill containment structures "can" provide adequate protection to surface water. *See id.* With respect to spills of saline produced water transported via poly pipe, BLM notes that, under a "worst case scenario," a large volume of brine could be discharged to a stream, "causing a sudden change in salinity capable of impacting riparian habitat and biota downstream of the release." *See* FEIS at 4-95. The BLM does not identify what events might precipitate this worst case scenario, or the likelihood of this worst case scenario. The fact that poly pipes will be crossing "difficult terrain" and areas of "extensive landslide deposit" suggests, however, that there is a possibility (perhaps a likelihood) that creep or landslides could damage or destroy the poly pipes, causing production and recycled water to spill into streams and damage riparian life. *Id.* The BLM fails to adequately analyze these risks; fails to impose any mitigation measures on the use of poly pipe; and fails to provide any alternative to the use of poly pipe (use of poly pipe is common to all alternatives, *see* FEIS 4-95). Thus, the FEIS does not provide enough information to aid a decisionmaker in deciding whether, or how, to alter the proposed action to lessen the environmental risk posed by transfer of produced water via poly pipe.

The BLM also fails to provide any analysis of the risk of fracking on surface water, including on surface waters outside the Unit, such as the North Fork and irrigation canals serving agricultural uses of the North Fork Valley. The BLM recognizes that the project poses the risk of chemical contamination to surface water, and in particular that water quality may be degraded by spills or releases of "hydraulic oil and fuel used in heavy equipment, *chemical additives used in well stimulation*, or waste fluids stored in tanks or pits, transported by truck, or conveyed in pipelines." *See* FEIS at 4-94 (emphasis added). But the BLM undertakes no analysis of the hundreds of chemicals that energy companies inject into the ground – and can therefore be spilled and released into surface waters – in the process of extracting natural gas, many of which are harmful to human health. Instead, the BLM takes the dismissive approach that "[m]ost of the additives used in the industry [in hydraulic fracturing fluid] are non-toxic and highly dilute in the fluid, so that they would present very little threat to water quality . . . ." FEIS at 4-99.

Similarly, the BLM fails altogether to address how fracking and reinjection of produced water will affect groundwater quality. *See* FEIS at 4-105. Rather, the BLM dodges this issue, claiming that fracking "is not expected to impact potable groundwater resources" and that impacts from reinjection of produced water are expected to be "minor" and reduced to "non-significant levels" through compliance with law. *Id.* Yet, this conclusion is contradicted by the BLM's own findings. The BLM notes that brines with concentrations of up to 70,000 ppm TDS may be generated in the fracking process. *See* FEIS at 4-100. Moreover, the BLM cites lab results that show that produced water from existing wells in the Unit contain "dissolved petroleum hydrocarbons, including the volatile constituents benzene, toluene, ethylbenzene, and xylenes, which are found in light crude oil." *See* FEIS at 3-41. The FEIS also notes that "[t]he constituents of the drilling fluid additives would be non-toxic, *with the exception of fluids returned from the formation, which may contain petroleum hydrocarbons and heavy metals*." FEIS at 4-105 (emphasis added). BLM claims that groundwater will be protected during fracking "by a combination of the casing and cement that is installed when the well is drilled and by the depth of the rock between fracture zone and any fresh-water bearing zones or aquifers." FEIS at 2-25. However, the BLM's confidence that fracking will not contaminate groundwater is belied by recent events and studies, as detailed in Citizen Groups' DEIS Comments at 48-55. Despite

BLM's dismissive approach, the risk of groundwater contamination is real, and health impacts from petroleum hydrocarbons and heavy metals are not "minor." The BLM must do more to address the potential momentous impacts to groundwater caused by leaks or spills of frack fluid or produced water.

Historically, BLM has been dismissive of possible impacts to water quality from hydraulic fracturing. However, given the weight of both new and old evidence documenting the risk of water contamination from gas drilling across the country and within the planning area, *see* DEIS Comments at 48-55, BLM's approach is becoming increasingly untenable. The simple fact of the matter is that natural gas development has the potential for poisoning our water with toxic, hazardous, and carcinogenic chemicals as well as naturally occurring radioactive radium, and BLM has failed to provide a thorough hard look analysis of these potentially significant impacts in its analysis for the Bull Mountain MDP.

Regarding water quantity, under the proposed alternative, BLM estimates that the proposed action would require 2,480 acre-feet of water. FEIS at 4-103. This is the equivalent of approximately an hour and half of the average flow of the Colorado River, and is enough water to flood 248 football fields to the depth of 10 feet. Unlike other applications, this water must be permanently removed from the hydrologic cycle because it is mixed with chemicals. This water use will have a significant impact on both surface and groundwater, with associated effects on stream and fish health and human (including agricultural) use. These impacts should be considered together with the drought-inducing effects of climate change and the quality impacts posed by the project. The BLM fails to mention, much less analyze, these impacts.

The BLM also fails to address the disruption of natural surface and groundwater flow patterns caused by the project's water use, an impact recognized in the EA. In the EA, the BLM noted that the significant drawdown of surface and groundwater quantities, necessary to "facilitate the natural gas recovery process," may also have a deeper impact on the area's hydrology, stating: "Construction activities may also disrupt natural surface and groundwater flow patterns. Altered flow patterns could disrupt natural surface and groundwater recharge/discharge patterns." EA at 128. In turn, these changes could have "adverse impacts on stream channel morphology, productivity of springs, riparian areas, and aquatic life." *Id.* However, this impact, recognized in the EA, is entirely omitted in the FEIS.

V. BLM Failed to Sufficiently Analyze Impacts to Wildlife.

The FEIS's analysis of wildlife impacts is inadequate for several reasons, as detailed in Citizen Groups' DEIS Comments at 64-84. First, it fails to consider the importance of the Bull Mountain Unit to wildlife populations of the greater North Fork area. Second, the FEIS fails to include sufficient information on the direct and indirect impacts of the proposed alternatives on wildlife, and makes general conclusions that are unsupported by documented facts. Third, the cumulative impacts analysis in the FEIS fails to acknowledge and analyze numerous active and planned energy developments in the interconnected landscape of the Upper North Fork.

The Bull Mountain Unit contains outstanding and important elk habitat. CPW maps the entire Unit as Winter Range; lower elevations of the Unit are also considered Severe Winter Range totaling approximately 5,000 acres, and Winter Concentration Areas total nearly 12,000

acres within the Unit. FEIS at 3-71. Elk are highly susceptible to disturbance on winter ranges. *See* DEIS Comments at 66. The Bull Mountain Unit also contains important mule deer habitat. *Id.* at 67. Mule deer are already being negatively affected by the oil and gas industry and the associated loss of habitat in the area. *Id.* As early as 2009, Colorado Parks and Wildlife (formerly Colorado Division of Wildlife) submitted scoping comments for this project to BLM expressing concern about the project's impacts on wildlife, and, in particular, its impacts on big game:

> CDOW is concerned with the proposed density and extent of development in the Bull Mountain Unit as the area provides high quality habitat for a variety of species, and contains important wintering habitat for big game. As you are aware, *the scale of the proposed development is unprecedented for this relatively pristine area*. Impacts to wildlife, *especially cumulative impacts*, may be far reaching. We are concerned about *the potential long-term displacement of big game from areas proposed for development, and how that might affect the overall carrying capacity of the adjacent habitat and long-term population trends for big game in the area*. We are also concerned about the potential loss of remote and primitive hunting opportunities within and immediately adjacent to areas proposed for development. *These issues should be thoroughly evaluated and disclosed in your NEPA document*.[39]

In its FEIS, BLM includes a new Wildlife Habitat Plan ("WHP"). FEIS at C-6. The Wildlife Habitat Plan is a voluntary, operator-proposed plan that has not been agreed to or approved by Colorado Parks and Wildlife. *See* Wildlife Habitat Plan, attached to FEIS Appendix C. The WHP includes timing measures to protect wintering big game. *Id.* Specifically, the Plan provides that no surface-disturbing activities shall occur from December 1 through April 30 in those portions of the Unit mapped as winter concentration and severe winter range. *Id.* Additionally, the WHP provides that no surface-disturbing activities shall occur from May 15 – July 15, in order to protect breeding migratory birds. *Id.* The WHP includes other features to protect wildlife. However, it is unclear whether BLM's "Preferred Alternative" (Alternative D) includes the timing measures to protect wintering big game and breeding migratory birds. The BLM states in several places that Alternative D includes the WHP. *See also* FEIS at 2-3, 2-86, 4-147. However, the chart on FEIS C-6 indicates that the timing measures to protect wintering big game and breeding migratory birds—the key features of the WHP—are excluded from Alternative D. Even if the full Wildlife Habitat Plan is included in Alternative D, the WHP only applies through the development phase, not to production or maintenance phase activities. This means that impacts to big game will be "significantly greater" for the production and maintenance phases of the project, when "higher quality winter habitat would be reduced by 40 percent," as the BLM describes:

> SG has committed to applying the WHP through the development phase of the project meaning that *once the last wells are drilled and the Bull Mountain Unit is put in to the production phase the WHP would no longer be implemented. Impacts to wintering big*

[39] Letter from J. Wenum, Area Wildlife Manager, Colorado Parks & Wildlife, to Thane Stranathan, BLM, Bull Mountain Geographic Area Plan (Natural Gas Wells) Scoping Comments (Nov. 6, 2009) (emphasis added).

> *game are expected to be considerably greater for this portion of the project.* As equipment and wells age it is conceivable that more maintenance activity and well work-overs may be necessary. *Without commitments to implement the WHP after the development stage it is realistic that more activity will occur during the winter period in the "Winter Closure Areas" during the 30+ year production phase.* With increased winter activity in these areas *it is reasonable to assume that impacts to wintering big game may be greatest during the production phase as higher quality winter habitat would be reduced by 40 percent*.

Thus, in no case does the WHP provide timing limitations to protect wildlife and birds during the 30+ year production phase, and timing limitations may not even be part of the BLM's Preferred Alternative.

Moreover, the BLM continues to fail to accurately account for the impact of roads on habitat fragmentation and avoidance by wildlife, including big game. The BLM uses route density as a means to characterize habitat quality and assess impacts within the Unit. However, its analysis fails to accurately account for the impacts the proposed densities would have. Notably, under Preferred Alternative D, impacts on big game species where road densities are greater than 0.5 road mile per square mile would be most pronounced on 16,420 acres, leading to a direct loss of habitat and habitat fragmentation. FEIS at 4-147. Given the long-term increased impacts from roads and increased human activity acknowledged by BLM, FEIS 4-148, the Bull Mountain Unit's ability to remain big game habitat will be significantly compromised, yet the FEIS fails to take the necessary hard look to determine direct, indirect, and cumulative impacts to the local population.

Even with the relatively limited development already in the area, wildlife are being impacted. *See* FEIS at 3-68 (acknowledging that mule deer are already "likely modifying their movement patterns to avoid human activity and traffic around the more active wells and roads"). Development at the level anticipated in the FEIS, coupled with impacts from related energy projects in the Upper North Fork, could be overwhelming for mule deer, elk and other game species. The FEIS fails to take a hard look at such impacts to these wildlife populations, and fails to sufficiently describe or explain how mitigation measures will avoid such impacts.

The Bull Mountain MDP will also affect fish, including the greenback cutthroat trout. The FEIS is inconsistent (and dismissive) in its treatment of the greenback cutthroat trout – at one point saying no greenback cutthroat trout have been identified in the Unit, FEIS at 3-67, but elsewhere acknowledging that greenback cutthroat trout exist in two streams in the northwest portion of the Unit, Roberts Creek and Henderson Creek, FEIS at 3-88, 3-66 (Figure 3-12) (showing occupied cutthroat streams in the Unit). BLM notes that greenback cutthroat trout need "clear, cold, high-gradient streams and creeks," "are extremely vulnerable to competition by nonnative trout," and "are also vulnerable to water depletions." FEIS at 3-88. Nevertheless, the FEIS dismisses impacts to the trout, stating for example that "[u]nder Alternative D, there would be no activities in the Henderson or Roberts Creek drainages. Water depletions from the Ault Creek drainage and from Bainard Reservoir would have no impact on known greenback lineage fish or known occupied habitats. As a result, oil and gas development in the Unit would have no effect on greenback cutthroat trout lineage fish." FEIS at 4-170.

The BLM's narrow approach, which is focused solely on impacts "in" the relevant creeks, ignores other direct, indirect, and cumulative impacts from development. The decline of native trout is caused primarily by habitat damage (much of it associated with roads, dust, and sedimentation), and the effects of introduced, non-native fish. Roads are a significant cause of trout habitat damage and water quality degradation. In streams where cutthroat share habitat with other non-native salmonids, any habitat degradation is likely to shift the balance to dominance by non-native salmonids. As described in more detail in Citizen Groups' DEIS Comments at 75-77, BLM's narrow look at impacts to greenback cutthroat trout excludes the real range of possible impacts associated with this proposal.

The cumulative impacts analysis in the FEIS fails to acknowledge and analyze the effects from numerous active and planned energy developments in the interconnected landscape of the Upper North Fork. The need for this analysis, and appropriate mitigation measures, is critical for understanding the widespread impacts to big game and other wildlife across the Upper North Fork. For example, in an internal Forest Service document examining the Petrox 2 APD and MDP proposal (a 6,400-acre project area that largely overlies the Pilot Knob Roadless Area north of Somerset),[40] the Forest Service acknowledges that "Major Project Concerns" include "*Cumulative effects associated with ongoing Bull Mountain EIS [and] roadless*."[41] But the Bull Mountain FEIS reneges on its intention to analyze this action, despite stating that "operations may be considered reasonably foreseeable."[42]

CPW also has expressed alarm over the cumulative effects of the Bull Mountain project and other projects on wildlife of the Upper North Fork Valley. Comments submitted by the agency in April 2015 on the dual operator 25-well project north of Pilot Knob[43] state:

> The infrastructure in the adjacent Bull Mountain and Deadman Gulch Units and the facilities currently being developed on Federal and private lands in those areas will be used to recover the gas resources at the proposed pad locations discussed in this EA. As such, *these are connected actions under CEQ guidelines that should be addressed in a single NEPA document*.[44]

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[40] *See* United States Bureau of Land Management and United States Forest Service, *Environmental Assessment, Dual Operator Proposal: Development of 25 Federal Natural Gas Wells and Associated Infrastructure on 5 Multi-well Pads* (Sep. 2015) at 75 (hereinafter "25-well EA").

[41] Paonia Ranger District, *Natural Gas Projects: Project Description and Issues* (Power Point) (attached as Exhibit 35).

[42] *Id.* at 4-18.

[43] *See* 25-Well EA.

[44] Letter from J. Wenum, Colorado Parks and Wildlife, to Thane Stranathan, BLM (April 24, 2015) at 2 (emphasis added) (attached as Exhibit 36).

> *CPW recommends that BLM evaluate the proposed locations through a Master Development Plan or similar planning tool that provides a means to address*[] *the cumulative impacts to wildlife from all proposed oil and gas development in the area, including the Bull Mountain, Deadman Gulch, and Iron Point Units*. The infrastructure in the Bull Mountain and Deadman Gulch Units and the facilities currently being developed on Federal and private lands in those areas will be used to recover the gas resources at the proposed pad locations. As such, these are connected actions under Council on Environmental Quality (CEQ) guidelines that should be addressed in a single NEPA document.[45]
>
> *We are becoming increasingly concerned with the level of oil and gas development and potential landscape-scale impacts to wildlife populations* and recreational hunting and fishing opportunities in the area.[46]

These statements echo concerns expressed by the agency in 2010 regarding Gunnison Energy's 16-well development in the North Fork/Muddy Creek Planning Unit:

> *The cumulative level of oil and gas development in the West Muddy Creek watershed is becoming a significant concern to CDOW*. The proposed MDP is adjacent to the 19,645-acre, 150 well plan of development being prepared by SG Interests for the Bull Mountain Unit.[47]
>
> Cumulative impacts to wildlife resources from the existing development patterns should be evaluated in a more comprehensive analysis of oil and gas development in the West Muddy Creek watershed prior to authorizing significantly expanded development.[48]

Despite these objections, the Bull Mountain Unit FEIS offers little analysis of the cumulative impacts that can be expected from the proliferation of connected energy proposals across the affected landscape. The discussion of cumulative impacts to wildlife in the FEIS beginning at page 4-149 is limited to discussion of impacts within the Unit, and does not take into account known and likely projects adjacent to or within close proximity to the Unit. The Bull Mountain Wildlife Habitat Plan has not been agreed to by CPW, casting doubt on the efficacy of the document. Comments from state and federal wildlife agencies and the public, as well as various Forest Service and BLM NEPA documents, paint a picture of an interconnected landscape with interconnected wildlife habitat, threatened by interconnected resource development. As such, the BLM erred in not addressing the full range of current energy proposals and development within

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[45] *Id*. at 3 (emphasis added).
[46] *Id*. (emphasis added).

[47] Letter from J. Wenam, Colorado Parks and Wildlife, to USDA Forest Service (June 30, 2010) at 2 (emphasis added) (attached as Exhibit 37).

[48] *Id*. at 1.

the FEIS's cumulative impacts analysis. The FEIS's failure to consider the cumulative impacts of other past, present and reasonably foreseeable actions proximate to the Bull Mountain Unit violates NEPA.

VI. BLM is in Violation of the Endangered Species Act.

Congress enacted the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544, to "provide a program for the consideration of . . . endangered species and threatened species" and to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . ." *Id.* § 1531(b). Section 7 of the ESA prohibits federal agencies from taking discretionary actions that would "jeopardize the continued existence of any endangered species or threatened species" or cause the "destruction or adverse modification" of habitat designated as "critical" for such species. 16 U.S.C. § 1536(a)(2). An agency action "jeopardizes" a protected species if it "reasonably would be expected, directly or indirectly," to reduce appreciably the species' likelihood of survival or recovery "by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02. An action destroys or adversely modifies critical habitat if it "appreciably diminishes the value of critical habitat" for the survival or recovery of a listed species. *Id.* To enforce this substantive mandate, any agency decision to take discretionary action that may affect any listed species is strictly governed by the inter-agency consultation process of section 7 of the ESA. *See* 16 U.S.C. § 1536.

If the proposed action is expected to affect a protected species, the agency must initiate formal consultation with the appropriate federal wildlife agency, here the U.S. Fish and Wildlife Service, which is in charge of ESA compliance for freshwater and terrestrial species. 50 C.F.R. § 402.01(b). The consultation process culminates in the issuance of a biological opinion, in which the Service must determine, based on the "best scientific and commercial data available," whether the proposed action will jeopardize the survival or recovery of a protected species. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.02. In its biological opinion, the Service also must determine whether the proposed action will destroy or adversely modify a protected species' designated critical habitat. 50 C.F.R. § 402.14(g)(4); *see* 16 U.S.C. §§ 1532(5)(A).

If the Service concludes that a proposed action is likely to jeopardize a protected species or destroy or adversely modify its critical habitat, the action may not proceed as proposed. *See* 16 U.S.C. § 1536(a)(2). In that circumstance, the Service must determine whether a "reasonable and prudent alternative" to the proposal exists that would avoid jeopardy to the species and destruction or adverse modification of critical habitat. *Id* § 1536(b)(3)(A). If the Service concludes that implementing the proposed action (or the identified reasonable and prudent alternative) will not jeopardize protected species and will not destroy or adversely modify critical habitat, the agency must include in its biological opinion an incidental take statement which specifies the amount or extent of any "take" of protected species that may be authorized as a result of the action. 50 C.F.R. § 402.14(i)(1).

Here, the BLM has determined that the project **'may affect, and is likely to adversely affect'** four endangered fish species: the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub. FEIS at 3-82. Despite the fact that this determination triggers the ESA requirement to formally consult with FWS—initiating the FWS's responsibility to prepare a biological opinion—BLM has not undertaken any consultation (formal or informal) with FWS.

Instead, the BLM points to a 2008 Programmatic Biological Assessment for the BLM's Fluid Minerals Program in Western Colorado ("Programmatic BA"). FEIS at 3-88. The BLM reasons that, as long as BLM remains in compliance with this Programmatic BA, its ESA duties will be satisfied. *Id.*; N-81. This reasoning is problematic in two respects. First, the BLM is relying on unspecified mitigation that *could* protect these species. BLM does so in the face of a FWS determination that considers *any* water depletion to be significant to these species, thus signaling the need to perform a biological opinion. Second, water depletion is not the only threat facing these species. BLM also recognizes the threat of sedimentation, salinity, and contamination posed by the proposed action, FEIS at 4-94 to 4-95, as well as the hydrologic connectivity and, therefore, the connectivity of impacts, between waters in the Bull Mountain Unit and resources found in the Gunnison and Colorado Rivers, *see* Section 3.2.4 ("Water Resources"). BLM's disregard for these endangered fish species is plainly in direct violation of ESA section 7, and cannot be sustained. *See* 50 C.F.R. § 402.14(a) (requiring formal consultation when an agency determines that any action it takes "may affect listed species or critical habitat.").

VII. BLM Failed to Take a Hard Look at the Cumulative Impacts of Oil and Gas Development on Resource Values in the Analysis Area.

The MDP FEIS's cumulative impacts analysis remains inadequate. Of special note, the MDP FEIS fails to adequately consider the cumulative impacts of the Bull Mountain Unit project together with an adjacent, recently-approved project proposed by SG Interests and Gunnison Energy. On December 7, 2015, BLM issued a Finding of No Significant Impact (FONSI) for this project, which involves 25 wells on five multi-well pads, installation of new pipelines, and construction/reconstruction of access roads ("the 25-well project").[49] The 25-well project and the Bull Mountain project are planned in the same field office (UFO); are neighboring, with wells approximately one mile apart, *see* Table 2 below; share infrastructure, including the Bull Mountain pipeline, *see* 25-Well EA at 29, 145 and FEIS at 2-51; will likely be approved within a year of one other, given that the Bull Mountain MDP is likely to be approved soon after the FEIS 30-day public review period, which ends August 8, 2016, and the 25-Well Project was approved on December 7, 2015; primarily target Mancos shale gas, *see* 25-Well EA at 20, FEIS at 2-9, 4-220; and are proposed by the same operator (SG Interests), with additional wells proposed by Gunnison Energy in the 25-well project.

Both projects will use the Bull Mountain pipeline, as mentioned, *see* 25-Well EA at 29, 145 and FEIS at 2-51, as well as the McIntyre flowback pits (water containment ponds used to hold produced water from the fracking process and to mix water with concentrated fracking fluid), *see* 25-Well EA at 30 and FEIS at 4-80. Additionally, the Bull Mountain compressor station is intended to provide compression to move produced gas from the area through the Bull Mountain gathering line, and may well serve both projects. *See* 25-Well EA at 75 and FEIS at 4-54.

[49] United States Department of the Interior, Finding of No Significant Impact for DOI-BLM-CO-S0500-2015-0029-EA, *available at*: http://www.blm.gov/style/medialib/blm/co/information/nepa/uncompahgre_field/fy2015_nepa_docs.Par.7876.File.dat/5pad_FONSI_signed.pdf.

Below is a graphical representation demonstrating the proximity of the projects, using the Public Land Survey System (PLSS). Each square represents a square mile.

Table 2
Township 11 South, Range 90 West

6	5	4	3	2	1
7	8 – 25-Well ("Henderson")	9 – 25-Well ("11-90-9")	10 – Proposed Compressor Station (See page 75 of 25-Well EA)	11 - Bull Mountain	12 - Bull Mountain
18	17	16	15 - 25-Well ("Aspen Leaf")	14 - Bull Mountain	13 - Bull Mountain
19	20 – 25-Well ("Spadafora")	21	22 - Bull Mountain (partial coverage)	23 - Bull Mountain	24 - Bull Mountain
30	29	28	27 - Bull Mountain (partial coverage)	26 - Bull Mountain	25 - Bull Mountain
31	32	33	34 - Bull Mountain (partial coverage)	35 - Bull Mountain	36 - Bull Mountain

Township 12 South, Range 90 West (The township immediately south of T11S, R90W)

6	5	4	3	2 – Bull Mountain	1- Bull Mountain
7 – 25-Well ("Allen")	8	9	10	11 – Bull Mountain (partial coverage)	12 – Bull Mountain

The 25-well project is mentioned in list form in Table 4-3 as one of the reasonably foreseeable future actions that comprise the cumulative impact scenario. FEIS at 4-18. Additionally, the modeling analysis for the Bull Mountain project was revised to include the emissions from the 25-well project. FEIS at 4-56. While consideration of cumulative emissions from both projects is a welcome addition to the FEIS, the FEIS should also have considered the cumulative effects of both projects to the range of resource values impacted by oil and gas development.

Indeed, two actions may be so "connected" as to mandate consideration in a single EIS. 40 C.F.R. § 1508.25; *Wilderness Workshop v. U.S. Bureau of Land Management*, 531 F.3d 1220, 1228-29 (2008). Actions are deemed to be 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.

40 C.F.R. § 1508.25.

The 10th Circuit applies an "independent utility" test to determine whether federal actions are so "connected" as to mandate consideration in a single EIS. *Wilderness Workshop*, 531 F.3d at 1228-29. "The crux of the test is whether each of two projects would have taken place with or without the other and thus had independent utility." *Id.* at 1229. With its shared infrastructure, common target formation, largely common operator, close timing, and geographical proximity, the 25-well project is arguably an interdependent part of the larger Bull Mountain MDP. 40 C.F.R. § 1508.25(iii). At the very least, the cumulative impacts of the two projects should have been much more closely considered than they are in the FEIS.

In addition to the 25-well project, numerous other projects and proposals will have cumulative impacts in conjunction with the Bull Mountain Unit proposal. Below is a list of a few of these projects. The FEIS has been revised to include more of these projects in the list of actions that comprise the cumulative impacts scenario. However, most receive no further analysis beyond mention in list form.

<u>67 Active Gas Wells in Delta and Gunnison Counties</u>: As of April 1, 2015, Gunnison and Delta Counties contain 67 active gas wells, the majority of which are located in the Upper North Fork and Muddy Creek areas. The FEIS does not discuss the impacts of these wells in conjunction with the Bull Mountain Unit proposal, despite connected infrastructure, access roads and ownership.

Petrox 50-Well Proposal at Pilot Knob:[50] Two APDs from Petrox Resources are proposed for development in the Federal Somerset Unit, a 6,400-acre project area that largely overlies the Pilot Knob Roadless Area north of Somerset. A master development plan (MDP) has also been submitted to the Forest Service.[51] A Forest Service document describes the level of development proposed in the Somerset Unit: "24 Multiple Well Drilling Locations (up to 50 wells); 1 Centralized Processing Facility (compressor, etc); 7.4 miles of proposed roads reconstruction, and 7.8 miles of new road construction; 16.2 miles of (mostly) co-located pipelines; Majority of proposed activities are within the Pilot Knob CR.)"[52]

Fram 108-Well Proposal:[53] In June of 2014, BLM approved a proposal for 108 oil wells from Norwegian company Fram, to be located downstream from the Bull Mountain Unit in the Whitewater Unit. Citizen groups requested a State Director Review of the decision in July of 2014. In response, BLM remanded the plan to its Grand Junction Field Office for further environmental review based on the fact that the plan did not analyze hydraulic fracturing. While this project has been paused to allow for additional environmental analysis, it remains a reasonably foreseeable project that should have been considered in the MDP FEIS's cumulative impacts analysis.

Gunnison Energy 60 to 400-Well Master Plan:[54] Gunnison Energy is proposing large-scale development north of Somerset and west of the Bull Mountain Unit for up to potentially 400 wells. This alone could dwarf the Bull Mountain Unit, and given its proximity to the Unit, cannot be ignored.

Spadafora Waste Disposal Pits: The Spadafora Water Storage Facility was approved by the Gunnison County Planning Commission on March 6, 2015. Three water storage pits, each with a pump station and a volume of about 9,240,000 gallons, will sit on roughly 19 acres and will store

[50] *See* Dennis Webb, *Roadless Dispute Clouds Drilling Proposal*, THE DAILY SENTINEL, February 28, 2015, available at: http://www.gjsentinel.com/news/articles/roadless-dispute-clouds-drilling-proposal.

[51] 25-well EA at 75.

[52] Paonia Ranger District, *Natural Gas Projects: Project Description and Issues* (Power Point) (attached above as Exhibit 35).

[53] *See* Dennis Webb, *Fram Proposal: 108 New Oil Wells South of Palisade*, THE DAILY SENTINEL, June 28, 2013, available at: http://www.gjsentinel.com/news/articles/fram-proposal-8232108-new-oil-wells-8232south-of-p.

[54] *See* Dennis Webb, *North Fork Drilling Plans Remain Small*, THE DAILY SENTINEL, February 15, 2015, available at: http://www.gjsentinel.com/news/articles/north-fork-drilling-plans-remain-small.

and recycle produced water for drilling and gas well operations. [55] This facility is immediately west of the Bull Mountain Unit.

16-well development in the North Fork/Muddy Creek Planning Unit:[56] In February, 2009 BLM approved a Master Surface Use Plan from Gunnison Energy for 16 wells just to the south of the Bull Mountain Unit. This is not analyzed in coordination with the Bull Mountain MDP analysis.

30,000-Acre Lease Sale:[57] In December of 2011 BLM proposed leasing approximately 30,000 acres of public lands and minerals for oil and gas development in the North Fork Valley. While the lease sale has been deferred, there remains the possibility for future leasing. The impacts of this proposal are not included in the DEIS.

Huntsman Unit Proposal: [58] SG has proposed drilling in the Huntsman Unit (COC 74403X), which includes three SG leases (COC 63886, 63888, and 63889). SG has proposed one APD there for well 10-89-31 #1 inside lease COC 63886. That APD was filed in 2010. The unit and the leases are currently suspended pending Forest Service analysis. Nonetheless, with formal proposals on the table, the BLM must consider this a reasonably foreseeable proposal. Drilling the proposed well would require travel on the same roads, new road construction, additional cumulative impacts to wildlife habitat (including critical trout habitat), and additional cumulative impacts to regional air quality and other resources.

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[55] *See* Adam Broderick, *Fracking Pits Approved for Development Near Paonia Reservoir*, THE CRESTED BUTTE NEWS, March 11, 2015, available at: http://www.crestedbuttenews.com/index.php?option=com_content&task=view&id=6286&Itemid=40.

[56] *See* Seth Mensing, *Gas Developers Propose Three New Water Pits for North Fork*, THE CRESTED BUTTE NEWS, May 4, 2015, available at: http://www.crestedbuttenews.com/index.php?option=com_content&task=view&id=3344&Itemid=40; In the Matter of the Promulgation and Establishment of Field Rules to Govern Operations in West Muddy Creek Field, Gunnison County, Colorado, Cause No. 1, Order No. 1-143, Colorado Oil and Gas Conservation Commission (March 30, 2009), available at: http://cogcc.state.co.us/orders/orders/1/143.html (attached to Citizen Groups' DEIS Comments as Exhibit 75).

[57] *See* Uncompahgre Field Office, *Oil and Gas Lease Sale February 2013*, BUREAU OF LAND MANAGEMENT, available at: http://www.blm.gov/co/st/en/BLM_Information/nepa/ufo/august_lease_sale.html.

[58] A categorical exclusion used for approval of a suspension of this lease is available: BLM, Categorical Exclusion DOI-BLM-CO-SO50-201-0035 CX, available at: http://www.blm.gov/pgdata/etc/medialib/blm/co/information/nepa/uncompahgre_field/ufo_nepa_documents0.Par.60636.File.dat/12-035CX%20SG%20USFS%20Lease%20Susp.pdf.

Pilots Knob APD:[59] SG has proposed an APD (12-89-30#1) in the Pilots Knob CRA on lease COC 64169. Development of that lease would involve the same potential impacts as others described above.

SG Interests Notice of Staking in the Wolf Creek Natural Gas Storage Area: On July 28, 2015 BLM received a Notice of Staking (NOS) from SG Interests for a proposed well and well pad in the Wolf Creek Natural Gas Storage Area. An NOS is a first step in submitting an Application for Permit to Drill (APD). The next step is for the Forest Service and BLM to schedule a site visit with SG Interests. SourceGas holds the lease, which was issued in 1954. SG Interests has an agreement with SourceGas allowing them to drill within the boundaries of the storage area.

SG Interest Thompson Divide Drilling Proposals: In 2012 BLM and the U.S. Forest Service received six applications for permit to drill (APDs) from SG Interests in the Thompson Divide Area. Two of the six APDs are currently considered complete. We have also received two additional Notices of Staking, which is a step that precedes submitting an APD. These 6 APDs and two NOSs are proposed on a total of five well pad locations.

Ursa Piceance Thompson Divide Drilling Proposal: Antero Resources began working on the Lava Boulder Creek Exploratory Development Program for a lease within the Thompson Divide in 2009 in Mesa and Pitkin counties. The Forest Service is preparing an environmental assessment of this proposal. The EA was released for public comment Sept. 27-Oct. 29, 2012. The Forest Service continues to work on this EA and at this time does not have an estimate for when it will complete the final decision. The proposal is for four wells on a single well pad. BLM has received one application for permit to drill and is awaiting completion of the Forest Service EA. Antero Resources recently sold these leases to Ursa Piceance LLC.

Coal: The FEIS states: "There are two active underground coal mines on federal mineral estate in the cumulative impacts analysis area." FEIS at 4-16. The FEIS then lists simple production data from the mines, including a third mine—Oxbow's Elk Creek Mine—which closed in 2013. But there is no discussion of impacts to wildlife, and the FEIS states that coal resources will not be discussed in detail. FEIS at 4-4. Recent proposals to expand the West Elk Coal Mine under 1,700 acres of the Sunset Roadless Area to access 10.1 million tons of coal are not mentioned.

The proposed 1,700 acre expansion is tied to the supplemental rulemaking for the Colorado Roadless Rule that would exempt approximately 19,700 acres of roadless forest in the North Fork from prohibitions on coal mining, road building, and associated development. On April 6, 2015 the U.S. Forest Service issued a Notice of Intent to prepare a supplemental Environmental Impact Statement to propose reinstatement of the North Fork Coal Mining Area exception of the Colorado Roadless Rule, and the document was released in November 2015.[60] The exception

[59] *See id.*

[60] U.S. Forest Service, Rulemaking for Colorado Roadless Area: Supplemental Draft Environmental Impact Statement (November 2015), available at: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd485194.pdf.

would allow for temporary road construction for coal exploration and/or coal-related surface activities in a 19,700-acre area defined as the North Fork Coal Mining Area.[61] Under the exception, Arch Coal plans to expand its underground West Elk mine, which includes bulldozing an extensive road network and scraping dozens of well pads in the Sunset Roadless Area. Also notable is the fact that coal mining in the North Fork Valley requires venting of methane, which releases significant amounts of VOCs that should be addressed in any cumulative impacts analysis. The proposed exception to the Colorado Roadless Rule would result in the mining and burning of 172 million tons of coal, the construction of up to 450 methane drainage wells, the construction of 67 miles of roads in a roadless forest, and numerous other impacts.

Climate Change: BLM's analysis of the cumulative impact of climate change is limited to the observation that "[i]ncreased concern over greenhouse gas emissions and global warming issues may lead to future federal and state regulations limiting the emission of associated pollutants." FEIS at 4-21. BLM fails to consider the impact of the project in light of the additive impacts caused by global warming. For example, BLM acknowledges that erosion and sedimentation is a major issue in the project area. *See* FEIS at 3-56 ("The Unit is located in an area of active erosion and many unstable slopes. These conditions present a continuing concern in the area . . ."). BLM also acknowledges that global climate change will exacerbate this problem. *See id.* ("Global climate changes may lead to more extreme ranges in rainfall and runoff.") But BLM fails to consider the impact of the project on erosion and sedimentation in light of the additive impacts caused by global warming. This should be done on a resource-by-resource basis.

SBEADMR: The Bull Mountain FEIS notes that "[a]spen trees have been impacted by sudden aspen decline," that "[a]ging stands and many dead aspen trees are observable at mid- and high elevations in the Unit.," and that "[s]pruce and pine trees in coniferous forests have suffered from bark beetle infestations." FEIS at 3-63. But the FEIS does not acknowledge the imminent Forest Service response for treating spruce mortality resulting from Sudden Aspen Decline (SAD) and the spruce beetle (*Dendroctonus rufipennis*) across the GMUG. Over the next 8-12 years, the Forest Service proposes to treat (i.e log) approximately 120,000 acres of aspen and spruce forest on the GMUG under the Spruce Beetle Epidemic and Aspen Decline Management Response (SBEADMR) project. The Forest Service ROD for SBEADMR states that "these disturbances [spruce beetle-caused tree mortality and SAD] are occurring in the context of a changing climate."[62] BLM's proposed Bull Mountain Unit MDP will contribute significant amounts of climate change pollution to the atmosphere, further fueling the climate conditions that are allowing the explosion of the spruce beetle population and the conditions that support SAD.

Planned SBEADMR logging, and possibly road-building, operations will be occurring both directly upstream from and in some cases adjacent to the Bull Mountain Unit. The SBEADMR

[61] Roadless Area Conservation; National Forest System Lands in Colorado, 80 Fed. Reg. 18,598-02 (April 7, 2015).
[62] U.S. Forest Service, Spruce Beetle Epidemic and Aspen Decline Management Response, Final Record of Decision (July 2016) at 2.

FEIS map of priority treatment sites for the North Fork Valley Geographic Area[63] shows significant commercial and noncommercial logging operations planned for the areas of Little Henderson Creek, along Country Road 265, and even directly next to the Bull Mountain Unit in the Forest Service-managed lands surrounding the Aspen Leaf Reservoir and Ault Reservoir. The SBEADMR project map further indicates new road construction associated with logging operations in that area.

All of this timber management and road building would be directly upstream or directly adjacent to the Bull Mountain Unit, yet it is not mentioned in the Bull Mountain FEIS. It is ironic that the Bull Mountain proposal would be a significant source of GHG emissions, and the spruce and aspen forests are dying in the context of a warming climate. Regardless of this link, the BLM erred in not considering the impacts associated with logging, road construction, truck and vehicle access, and associated disturbance in conjunction with the Bull Mountain MDP.

VIII. The FEIS lacks an adequate consideration of pipeline safety.

The FEIS's consideration of pipeline safety is grossly inadequate:

- BLM did not consult agencies with pipeline safety jurisdiction. In fact, BLM states that approvals for pipeline construction and operations would be acquired from the Colorado Department of Transportation, which has no jurisdiction over pipelines in Colorado. FEIS at 1-9 (Table 1-1). BLM should have consulted with the Pipeline Hazardous Materials Safety Administration ("PHMSA") and Colorado Public Utilities Commission, which has jurisdiction over pipelines within Colorado per a certification agreement with PHMSA.[64]

- BLM did not consider the cumulative impacts and risks of a total of 24 miles of new unregulated gas gathering pipelines. Rural gas gathering lines are exempt from federal pipeline safety regulations, and therefore state regulatory oversight. *See* 49 CFR § 192.

- BLM did not consider the impact of extreme weather causing flooding, mudslides and geological instability, which can compromise the integrity of pipelines and result in leaks and potential explosions.

> The nation's pipeline system . . . faces a greater risk from failure due to extreme weather events such as hurricanes, floods, mudslides, tornadoes, and earthquakes. A 2011 crude oil spill into the Yellowstone River near Laurel, MT, was caused by channel migration and river bottom scour, leaving a large span of the pipeline exposed to prolonged current forces and debris washing downstream in the river. Those external forces damaged the exposed pipeline. In October 1994, flooding

[63] *Id.* at Appendix G at 5 (attached as Exhibit 38)
[64] *See* Colorado Department of Natural Resources et al., *A Regulatory Review of Liquid and Natural Gas Pipelines in Colorado* 9 (December 2014), available at: http://cogcc.state.co.us/documents/library/Technical/InterAgency/Final_Pipeline_WhitePaper_w_Appendices_12_12_14.pdf.

> along the San Jacinto River led to the failure of eight hazardous liquid pipelines and also undermined a number of other pipelines. The escaping products were ignited, leading to smoke inhalation and burn injuries of 547 people. From 2003 to 2013, there were 85 reportable incidents in which storms or other severe natural force conditions damaged pipelines and resulted in their failure. Operators reported total damages of over $104M from these incidents. PHMSA has issued several Advisory Bulletins to operators warning about extreme weather events and the consequences of flooding events, including river scour and river channel migration.

Notice of Proposed Rulemaking on Gas Transmission and Gathering Lines, 68 Fed. Reg. 20722, 20728 (April 8, 2016) (to be codified at 49 C.F.R. Parts 191 and 192).

- BLM did not consider the pipeline safety impacts on hikers, campers, hunters, and anglers utilizing the public lands for recreation purposes:

> On August 19, 2000, a 30-inch-diameter gas transmission pipeline ruptured adjacent to the Pecos River near Carlsbad, NM. The released gas ignited and burned for 55 minutes. Twelve persons who were camping under a concrete-decked steel bridge that supported the pipeline across the river were killed, and their vehicles were destroyed. Two nearby steel suspension bridges for gas pipelines crossing the river were damaged extensively.

68 Fed. Reg. 20722, 20730.

- BLM did not consider forest fire risks from pipeline explosions:

> On December 11, 2012, a 20-inch-diameter gas transmission line ruptured in a sparsely populated area about 106 feet west of Interstate 77 (I-77) in Sissonville, WV. An area of fire damage about 820 feet wide extended nearly 1,100 feet along the pipeline right-of-way. Three houses were destroyed by the fire, and several other houses were damaged. Reported losses, repairs, and upgrades from this incident totaled over $8.5 million, and major transportation delays occurred. I-77 was closed in both directions because of the fire and resulting damage to the road surface. The northbound lanes were closed for about 14 hours, and the southbound lanes were closed for about 19 hours while the road was resurfaced, causing delays to both travelers and commercial shipping.

68 Fed. Reg. 20722, 20730.

- BLM did not consider lack of pipeline safety inspections:

> The National Association of Pipeline Safety Representatives, an association representing state pipeline safety officials, produced a compendium of state pipeline regulations showing that most states with delegated authority from PHMSA to conduct intrastate inspections do not have expanded regulations that

cover increased oversight of gathering companies building gathering pipelines in rural areas are generally not subject to inspection and do not have to report the location and characteristics of much of the gathering pipelines being installed.

U.S. Government Accounting Office, GAO-14-667, *Oil and Gas Transportation: Department of Transportation Is Taking Actions to Address Rail Safety, but Additional Actions Are Needed to Improve Pipeline Safety* 23 (August 2014).

IX. CONCLUSION

The Citizen Groups appreciate your consideration of the information and concerns addressed in this protest letter. Should you have any questions or wish to discuss our concerns in greater detail, please do not hesitate to contact us.

Sincerely,

Laura King
WESTERN ENVIRONMENTAL LAW CENTER
103 Reeder's Alley
Helena, Montana 59601
406.204.4852
king@westernlaw.org

Kyle Tisdel
WESTERN ENVIRONMENTAL LAW CENTER
208 Paseo del Pueblo Sur, Unit 602 Taos, New Mexico 87571
575.613.8050
tisdel@westernlaw.org

Matt Reed
Public Lands Director
High Country Conservation Advocates
PO Box 1066
Crested Butte, CO 81224
303.505.9917
matt@hccacb.org

Natasha Léger
Interim Executive Director
Citizens for a Healthy Community
130 Grand. Ave,
Paonia, CO 81428
970.399.9700

natasha@citizensforahealthycommunity.org

Jeremy Nichols
Climate & Energy Program Director
WildEarth Guardians
1536 Wynkoop Street, Ste. 310
Denver, CO 80202
303.437.7663
jnichols@wildearthguardians.org

Peter Hart
Staff Attorney/Conservation Analyst
Wilderness Workshop
PO Box 1442 / 520 South 3rd St., Suite 27
Carbondale, CO 81623
970.963.3977, ext. 12
peter@wildernessworkshop.org

Roz McClellan
Rocky Mountain Recreation Initiative
1567 Twin Sisters Rd.
Nederland, CO 80466
303.447.9409
rosalind.mcclellan@colorado.edu

Matt Sandler
Staff Attorney
Rocky Mountain Wild
1536 Wynkoop St., Ste. 900
Denver, CO 80202
303.546.0214 ext. 1
matt@rockymountainwild.org

Alex Johnson
Executive Director
Western Slope Conservation Center
204 Poplar Ave.
Paonia, CO 81428
970.527.5307
director@theconservationcenter.org