

**National Audubon Society  
The Wilderness Society  
Wyoming Outdoor Council**

**VIA ELECTRONIC MAIL**

March 12, 2018

Bureau of Land Management  
Attn: Mike Robinson  
Casper Field Office  
2987 Prospector Drive  
Casper, WY 82604  
Fax: 307-261-7587  
WY\_ [CasperMail@blm.gov](mailto:CasperMail@blm.gov)

**Re: Comments on Converse County Oil and Gas Project Draft Environmental Impact Statement (DOI-BLM-WY-P060-2014-0135-EIS)**

Dear Mr. Robinson:

Please accept these comments on the Converse County Oil and Gas Project Draft Environmental Impact Statement (DEIS). The DEIS discusses the environmental effects from the drilling and operation of 5,000 new oil and gas wells proposed by Anadarko Petroleum Company, Chesapeake Energy Corporation, Devon Energy, EOG Resources, Inc., and SM Energy.

**Project description**

The Converse County Project Area (CCPA) is vast in scale and scope. The project area encompasses approximately 1.5 million acres of federal, state and private lands in east-central Wyoming. Eighty-three percent of the surface is privately owned. Ten percent of the surface is public land managed by the BLM and USDA Forest Service. The remaining surface estate is administered by the State. The BLM administers approximately sixty-four percent (964,525 acres) of the mineral estate. State and privately-owned minerals comprise the rest.

Under Alternative B, the proposed action, up to 5,000 new oil and gas wells would be drilled on 1,500 single and multi-well pads within the CCPA. Drilling would take place over a period of 10 years at an average rate of 500 wells per year. The anticipated initial drilling and completion pad size would be on average 12 acres; however, individual pad sizes may vary based on the number of wells per pad and constraints related to lease/landowner agreements, operational safety, and topography. The number of wells drilled from each pad would vary from 1 to 16. It is anticipated that 50 drill rigs could be operating year-round in the

project area. Nearly 2,000 miles of new roads, 2,000 miles of buried oil and gas pipelines, 900 miles of surface water pipelines, 1,500 miles of electrical powerlines, 455 other well pads (i.e., production, water source, and disposal well pads), and other infrastructure and facilities would be constructed to support this proposed development. Total new surface disturbance under the Proposed Action would be approximately 52,667 acres, or 3.5 percent of the total CCPA.

The proposed Converse County project would be superimposed on a landscape already experiencing intensive energy development. Existing oil and gas development in the CCPA consists of a combined total of 1,449 well and production pads and associated access roads, construction facilities, and production facilities, with an estimated disturbance of 13,819 acres. The existing production facilities include 18 compression facilities, 5 gas plants, and 6 twenty-acre freshwater “make-up” ponds. The proposed project would add 50 compression facilities, 2 gas plants, and 30 freshwater impoundments. New development previously approved under the National Environmental Policy Act (NEPA) consists of 1,663 new wells on 361 new well pads with an estimated disturbance of 10,253 acres.

It is estimated that each of the 5,000 proposed new wells would produce an average of approximately 1.8 acre-feet, or 14,000 barrels, of water annually. This produced water would be disposed of by a combination of injection and evaporation. A massive amount of fresh water is required for this project. Approximately 6.5 to 16.0 acre-feet (or approximately 50,400 to 124,100 barrels) of water *per well* would be required during well drilling and completion operations. Total water usage for development is estimated to range from 32,500 to 80,000 acre-feet (or approximately 252 to 620 million barrels) of water. To meet this demand, up to 50 new water supply wells would be drilled into aquifers that contain underground sources of drinking water. This fresh water (as much as 8,050 acre feet per year) would be stored in as many as thirty, 20-acre permanent impoundments called “make-up” ponds, and transported to well locations by surface pipelines, or by truck where pipelines are unavailable.

Equally impressive is the amount of wastewater created. The projected annual volume of wastewater from development would peak at full build out in ten years at approximately 9,750 acre-feet per year: 3,870 acre-feet from flowback and 5,880 acre-feet from produced water. In addition to the existing disposal wells in the project area, another 30 disposal wells would be needed to dispose of wastewater produced by the project. Produced water would either be hauled by truck to disposal sites or transported by pipeline to centralized disposal facilities. Unfortunately, despite the obvious environmental benefits, water recycling is not proposed.

In addition to having to dispose of polluted flowback and produced water, large quantities of hazardous materials and solid waste would be used/generated during the development of the project. Drilling fluid and cuttings could be buried on site, despite the many advantages offered by closed-loop drilling systems.

Another large oil and gas project called Greater Crossbow, where 1,500 wells are proposed, is planned for an area immediately north of the CCPA, adding significantly to the cumulative effects of existing and proposed development.

Residents in the area have complained about the environmental impacts caused by existing development activities—these problems will likely intensify and become more widespread unless the operators, BLM and other federal, state and local agencies with jurisdiction step up to address them in a meaningful way.

### **Description of Commenters**

The National Audubon Society’s mission is to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth’s biological diversity.

The mission of the Wilderness Society is to protect wilderness and inspire Americans to care for our wild places.

Founded in 1967, the Wyoming Outdoor Council is the state’s oldest and largest independent conservation organization. The Council’s mission is to protect Wyoming’s environment and quality of life for future generations.

### **General Comments**

The DEIS presents a generic and highly generalized analysis and environmental disclosure that fails to incorporate “lessons learned” from numerous other natural gas development projects in Wyoming including several projects approved in the CCPA. The analysis assumes an even spacing of wells and infrastructure across the landscape when in reality surface features, characteristics of oil and gas bearing formations, landowner surface agreements, and environmental constraints will play a major role in dictating the location of wells, pipelines, roads, overhead powerlines and other infrastructure. To get a better picture of the actual on-the-ground impacts, we recommend that BLM prepare additional environmental analyses on a finer scale, for example, on a watershed level, and prepare Master Development Plans that would analyze impacts from specific, multi-well projects when locations of well pads, access roads, pipelines, powerlines, and other facilities are known. Because the BLM typically categorically excludes individual drilling permits from NEPA review under Section 390 of the Energy Policy Act, no further public review or comment opportunity will be provided for most of the wells proposed by the operator group.

The DEIS makes numerous references throughout the document to additional site-specific NEPA reviews. In reality, and as noted above, the vast majority of wells in the project area will be approved without any further NEPA review under Section 390 of the Energy Policy Act. The DEIS should acknowledge this point, and explain how and when it will provide the “hard look” at site-specific environmental impacts that NEPA requires. In limited circumstances where the BLM decides to prepare an environmental assessment (EA) for a project related action, the

public typically is not invited to review or comment on the document; these are known as internal EAs.

The DEIS' analysis of impacts to greater sage-grouse should explain how a "net conservation gain" will be achieved in priority habitat management areas (PHMA), and how the predicted abandonment of 54 sage-grouse leks comports with the conservation goals mandated by the 2015 Approved Resource Management Plan Amendments (ARMPA) for Greater sage-grouse and Wyoming Executive Order 2015-4.

We are concerned with the lack of capacity within the various agencies to properly oversee development of this massive project. The DEIS fails to disclose or discuss the agencies' ability to inspect facilities, monitor activities and enforce rules, regulations, and the terms and conditions under which this project will be governed. What assurances does the public have that BLM will actually carry out the duties assigned to it in the DEIS? For example, the DEIS notes that speed limits will be enforced, and that dust will be applied during "dry periods." Will the BLM have inspectors in the field continuously monitoring project activities who will enforce speed limits and make decisions about the need for dust control measures? These problems have been the subject of investigations and reports prepared by the Government Accountability Office – they should be addressed in the DEIS. Additionally, the conditions of approval (COA) that will be applied at the application for permit to drill (APD) stage are not discussed or provided for, and this is a concern given the likely use of categorical exclusions subsequent to this EIS.

The DEIS fails to analyze a reasonable range of alternatives to the proposed action. The draft impact statement eliminates from further consideration reasonable and practical conservation measures that would avoid and reduce environmental impacts and come closer to achieving compliance with applicable federal land use plans. Many such measures are included in Alternative C, while others were improperly eliminated from detailed analysis. For example, incorporating flareless drilling completion and production is eminently technically feasible (e.g., see the EISs for the Jonah and Pinedale Anticline fields), and such measures would advance "basic policy objectives for the management of the area" which expressly require BLM (under the Casper RMP) to take steps to reduce air pollution. If achieving 100% flareless drilling is not feasible, the BLM should consider whether a lesser amount of emissions is achievable rather than rejecting the alternative outright. The same is true for the greenhouse gas reduction alternative. Eliminating all greenhouse gases from project-related activities may not be feasible; but reducing some greenhouse gas emissions is feasible, and those opportunities should be explored in the DEIS. The same goes for burying electrical distribution lines. Of course, it may not be feasible to bury *all* lines, but it may be feasible to bury some. The fact that all lines cannot be buried is not a valid reason for not analyzing whether some lines can be buried. The same is true for the surface disturbance cap alternative rejected by BLM. A project-wide limit on surface disturbance may be impracticable, but a disturbance cap in certain areas of the CCPA may make sense to respond to resource concerns. For example, an upper disturbance limit may be appropriate in areas where sensitive soils are present, or to protect viable sage-grouse leks in general habitat

management areas (GHMA) to mitigate the development effects in PHMA. Likewise, limiting development on BLM surface was rejected “because it does not address a specific issue or resource concern” when in fact, limiting surface disturbance on federal surface would help mitigate and offset many of the environmental impacts identified in the DEIS such as loss of open space, degraded wildlife habitat and diminished recreational opportunities.

The DEIS claims that the project conforms to the Casper RMP and Thunder Basin National Grassland (TBNG) plan. It does not. The Casper RMP and the Thunder Basin LRMP must be amended to address the accelerated level of development and anticipated environmental impacts from proposed oil and gas projects. The analyses presented in the environmental impact statements supporting those plans was based on reasonably foreseeable development scenarios developed over a decade ago. Massive oil and gas projects like the Converse County and Crossbow projects were neither anticipated nor studied. The level of energy development and therefore the degree and severity of impacts from the proposed developments have greatly exceeded the levels and effects anticipated in the underlying plans. Further, the goals, objectives and decisions set forth in the underlying land use plans were based on analyses that are no longer accurate or reliable. It is clear that many of the goals, objectives and individual management decisions set forth in the BLM’s and Forest Service’s land use plans are neither relevant nor attainable in light of proposed developments being analyzed in the Converse County and Greater Crossbow EISs. The projects and effects described in the Converse County and Crossbow DEISs require plan amendments, and the BLM and Forest Service should immediately initiate the process for plan amendments under their respective planning regulations.

Part and parcel of the need for plan amendments is a companion need for the BLM to prepare a supplemental DEIS analyzing the impacts of the Converse County project based on the issues raised in these and numerous other comments. The BLM should initiate the supplemental DEIS for this project and provide additional opportunities for public comment before approving the project. Such an analysis is needed to provide the “hard look” at environmental impacts that NEPA requires, and to ensure the need for a reasonable range of alternatives is considered.

## **Specific comments**

### **Chapter 2.0 Proposed Action and Alternatives**

#### **2.2 Common to All Alternatives**

The DEIS should clarify that full compliance with the 2015 BLM and Forest Service conservation plans for Greater sage-grouse is required in all respects. Although the DEIS states that new development must comply with the Required Design Features (RDF) included in the 2015 Approved Resource Plan Amendments for Greater sage-grouse (ARMPA), this is only partially correct. In addition to implementing the RDFs, the BLM and Forest Service must also comply with all required conservation measures outlined in the ARMPA/Record of Decision, including density and disturbance limits and applicable controlled surface use and timing stipulations. In addition, the DEIS should note that the Wyoming Governor’s Sage-Grouse

Executive Order (SGEO) applies to all federal and state permitted activities on all lands regardless of ownership.

### **2.2.2.1 Well Pad Layout and Construction**

The DEIS correctly points out the Casper RMP limits total surface disturbance to 80 acres per square mile. The DEIS should include more information, analysis and figures displaying general well field layout that clearly demonstrates how the surface disturbance limit will be achieved. This should be displayed at multiple scales, perhaps by sub-watersheds, and by section, township, and project-wide. Has the limit been exceeded with respect to existing oil and gas development in the CCPA? Without proper analysis and planning, disturbance caused by the construction of well pads, production pads, pipeline ROW, access roads, and other facilities described in the Proposed Action could exceed the 80-acre limit. The DEIS states that “construction of individual pads would be requested through subsequent APDs and analyzed in site-specific NEPA.” As discussed elsewhere in these comments, site-specific NEPA analysis rarely occurs, and even if it does, NEPA documents are prepared for individual APDs, road and pipeline ROW, etc., and not necessarily on a scale that would be useful for ensuring compliance with the surface disturbance limits. We emphasize that BLM is required to abide by the provisions in an RMP. See 43 U.S.C. § 1732(a) (stating BLM must manage the public lands “in accordance with the land use plans”).

### **2.2.2.2 Well Drilling**

Protection of useable groundwater. The DEIS states that the “casing and cementing program would be designed to isolate and protect shallower formations encountered during drilling ...” We have two concerns: First, the DEIS should state the applicable legal requirement imposed by Onshore Order No. 2, which is to construct wells to isolate and protect aquifers containing “usable water,” defined as having up to 10,000 ppm total dissolved solids (TDS). 53 Fed. Reg. 46,798, 46,801, 46,805 (Nov.18, 1988). Second, the proposed action should be revised to reflect this legal requirement. Merely stating that shallower formations or “freshwater” formations will be protected does not comply with the onshore order.

## **2.4 Alternative B – Proposed Action Alternative**

### **2.4.1 Development Overview**

Year-round drilling. The DEIS states that “[t]o the extent possible, drilling and development operations within the CCPA would be conducted on a year-round basis to maximize the use of horizontal development from multi-well pads.” To accomplish this, the DEIS notes that “the operators would request exceptions to timing limitations for raptor nests and greater sage-grouse leks in non-core areas...” These requests “would require an environmental assessment to be completed that would allow the BLM to analyze the effects of development on wildlife within the site-specific project area.” As discussed elsewhere, due to the increased potential for significant environmental effects, we do not support the grant of exceptions or waivers of stipulations. However, if the BLM considers such requests, the site-specific EAs must address the environmental impacts at the proper scales (including the consideration of cumulative impacts) and provide meaningful opportunities for public review and comment.

### **2.4.3.2 Well Drilling**

Drilling fluids. The DEIS states that “Drilling fluids containing oil-based muds would not be used in formations that contain water with total dissolved solids of 10,000 or less.” Since all of the water bearing formations above the oil and gas target formation (Dakota Sandstone) contain “useable water” (less than 10,000 mg/L TDS), the DEIS should state that drilling fluids containing oil-based muds shall not be used in the Quaternary/Alluvial, Lower Tertiary Wasatch/Fort Union, and Fox Hills/Hell Creek aquifer systems because these formations contain less than 10,000 mg/L TDS. See DEIS at 3.16-9 to 3.16-12.

Closed loop systems. The DEIS states that “in general, semi-closed loop systems would be used.” Note, however, that Required Design Features specified in the BLM’s 2015 ARMPA for greater sage-grouse state that “Use only closed-loop systems for drilling operations, with no reserve pits.” DEIS at Table 2.2-1. The DEIS should clarify that only closed-loop systems will be used in Priority Habitat Management Areas (PHMA) for greater sage-grouse.

Reserve pits. The DEIS indicates that although reserve pits are “not specifically proposed or anticipated, reserve pits could be constructed, as appropriate based on site-specific conditions. “It is not reasonably foreseeable at this time to predict when or under what conditions reserve pits would be necessary; therefore, additional NEPA analysis may be required at the site-specific stage if reserve pits are to be constructed.” We have two concerns regarding this statement. First, we question why it is not “reasonably foreseeable at this time to predict” whether reserve pits will be constructed. According to the DEIS, the Wyoming BLM has prepared six environmental assessments (EA) for 914 wells on 205 well pads in the CCPA. DEIS at 2-18. The DEIS further reveals that as of January 9, 2015, “1,520 existing wells ... have been drilled and are in operation.” DEIS at 2-15. The BLM should review its files for information that will undoubtedly shed light on “when or under what conditions reserve pits would be necessary.” How many of the existing wells in the CCPA utilized reserve pits? Under what conditions were the pits deemed necessary? We suspect the answers can be found there.

Second, although the DEIS claims that additional NEPA analysis may be required at the site-specific stage if reserve pits are to be constructed,” the reality is that the BLM will categorically exclude most APDs from further NEPA review under Section 390 of the Energy Policy Act. The DEIS should acknowledge this important fact and not mislead the public into believing that additional site-specific NEPA analysis may take place—in the vast majority of cases, it probably will not. The DEIS should specify the conditions under which a Section 390 categorical exclusion will be used, and when additional NEPA analysis will be prepared. Because additional site-specific NEPA analysis will likely not be done for wells approved in the CCPA, we recommend that the DEIS be revised to provide the appropriate level of site-specific analysis.

### **3.11.11 Social Conditions and Trends**

The DEIS identifies conditions that will inevitably create significant and widespread conflict between various community sectors (e.g., private landowners, residents, recreational users,

etc.) and oil and gas interests, yet offers only a single mitigation measure, SOC-1, with a narrow and limited focus: responding to the needs of local governments for information required to plan for infrastructure and services. To address the broader range of anticipated conflicts, we recommend that the BLM, oil and gas operators, and local government design and offer to the community a formal structure and process for dispute resolution. Affected landowners, in particular, should have an ability to bring concerns forward with assurances that good faith efforts will be made to address them. Similarly, NGOs that focus on human health and environmental concerns should be invited to participate in periodic discussions and processes to ensure that public health and safety requirements and conservation measures set forth in the Record of Decision are met.

Additionally, a significant concern of landowners related to real estate values appears not to be addressed in the DEIS. Real estate property values in other parts of the state that have experienced intensive oil and gas development have fallen, in some cases significantly (e.g., Pavillion) yet the DEIS fails to identify or address this concern. Intensive development creates a spider web of roads, pipelines, overhead power lines and all manner of oil and gas infrastructure, resulting in significant, long-term impacts to ranch operations including maintaining productive hay fields and pasture lands. The loss of healthy and productive rangeland is clearly an adverse residual impact (DEIS 4.11.22) as well as an irretrievable commitment of resources. See DEIS at 4.11.5.

Approximately eighty-seven percent of the lands in the CCPA are privately owned and are not public lands owned by the BLM. Many of these lands are farm and ranch land. This emphasizes the need to provide greater mitigations for impacts and conflicts with local communities and landowners.

The BLM estimates that approximately 5.9 trillion cubic feet of natural gas can be recovered (Table 2.7-2) from the Converse County EIS project area. We understand that not all of the wells analyzed will be under BLM jurisdiction. However, the Converse County EIS analyzes all of the impacted resources affected within the entire project area. We believe that this EIS should also disclose the economic revenue lost through venting, flaring and leaks as part of the socio-economic analysis.

The Wyoming Oil and Gas Conservation Commission has detailed data to determine the expected estimated loss due to venting and flaring and the reasons why the gas was vented or flared. Most of the vented and flared gas that the WOGCC approved was released due to safety issues, but there were situations where the gas was vented and/or flared because there was no mechanism to take it to market. Both the safety releases and lack of market losses should be disclosed.

There will likely be substantial amounts of gas vented and flared from oil wells during the early portion of their production. We don't have the data to address this loss, however the WOGCC should be able to provide estimates. Again, the vented and flared volumes for oil wells, should be differentiated by safety needs and lack of production collection system.



The BLM has recently rescinded its methane rule which would have required Leak Detection and Repair as part of the development process. Leak Detection and Repair is an important practice to identify and repair leaks where there is loss of product. Leaks account for an estimated 1%-2% loss of product via leaks – this is a significant effect in terms lost revenue to the affected counties and the State of Wyoming.

Below is an estimate of lost revenue for the 5.9 trillion cubic feet of recoverable natural gas prorated from 2015 production and leaked gas volumes. The Converse County EIS mineral ownership percentages were used to separate royalties and taxes. The table reflects the anticipated loss of revenue for lost gas associated with the natural gas wells.

**Total Revenue Estimated To Be Lost Over A 30 Year Period From Not Implementing An LDAR Program On New Facilities.**

<b>Range of Volume Leaked (mcf)</b>	<b>Price per mcf</b>	<b>Total Value of Lost Gas</b>	<b>Total Royalty and Tax Loss</b>	<b>Total Lost to Affected Counties</b>
1%	\$2.98	\$175,820,000	\$37,000,000	\$12,000,000
2%	\$4.00	\$,472,000,000	\$107,000,000	\$32,000,000

**Air Quality (DEIS sections 3.1 and 4.1)**

The BLM's Proposed Action (Alternative B) for the Converse County Oil and Gas Project presents a number of grave air quality concerns which, because of the project's scale and the inadequacy of proposed monitoring and mitigation measures, pose significant risks to Wyoming's environment, human health, and residents' and visitors' quality of life. Among these concerns are BLM's failure to ensure compliance with the Clean Air Act and state air quality standards, the troubling lack of risk analysis and mitigation for Volatile Organic Compounds, inadequate assessment of concerns related to flaring, setbacks, and bonding, a cursory environmental review of greenhouse gas emissions and their contribution to climate change, and an anemic discussion of monitoring which, according to government documents, press releases, and the scoping comments of several residents, is inadequate for existing oil and gas wells. NEPA requires a hard look at these issues, and disclosure of risks in plain English so that the average reader can understand the potential effects on public and environmental health. The Converse County Project's DEIS does not rise to NEPA's mandate relative to air quality issues.

The Outdoor Council and its partners suggest deeper analysis of each of these issues and implementation of appropriate control technologies and mitigation measures to address environmental and health concerns. More broadly, BLM should consider developing one or more Master Development Plans ("MDP") for the CCPA. MDPs are useful tools for large scale oil and gas projects, particularly long-term projects with many wells and multiple operators such as the Converse County Oil and Gas Project. MDPs facilitate a more comprehensive

analysis of environmental impacts and assessment of best management practices (BMPs). This project level analysis can reduce environmental impacts, ease the regulatory burden on industry, and save time and money. If BLM elects to develop an MDP, the plan should include a detailed review of available data, comply with RMPs, incorporate BMPs, clarify how operator/BLM communications will proceed, and provide for public process.

**A. BLM Must Reduce Air Pollution from the Converse County Oil and Gas Project and Ensure Compliance with the Clean Air Act and Wyoming Ambient Air Quality Standards.**

The BLM must reduce air pollution from the Converse County Oil and Gas Project to comply with the Clean Air Act's ("CAA") National Ambient Air Quality Standards ("NAAQS"), and the state's Wyoming Ambient Air Quality Standards ("WAAQS"). The BLM has entered into a memorandum of understanding ("MOU") with the Forest Service ("USFS") and the Environmental Protection Agency ("EPA") to guide the agencies' environmental analysis of air quality impacts, and must carefully ensure compliance with that MOU. Per the MOU's provisions, BLM must "provide for compliance with applicable state and Federal pollution control laws," and as the Lead Agency must conduct thorough modeling of impacts to air quality, identify reasonable mitigation and control measures to address adverse impacts including cumulative impacts, and consider monitoring and enforcement programs to verify those measures are working as intended.

The BLM has yet to comply with this mandate. Particularly, the agency must do more to ensure compliance with NAAQS and WAAQS for ozone. EPA reduced the NAAQS for ozone from 0.075 ppm to 0.07 ppm on October 1, 2015 citing "extensive scientific evidence regarding ozone effects on public health and welfare." The Wyoming Ambient Air Quality Standards ("WAAQS") also apply a 0.07 ppm threshold for ozone. As BLM notes in the Converse County DEIS, the statutory deadline for EPA's final area designations is October 1, 2018, and the new, lower standard could change the attainment designation of some Air Quality Control Regions ("AQCRs") within the project area. Nonetheless, BLM claims that "as of fall 2016, the areas potentially impacted by the Project currently are in attainment for all criteria pollutants; therefore, Nonattainment New Source Review ["NSR"] does not apply."

BLM's assessment is shortsighted. By the agency's own analysis of monitoring data obtained from the USEPA Air Quality System for six WDEQ monitoring stations, portions of the CCPA will exceed ozone thresholds and be in non-compliance with both NAAQS and WAAQS upon the October 1, 2018 deadline—little more than a year from now. BLM suggests USEPA's attainment designation will be based on "future air quality data," and implies ozone levels for 2014, 2015, and 2016 will be lower than the new threshold, but fails to support this contention with data.

Failure to comply with the NAAQS for ozone poses significant risks to public health and environmental quality, and imposes regulatory costs on industry. According to the EPA, "Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and airway inflammation. It also can reduce lung function and harm lung

tissue. Ozone can worsen bronchitis, emphysema, and asthma, leading to increased medical care." These risks are greatest for children and the elderly. Ozone also harms sensitive vegetation and ecosystems, reducing plants' ability to photosynthesize, and increasing risk of disease, damage from insects, effects of other pollutants, and harm from severe weather. Damage to plants can devastate an ecosystem, resulting in loss of biodiversity, loss of habitat quality, and changes to water and nutrient cycles. These are unacceptable risks to the environment, public health, and Wyoming residents' and visitors' quality of life.

For industry, nonattainment of ozone NAAQS triggers Nonattainment NSR, a concern BLM has discounted in the DEIS. Nonattainment NSR applies to new major sources or major modifications to existing sources when the AQCR in which the source is located is not in attainment for a particular criteria pollutant. If EPA's October 1, 2018 designation finds AQCRs within the Project area are in nonattainment for ozone NAAQS, major sources and modifications within the county will require (1) installation of lowest achievable emission rate ("LAER") technology, (2) emissions offsets, and (3) public participation in NSR permitting. Existing sources will require Reasonably Available Control Technology ("RACT") rather than the less onerous Prevention of Significant Deterioration ("PSD") standard that would apply in attainment areas. These requirements are stringent and costly, and should not be lightly ignored.

The BLM's assumption of continued ozone attainment designation throughout the CCPA is even more troubling given the lack of analysis of volatile organic compounds ("VOC") in the Project Area. Tropospheric, or ground level ozone, is a threat to human and environmental health, as opposed to stratospheric, or "good ozone," which shields the planet from the sun's ultraviolet rays. Tropospheric ozone is formed when Nitrogen oxides (NOx) interact with VOC. While BLM does well to consider Nitrogen dioxide (NO2) in its analysis of criteria pollutants, the DEIS does not address concentrations of nitric oxide, which combines with oxygen to form NO2, nor does it address VOC. Road transport and energy production are major sources of nitric oxide, and the risks associated with nitric oxide and its contribution to ozone must be evaluated. Risks from VOC are even more concerning, because of their insidious and devastating effects on human health.

Recently developed oil and gas projects give insight into the potential harms from inadequately mitigated emissions. A 2010 technical report from the Air Quality Division of the Wyoming Department of Environmental Quality ("WDEQ") attributed unprecedentedly high ozone levels in the Upper Green River Basin to local oil and gas operations. WDEQ acknowledged in a 2017 statement on ozone levels in the Upper Green River Basin that "While we have significantly reduced Nitrogen Oxide (NOx) and Volatile Organic Compound (VOC) emissions from a variety of sources, it is clear that we have to do more to achieve our ultimate goal."

To fulfill its mandate under NEPA and the aforementioned MOU, BLM should fully consider air quality impacts and conduct careful, quantitative modeling thereof. The anticipated scale of the project, 5,000 new wells, is vast. This degree of development constitutes a significant new

source of potentially damaging emissions, in the portion of Wyoming with the state's least stringent air quality rules. Accordingly, BLM must accurately forecast emissions from leaks, venting and flaring of natural gas from wells and equipment used to produce, process, store, or transport oil or gas, wastewater disposal, and operational truck traffic, and fully evaluate effective mitigation and reductions measures in a supplemental DEIS. BLM should also consider emissions from sources on new and existing leases and rights-of-ways used and permitted to facilitate infill under FLPMA and MLA authority. The NEPA analysis should consider and install as required lease stipulations, COAs, or BMP measures that will mitigate emissions from oil and gas development. "Green Completion" should be required for all wells. Green Completion is both technologically feasible and cost effective as evidenced by other Wyoming oil and gas projects. WDEQ's Air Quality Division describes Green Completion as the appropriate BMP for reducing emissions of regulated pollutants to the extent practicable and provides a sample permit application form on its website outlining appropriate compliance technologies and procedures. Finally, the risk of well blowouts must be acknowledged, considered in assessment of cumulative impacts, and mitigated. Well blowouts occur regularly, venting large quantities of gas, and have caused evacuations of residents in the state.

**B. BLM Must Mitigate the Release of Volatile Organic Compounds to Reduce Risks to the Environment and Public Health**

While VOC are concerning as constituent components of ozone, they are also a threat to public health in their own right. VOC are "any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions, except those designated by EPA as having negligible photochemical reactivity." The most volatile VOC are found almost entirely as gases in the air, while less volatile VOC are found in solids, liquids, or on surfaces. Technological advances like directional drilling and hydraulic fracturing have led to increased unconventional natural gas development, prompting concerns from the public about health risks from VOC emission. Over a decade ago, EPA acknowledged that "a surprising quantity of hitherto unsuspected quantities of volatile organic chemicals (VOCs) are lost (emitted) nationally by the processing, distribution, and consumption of petroleum and petroleum byproducts." VOC concentrations already exceeded health-based risk levels in over two dozen samples collected in Wyoming in 2014. Residents who live near the proposed CCPA have voiced concerns about increased cancer risks associated with VOCs.

VOC associated with natural gas development, like benzene, toluene, xylene, styrene, and tri-ethyl benzene are regularly vented from relief valves along with methane, and can cause, among other signs and symptoms, nosebleeds, headaches, loss of coordination, nausea, asthma attacks, dizziness, damage to the liver, kidneys, and central nervous system, and cancer. Research has linked oil and gas development to reproductive health risks including infertility, miscarriage, impaired fetal growth, and low birth weight.

Some VOC emitted from oil and gas projects are listed among the 187 hazardous air pollutants ("HAPs") identified by the EPA and regulated under the CAA. The Converse County DEIS acknowledges that "HAPs can cause serious health effects or adverse environmental or ecological effects," and that "these HAPs are associated with anthropogenic (human caused) emissions sources," but continues to say "concentrations of HAPs are not measured in the region and there is no data available to assess the current concentrations or trends." This lack of data, coupled with the serious risk posed to the environment and public health, is unacceptable. Concentrations of HAPs must be monitored, and industry must apply Maximum Achievable Control Technology for each pollutant. BLM must evaluate the cumulative impact of HAPs and VOC emissions to ensure development can comply with the Act.

To address these concerns, BLM should implement robust monitoring at both on and off-well sites for VOC, accounting for the risks of accumulation and long-term exposure, and mitigate risks to the environment and human health using best management practices. Leak detection and repair (LDAR) and infrared technology are time tested, cost effective technologies for detecting and measuring VOC emissions and should be required. BLM must monitor and cumulatively consider VOC emissions from venting, flaring, and leaks, and effects of wind, terrain, and the microclimate on VOC emissions.

### **C. BLM Must Ensure Compliance with Wyoming's Flaring, Setbacks, and Bonding Rules**

In February of 2016, the Wyoming Oil and Gas Conservation Commission ("WOGCC") voted unanimously to impose new rules reducing flaring and venting in the state, requiring operators to disclose what is being admitted or flared, and requiring data collection on methane emissions from oil wells. The new rules also lower the daily venting limit from 60,000 cubic feet of gas to 20,000 cubic feet.

Under the new rules, venting and flaring is considered waste unless it is authorized by the Commission. This authorization is limited to "Emergencies or upset conditions, and for safety purposes during necessary maintenance or upgrades" and to a limited number of enumerated "temporary emergency situations." BLM must ensure development proceeds in accordance with these rules. In the Converse County DEIS, BLM considered an alternative titled "Flareless drilling, Completion, and Production," but excluded the alternative from detailed analysis on the grounds that it was "not technically feasible" and was inconsistent with policy objectives because the WOGCC rules permit flaring. While it is true that WOGCC rules permit flaring in some limited circumstances for safety reasons, those rules generally restrict flaring, and should not be used to dismiss proposals to reduce flaring by implementing appropriate control technologies. BLM claims installation of gas gathering pipelines to all wells prior to completion, which would eliminate flaring during operations "may not be feasible" but fails to conduct any analysis of feasibility. BLM must do more to evaluate risks from flaring and to assess the feasibility of control technologies. WOGCC rules restricting flaring to emergency situations do not suggest that BLM may abdicate its duty to evaluate those technologies.

Additionally, the new WOGCC rules impose new setback requirements for wells and facilities, which must be at least five hundred feet from existing occupied structures, and bonding requirements of \$50,000, to be approved by the WOGCC, and in compliance with the Wyoming Conservation Act. BLM must ensure development proceeds in compliance with these new rules. BLM's consideration is particularly important given public concerns about setback distances, bonding, and flaring. Historically, citizens have demonstrated concern about the proximity of oil and gas development to their homes, the volume of gas flared from wells, and bonds that were insufficient to properly plug and abandon wells. These concerns are particularly poignant given the scale of the Converse County Oil and Gas Project.

**D. BLM Must Adequately Address Climate Change and Mitigate Greenhouse Gas Emission**

BLM acknowledges that greenhouse gases ("GHGs") "play an important role in determining the earth's climate," that fossil fuel development and activities using combustion engines contribute to climate change, and that these activities will occur as part of the Converse County Oil and Gas Project. The DEIS notes that studies suggest significant adverse impacts to Wyoming resulting from climate change, including "at least a 5 degree Fahrenheit to 6 degree Fahrenheit temperature increase over the next century, and an increase in the maximum number of dry days and extreme events, such as exacerbated flooding and extended droughts." These climate changes mean that "ozone concentrations are likely to increase in the region," and "precipitation patterns also are expected to change."

Due to these foreseeable risks, and pursuant to Council on Environmental Quality ("CEQ") guidance and Executive Order 13514, the EPA recommended in its scoping comments that BLM include in its EIS an analysis of GHG emissions in CO<sub>2</sub> equivalent terms and translated into equivalencies to facilitate public understanding, an assessment of measures to reduce GHG emissions, a description of existing state, regional, and tribal climate change plans or goals, and an evaluation of potential impacts from emissions.

BLM's assessment of climate change and its impacts in the DEIS emphasized uncertainty, saying "it is difficult to assess whether additional mitigation strategies would be implemented, and to what extent current mitigation strategies ultimately would curb climate change." While the CEQ's "Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews" was withdrawn in 2017, the longstanding NEPA principles undergirding that document remain, and mandate that agencies thoroughly consider the potential effects of federal actions on climate change, and the effects of climate change on proposed actions. To that end, the BLM should quantify proposed direct and indirect GHG emissions, use those projected emissions to assess potential climate change effects, analyze methods to reduce emissions and impacts, and thoroughly consider alternatives that would reduce GHG emissions.

BLM eliminated a proposed alternative from detailed analysis entitled "Greenhouse Gas Reduction Alternative," which proposed carbon neutral processes, on the grounds that the proposed alternative was not technically feasible. While a completely carbon neutral project may be infeasible, BLM should thoroughly evaluate the feasibility of the alternative's proposed control technologies and measures, and implement those that are feasible. For instance, many common-sense and cost-effective technologies are available to reduce methane emissions across the oil and gas supply chain, and many of these technologies would actually save the industry money over time. A 2014 report that the Environmental Defense Fund commissioned from the independent consulting firm ICF International shows that approximately 40 percent of methane emissions from the nation's oil and gas sector could have been eliminated by 2018 at a total cost of just one penny per thousand cubic feet of produced gas. Nearly all of the measures identified in the ICF Report could be feasibly applied to thousands of well sites, gathering and processing facilities, and transmission compressor stations on Federal leases and rights-of-way under BLM's jurisdiction in the CCPA. The dramatic pollution reduction potential of these controls, and their extreme cost-effectiveness, should be considered as BLM continues its environmental analysis.

**E. BLM Must Ensure Adequate Inspection of Oil and Gas Wells**

BLM must respond to public concern regarding inadequate inspection of oil and gas wells, and ensure the 5,000 wells that the agency intends to permit through the Converse County Oil and Gas Project are appropriately inspected. The Government Accountability Office has prepared a report that documents that 57 percent of "high priority" wells needing inspections at drilling sites were not inspected during this stage of development. Between 2009 and 2012, 3,486 wells were drilled on Federal and Indian lands, but many wells at high risk for pollution were not inspected. Forty-five percent of new, high priority wells were not inspected in Wyoming during that time period. As of 2014, Wyoming led the nation in percentage of uninspected wells. It is critical that inspections occur during well drilling, not subsequently, if potential environmental and safety problems are to be detected. Once wells are drilled, retroactive inspection is difficult or impossible.

The BLM must ensure that similar problems are not repeated as the 5,000 wells anticipated to be drilled in Converse County are developed. The agency has identified inadequate staffing and budgetary constraints as hurdles to proper inspection. BLM must ensure that adequate personnel are in place to inspect all wells during drilling. If adequate staffing is not available to do timely inspections, BLM must adjust the pace of development in the CCPA accordingly. BLM must comply with its regulatory mandate, and may not use a lack of resources to justify abdicating its regulatory responsibilities.

**F. BLM Must Provide for Dust Abatement and Mitigate Road Impacts on Air Quality**

Dust generated from truck traffic, the construction of facilities, drilling wells and other operations poses a significant risk to the health of humans, stock, and crops. Dust from intensive development also present visibility issues, increasing risk of traffic accidents. In

scoping comments, the EPA, Converse County, and numerous local residents expressed concerns about fugitive dusts. BLM must appropriately mitigate these risks through dust abatement. In following the mitigation hierarchy, BLM should first avoid impacts where possible by concentrating development, limiting the number of well pads, and reducing truck traffic where possible. BLM should then mitigate the remaining effects through watering, erosion control, planting of appropriate ground cover, revegetation of disturbed areas, and other appropriate management practices. Borrow or fill sites within the project shall be graded to an un-compacted finished condition, with natural transitions to surrounding existing grades, prior to re-vegetation.

#### **G. Miscellaneous air quality comments**

The DEIS (4.1) presents highly technical information that is of little use to the average lay person, including people who reside inside or near the project area. Scoping comments submitted by local residents complained of dust, atmospheric haze, smoke plumes, toxic chemicals, odors, noise and night lights. The technical discussion accompanied by various figures, tables, and graphs do not clearly convey to the average reader an accurate picture of air quality impacts from this project. The DEIS should be revised to include a plain-English discussion of the anticipated impacts to local residents caused by the development of 5,000 new wells. We know from experience in other areas of the state (e.g., Pinedale) that air quality in the area will suffer as a result of this project. For example, local residents should understand that dust control measures proposed in the DEIS will not be completely effective and that dust will be a major and continuous nuisance for the life of the project. Indeed, the bracing clean air and near unlimited visibility that residents have enjoyed for decades will be a thing of the past. In its place will be a perceptible decline in overall air quality, with episodes of intense pollution caused by well completion activities, blowouts, malfunctions, etc. The smells of toxic chemicals will be evident to residents from time to time.

We are most concerned by the near absence in the DEIS of an analysis of mitigation measures to reduce air quality impacts. A *single* mitigation measure is proposed in the DEIS: “AQ-1 If located on BLM surface, gas plants and compressor stations will be located at least 2,000 meters from residences or other occupied dwellings.” DEIS 4.1.3.7. Chapter 6 of the DEIS describes a “mitigation strategy” that includes three “OG-Committed Design Features” – 1) dust control measures, 2) speed limits, and 3) Tier 2 drill rigs (excludes all other rig types). This is an insufficient range of mitigation measures.

Most glaring is the DEIS’ failure to consider mitigation measures recommended in the Casper RMP, Appendix L - Air Quality Mitigation Matrix. Appendix L “outlines options for air quality mitigation in the planning area” and includes such measures as:

#### **Nitrogen Oxide (NOX) and Carbon Monoxide (CO) Mitigation Measures**

- Utilize selective catalytic reduction (SCR) on drill rig engines and compressors.
- Application of nonselective catalytic reduction on drill rig engines and compressors
- Utilize compressors driven by electrical motors.



- Increased diameter of sales pipelines
- Centralization of dehydrator units
- Reduce number of vehicle miles driven and unnecessary idling.
- Utilize wind-generated electricity to power compressors.
- Increased emissions monitoring
- Increased ambient pollutant monitoring
- Reduced rate of development

**Particulate Matter (PM) Mitigation Measures**

- Increase water application rate to achieve greater than 50% fugitive dust control.
- Unpaved road dust suppressant treatments
- Administrative control of speed limits
- Installation of remote telemetry
- Gravel roads
- Paved roads

**Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants Mitigation Measures**

- Flareless (“green”) completion
- Condensate tank vents, carbon canisters or other VOC capture to the vent discharge

See Casper RMP Table L-1. Potential Mitigation Measures for Air Quality Impacts Associated with the Proposed Casper Resource Management Plan

Notwithstanding a clear responsibility under the Casper RMP to evaluate reasonable mitigation measures, the DEIS ignores this mitigation matrix altogether, and discusses/adopts one or possibly two the potential mitigation measures listed above. This laissez-faire approach to the protection of air quality is unacceptable.

The DEIS also fails to consider/implement the specific management decisions contained in the Casper RMP for air resources, several of which are directly applicable to monitoring and reducing emissions from oil and gas development project. See Table 1-1. Goals, Objectives, and Decisions/Management Actions at pages 2-10, 2-11, Decision numbers 1001 to 1015. The DEIS should explain the status of efforts to accomplish each of the specific air quality decisions noted in the RMP. We recommend that the DEIS be revised to address a full range of air quality mitigation measures outlined in the Casper RMP. The discussion should include an analysis of leak detection and repair (LDAR); installation of additional air quality monitoring stations; adoption of air quality controls measures currently in use in the Jonah and Pinedale Anticline fields; and use of Tier 4 drilling rigs.

**Water Resources (DEIS sections 3.16 and 4.16)**

We have several concerns about potential impacts to ground and surface water resources. These concerns relate primarily to the failure to achieve Casper RMP management objectives, failure to adequately disclose adverse effects, and failure to properly mitigate adverse effects.

### **Impacts to Groundwater.**

Under the heading, *Contamination of Usable Waters from Hydraulic Fracturing*, the DEIS states:

“Under Alternative B, no impacts to usable waters from hydraulic fracturing would be expected. As discussed under Alternative A, due to the physical constraints on fracture growth and regulatory requirements, there would be an extremely low risk of impacts to usable waters and the risk would not change because of the increased number of wells that would be drilled.” DEIS at 4.16-15.

For the reasons set forth below, the conclusion that hydraulic fracturing would have no impact on “useable waters” is not supportable. The DEIS indicates that “there are five major aquifer systems in the CCPA, with the shallowest systems utilized the most. The DEIS notes that with some exceptions, the water quality in these uppermost aquifers generally range from fresh to slightly saline, or less than 1,000 up to 3,000 milligrams per liter (mg/L) total dissolved 4 solids (TDS).” DEIS 3.16-9. The aquifers in this basin generally are found with the youngest being the shallowest and the oldest the deepest. They include:

- Quaternary/Alluvial
- Lower Tertiary Wasatch/Fort Union
- Fox Hills/Hell Creek
- Dakota Aquifer
- Madison Aquifer

The DEIS contains a summary of the characteristics of each of these aquifers. Relevant excerpts from that discussion are provided below.

The Quaternary/Alluvial aquifer system is found adjacent to stream channels and primarily is composed of a clay - rich mixture of sandy silt and gravel. It generally is less than 50 feet thick but can be thicker locally. When composed of a higher percentage of gravel and coarse sand, the aquifer may have very high permeability and storage capacity. Wells completed in this aquifer commonly yield up to 75 to 450 gallons per minute (gpm), but alluvial aquifers may be limited in aerial extent. These aquifers often are in hydrologic communication with underlying Tertiary aquifers or surface water. TDS concentrations in the Quaternary/Alluvial aquifers in the northeast Wyoming water basins (including drainages in Converse County not part of the Platte River drainage) ranged from 100 to 4,000 mg/L. The quality of water in these aquifers is highly variable due to the underlying rock type and the quality of surface water.

Most wells in the CCPA draw from the Lower Tertiary aquifer system. Well depths typically are less than 1,000 feet, although the WSEO records indicate a few deeper wells (WSEO 2014). Well yields in the Lower Tertiary aquifers are variable and range from 15 gpm to more than 500 gpm. The aquifer system also contains uranium and coal deposits along with minor amounts of oil and gas. Water quality generally is good in the aquifer, as evidenced by the heavy use of this zone as a domestic and municipal

water source. The dominant TDS component is sodium sulfate or sodium bicarbonate, and TDS concentrations range from 228 to 3,200 mg/L. **Based on these data, aquifers of the Lower Tertiary generally would contain usable water or potential underground source of drinking water (USDW) (i.e., waters with TDS less than 10,000 mg/L).** An aquifer that is considered a USDW must be protected unless it has been granted an exemption under the Safe Drinking Water Act. DEIS at 3.16-11 (internal citations omitted).

The Fox Hills/Lower Hell Creek aquifer system underlies the Lower Tertiary aquifer system and consists of a series of fine - to coarse - grained sandstones up to 3,700 feet thick. The Fox Hills/Lower Hell Creek aquifer generally lies at depths greater than 6,000 feet and, given this depth, is not commonly used as a water supply aquifer in the Powder River Basin. Where the Fox Hills/Lower Hell Creek aquifer system is deeply buried, generally only wells that were drilled for oil and gas are completed in the aquifer. Water yields can be high, reportedly up to 705 gpm.

TDS in the Fox Hills/Lower Hell Creek aquifer commonly is 3,000 mg/L or less over widespread areas of northeast Wyoming, eastern Montana, North Dakota, and South Dakota. In the northeast Powder River Basin of Wyoming that includes portions of the CCPA, TDS concentrations in the Fox Hills/Lance aquifer ranges from 600 to 3,300 mg/L in shallow areas near the outcrop. Elevated levels of fluoride and localized high concentrations of sodium and radionuclides also have been detected.

In portions of the CCPA in the southern Powder River Basin in areas that drain to the North Platte River, samples from the Lance aquifer had TDS concentrations ranging from 264 to 1,950 mg/L, and six samples from the Fox Hills aquifer had TDS concentrations ranging from 943 to 2,050 mg/L. **Based on these data, the waters of the Fox Hills/Lower Hell Creek aquifer system would be considered potentially usable waters (i.e., waters with TDS less than 10,000 mg/L) and would be protected unless an aquifer exemption has been granted under the Safe Drinking Water Act.**

The Dakota aquifer system is similar in geologic makeup and character to the Fox Hills/Lower Hell Creek aquifer. It is approximately 400 feet thick and not commonly targeted as a source of water because of its depth, low yield, and TDS concentrations greater than 10,000 mg/L. This zone is a potential oil and gas reservoir, and water quality may be affected by the presence of naturally occurring petroleum compounds.

The Madison aquifer system is the deepest aquifer system in the CCPA and is composed of Paleozoic rocks ranging from the Cambrian Flathead aquifer to the Pennsylvanian - Permian Tensleep aquifer... The Madison Limestone is an important aquifer of the Madison aquifer system, but in the CCPA it is thousands of feet below the base of the Fox Hills/Hell Creek aquifer, the deepest practical aquifer in the CCPA... The proposed target zones for oil and gas production are all stratigraphically above the Madison, and wells drilled to these zones would not penetrate the Madison. The deepest proposed oil and gas objective (i.e., the Dakota Sandstone) is more than 2,500 feet above the Madison aquifer.

DEIS at 3.16-10-12 (internal citations omitted) (emphasis added).

To provide protection for aquifers in the CCPA containing useable water, wells would have to be cased and cemented through the full extent of Fox Hills/ Hell Creek aquifer to its intersection with the Dakota aquifer. Although Figure 4.16-1, *Typical Well Construction*, appears to show both production casing and cement extending the full depth of the well, this does not reflect reality.

Since 1988, BLM's Onshore Order No. 2 has required operators to construct wells to isolate and protect aquifers containing "usable water," defined as having up to 10,000 ppm total dissolved solids (TDS). 53 Fed. Reg. 46,798, 46,801, 46,805 (Nov. 18, 1988). BLM adopted the 10,000 ppm standard because it matched the definition of "underground source of drinking water" used by the Environmental Protection Agency (EPA) in administering the Safe Drinking Water Act (SDWA). *See id.* at 46,798 (citing 40 C.F.R. § 144.3).

When BLM issued its 2015 hydraulic fracturing rule, it made a housekeeping change amending the applicable provision in the Code of Federal Regulations to conform with the Onshore Order No. 2 usable water requirement. 80 Fed. Reg. 16,128, 16,141–42 (Mar. 26, 2015). But in opposing the hydraulic fracturing rule, several industry trade associations and states informed the court that there has been widespread non-compliance with the 10,000 ppm standard, despite the fact that Onshore Order No. 2 is a legally-binding regulation promulgated by notice-and-comment rulemaking. *See* 53 Fed. Reg. at 46,798; 43 C.F.R. § 3164.1(b). Based in part on concern that the hydraulic fracturing rule would require companies to change their practices, the U.S. District Court for Wyoming enjoined the rule in 2015. Order on Motions for Preliminary Injunction at 30-33, 53-54, ECF No. 130, *Wyoming v. Jewell*, 2:15-cv-00043-SWS (D. Wyo. Sept. 30, 2015) (*Wyoming v. Jewell*).

Since then, industry trade associations have continued to highlight that there is a widespread industry practice of failing to protect underground sources of drinking water. For example, in their September 25, 2017 comments supporting BLM's proposed rescission of the hydraulic fracturing rule, Western Energy Alliance and the Independent Petroleum Association of America (collectively, WEA), told the agency that the 10,000 ppm standard is inconsistent with "existing practice for locating and protecting usable water." Sept. 25, 2017 WEA comments at 59 (WEA comments), attached.<sup>1</sup> Instead, companies in Wyoming typically set well casing to a depth of only "100 feet below the deepest water well within a one mile radius of [the] oil or gas well"—usually 1,000 feet below ground or less. *Id.* at 84. And in Montana and North Dakota, WEA states that companies only install protective casing for the Pierre Shale formation, regardless of whether underground sources of drinking water may exist below that formation. *Id.*

---

<sup>1</sup> A complete copy of WEA's comments is available at: <https://www.regulations.gov/document?D=BLM-2017-0001-0412>.

WEA has explained that requiring companies to protect all underground sources of drinking water would result in substantial additional costs for “casing and cementing associated with isolating formations that meet the numerical definition of usable water under the [Onshore Order No. 2 standard], but which are located at depths deeper than the zones that state agencies and BLM field offices have previously designated as requiring isolation.” WEA comments at 84. WEA predicted that complying with the 10,000 ppm standard would cost industry nearly \$174 million per year in additional well casing expenses. *Id.* at 84-85.

Industry’s admissions raise a significant environmental concern that BLM must address in a Supplemental DEIS before approving the Converse County ROD. Accepting WEA’s statements as true, BLM and energy companies have been putting numerous underground sources of drinking water at risk. In its 2016 hydraulic fracturing study, the EPA noted that, “the depth of the surface casing relative to the base of the drinking water resource to be protected is an important factor in protecting the drinking water resource.”<sup>2</sup>

While water with salinity approaching 10,000 ppm TDS is considered “brackish,” such aquifers are increasingly being used for drinking water. In fact, EPA adopted the 10,000 ppm standard based on the 1974 legislative history of the SDWA, which explained that Congress intended the SDWA to “protect not only currently-used sources of drinking water, but also potential drinking water sources for the future.” H.R. Rep. No. 93-1185 (1974), 1974 U.S.C.C.A.N. 6454, 6484.

Similarly, BLM explained in 2015 that “[g]iven the increasing water scarcity [in much of the United States] and technological improvements in water treatment equipment, it is not unreasonable to assume [these] aquifers . . . are usable now or will be usable in the future.” 80 Fed. Reg. at 16,142. The agency noted that even “if we’re not using that water today we may be using it ten years [or] a hundred years from now. So we don’t want to contaminate it now so it’s unusable in the future.” *Wyoming v. Jewell* admin. record at DOIAR0009703, attached. Comments from EPA and the Association of Metropolitan Water Agencies (AMWA) supported this conclusion. *Id.* at DOIAR0038117. AMWA reported that brackish groundwater is *already* being used for drinking in some parts of the country. *See id.* at DOIAR0038118 (pumping 8,000 ppm TDS groundwater in Florida); *id.* at DOIAR0068337 (desalination already being used for municipal water treatment in some areas). AMWA explained that because of “challenges resulting from climactic changes, population growth and land development, many utilities are turning to more challenging groundwater sources such as those that are very deep or have high salinity concentrations . . . given the lack of sufficient water elsewhere.” *Id.* at DOIAR0038118. Higher salinity water is also being used today for some industrial purposes. *See, e.g., id.* at DOIAR0075763 (power plant cooling).

---

<sup>2</sup> EPA, [Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States](https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990) at 6-19 (2016) (EPA Study), available at: <https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990>.

Our concerns are underscored by recent research showing that it is very common in this region for hydraulic fracturing and oil and gas production to occur in shallow formations that have only limited vertical separation from underground sources of drinking water. Fracturing and production also sometimes occur *within* an aquifer that represents an underground source of drinking water. For example, EPA's 2016 report found that "hydraulic fracturing within a drinking water resource" is "concentrated in some areas in the western United States" that include "the Wind River Basin near Pavillion, Wyoming, and the Powder River Basin of Montana and Wyoming."<sup>3</sup> Where that occurs, EPA explained that:

. . . hydraulic fracturing within drinking water resources introduces hydraulic fracturing fluid into formations that may currently serve, or in the future could serve, as a drinking water source for public or private use. This is of concern in the short-term if people are currently using these formations as a drinking water supply. It is also of concern in the long-term, because drought or other conditions may necessitate the future use of these formations for drinking water.

*Id.* Other recent studies have made similar findings. Researchers investigating the oil and gas-related contamination in Pavillion, Wyoming reported that shallow fracturing also occurs in New Mexico, Colorado, Utah and Montana. Gayathri Vaidyanathan, *Fracking Can Contaminate Drinking Water* at 8, *Sci. Am.* (Apr. 4, 2016) (*Sci. Am. Article*), attached. The researchers concluded that "it is unlikely that impact to [underground sources of drinking water] is limited to the Pavillion Field..." Dominic C. DiGiulio & Robert A. Jackson, *Impact to Underground Sources of Drinking Water and Domestic Wells from Production Well Stimulation and Completion Practices in the Pavillion, Wyoming Field*, 50 *Am. Chem. Society, Env'tl. Sci. & Tech.* 4524, 4532 (Mar. 29, 2016), attached to these comments. Another study found that approximately three quarters of all hydraulic fracturing in California occur in shallow wells less than 2,000 feet deep.<sup>4</sup>

WEA's description of widespread non-compliance with Onshore Order No. 2, and the evidence of shallow production and fracturing, raise a significant environmental issue that must be addressed in a Supplemental DEIS. *See Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97 (1983) (an agency must "consider every significant aspect of the environmental impact of a proposed action"); *see also Davis v. Mineta*, 302 F.3d 1104, 1123 (10th Cir. 2002). Moreover, BLM's analysis must "state how alternatives considered in it and decisions based on it will or will not achieve the requirements of [NEPA] and other environmental laws and policies." 40 C.F.R. § 1502.2(d); *League of Wilderness Defenders v. USFS*, 585 Fed. Appx. 613, 614 (9th Cir. 2014); *Montana Wilderness Association v. McAllister*, 658 F. Supp. 2d 1249, 1255-56 (D. Mont. 2009). The Council on Environmental Quality regulations also require a discussion of possible

---

<sup>3</sup> EPA Study at ES-27; *see also id.* at 6-44 to 6-50.

<sup>4</sup> California Council on Science and Technology, [An Independent Scientific Assessment of Well Stimulation in California](http://ccst.us/publications/2015/2015SB4-v2ES.pdf) at Executive Summary 10 (2015), <http://ccst.us/publications/2015/2015SB4-v2ES.pdf>; *see also Sci. Am. Article* at 8 (similar finding about California).

conflicts with the objectives of state, local and federal land use plans, policies and controls for the area concerned. 40 C.F.R. § 1502.16(c).

Ignoring evidence of widespread noncompliance with BLM's standards for protecting underground sources of drinking water would violate NEPA, and failing to protect useable groundwater would violate Onshore Order No. 2 and the FLPMA (by not ensuring compliance with the underlying RMP). To make an informed decision on whether to approve the Converse County Oil and Gas Project Record of Decision (ROD), the BLM needs to know whether doing so will put underground sources of drinking water at risk, and what additional stipulations or other steps are needed to prevent such contamination. The information necessary to make such an assessment is readily available in BLM's own permitting files for existing oil and gas wells, from produced water records on existing wells, and from other sources such as US Geological Survey reports. 80 Fed. Reg. at 16,151–52. Moreover, to the extent any information gaps exist, it is incumbent on BLM to obtain that additional information before approving this project. Additional data on, for example, aquifer quality or well construction practices is "essential to a reasoned choice among alternatives" and can be collected at a cost that is not "exorbitant." See 40 C.F.R. § 1502.22.

#### **Noise Impacts (DEIS sections 3.7 and 4.7)**

The DEIS (at 3.7.2) states that "Ambient noise levels in rural rangeland areas of Wyoming typically are near 24dBA (Ambrose and MacDonald 2015)." This statement is not correct. Ambrose reported much lower ambient noise levels:

Results of these measurements demonstrate that ambient sound levels in sage habitats in rural Wyoming during hours critical to lekking activity of greater sage-grouse are likely between 10- 15 dBA, depending on terrain, vegetation, and meteorological conditions. Ambient sound levels for all hours of the day are likely between 15-20 dBA. While the 1800-0800 hours are important relative to lek activity, all hours of the day are important for female grouse-chick communication, and, overall, may be equally important to greater sage-grouse populations. For this reason, it is important to measure sound levels near leks as well as in areas used for nesting and brood rearing.

Executive Summary, *Ambient Sound Levels in Sage Habitats in Wyoming, April 2014*. We have attached this report for your information. The DEIS should be corrected to accurately reflect the findings and conclusions set forth in the Ambrose report. To be consistent with the SGEO, ambient measurements should reflect the best estimate of ambient levels during lekking hours (6:00pm – 8:00am), which in this case was recommended in Ambrose et al. 2014 to be 10-15 dBA.

Noise is also an issue for humans, particularly for those who work and live in the project area. The DEIS, citing the USEPA Noise Control Act, suggests that noise levels above 55 dBA will cause activity interference and annoyance. DEIS at 3.7.1. The study upon which this number is

based addressed urban areas; the “annoyance” level for rural locations within the CCPA is likely much lower. Studies investigating noise tolerances in rural setting should be reviewed.

The DEIS also indicates that a 3dBA change of noise level is detectable while a 5dBA change is “readily noticeable by most people.” A 10dBA change is perceived to be a doubling (or halving) of sound or noise and would cause “an adverse community response.” DEIS Table 3.7.1 and text on lines 11-15. However, given the low ambient noise levels recorded in rural Wyoming, one can assume that noise impacts will be moderate to severe at much lower levels than the 70dBA threshold suggested in the DEIS. See 4.7.2.1. In particular, residents living within close proximity of oil and gas construction activities (the minimum setback is 500’), drilling and fracking operations, and noise-creating infrastructure, could be exposed to noise levels several hundred times greater than ambient levels. The DEIS suggests that noise impacts, even if significant, will be short term, but neglects to consider that the construction of multiple wells on multiple pads in the vicinity of a single residence could take place for many weeks if not months. Despite these likely impacts, the DEIS fails to analyze or adopt any measures to mitigate the effects of noise on sensitive receptors. DEIS at 4.7.2.2. The DEIS should be revised to consider a range of mitigation measures to reduce noise impacts. Those measures could include prohibiting the use of “jake brakes” in occupied areas, greater setback distances, sound barriers around drilling and completion rigs, limits on nighttime drilling and well completion operations, and mufflers on engines.

### **Impacts from Outdoor Lighting**

High intensity outdoor lights are used to illuminate drill rigs, gas plants, compressor stations, and other project-related infrastructure. The DEIS fails to include an analysis of the impacts of outdoor lighting on sensitive receptors, including humans and wildlife. The adverse effects of light pollution effects are well documented and they can be significant. An extensive body of scientific literature assessing the impacts of light pollution is readily available to EIS-preparers using basic Google searches. The BLM should analyze the effects of light pollution, and consider a range of measures to mitigate the harmful effects to wildlife and to the people who reside in the CCPA. Dark nighttime skies are clearly an important resource that should be protected to the extent possible in order to meet BLM’s multiple use obligations under FLPMA.

### **Wetland and Riparian Areas (DEIS sections 3.17 and 4.17)**

The DEIS (at 3.17.1) references an outdated Wyoming State Wildlife Action Plan. The plan was revised and updated in 2017 and is available on the WGFD website. The current 2017 plan should be reviewed and new information should be incorporated into the DEIS.

The DEIS discloses a variety of impacts to wetland and riparian areas from the proposed oil and gas development. The DEIS estimates that “of the 9,108 acres of wetland and riparian areas within the CCPA, an estimated 345 acres could be disturbed under Alternative B.” DEIS at 4.17.2.1. Despite the significant loss of wetland and riparian areas from project-related activities, the DEIS recommends a single mitigation measure, GW-1, that only addresses water table drawdown impacts. Specifically, GW-1 requires that “all new water supply wells be



located 2,000 feet or more from existing water wells, springs, wetlands, and riparian areas.” DEIS at 4.16.2.3. While important, this mitigation measure fails to address the numerous other impacts to wetland and riparian features identified in the DEIS on page 4.17-2. We recommend that the BLM identify and analyze a broader range of mitigation options to lessen the severity of the impacts. Measures could include increased setbacks from these features, consolidation of linear features and facilities, master development plans, and generally, more attention paid to finding opportunities to avoid these features altogether.

The Casper RMP states that “[a]ll practicable means to avoid or minimize environmental harm are encompassed in the alternatives as described in Table 2-3 and the appendices of the Proposed RMP/Final EIS.” See Casper RMP Section 1.3.1 Mitigation Measures. Specific measures that fulfill the BLM’s duty to utilize all practicable means to avoid or minimize impacts are provided in Table 2-3, which includes goals, objectives and decisions for water resources. Some of the provisions applicable to water resources are stated below:

GOAL PR:5 Maintain or improve surface water and groundwater resources consistent with applicable state and federal standards and regulations. An objective of this goal is to “Maintain watershed, wetland, and riparian functions to support surface-flow regimes and water quality.” See Objective PR:5.1.

GOAL PR:7 Bring all watersheds to their full potential conditions. An objective of this goal is to “Improve protection for surface water and groundwater sources.” See Objective PR:7.2.

Decision # 1032: Analyze all management activities with the potential to impact Class 1 or 2 waters (Class 1 and 2 - Wyoming DEQ water quality standard) to prevent degradation of existing water quality. Management activities potentially impacting all other waters will be addressed on a case-by-case basis.

Decision # 1033: As determined by the authorized officer, Storm Water Management Plans (WYPDES Storm Water Permit) will be required on all new BLM projects of more than 1 acre.

Decision 1034: On BLM-authorized drilling activities, require use of pitless drilling technology where there is potential for adverse impact to surface water, groundwater, or soils.

Decision # 1035: Class 1 and Class 2 waters – (Wyoming DEQ water quality standard): NSO within 500 feet and CSU from 500 feet to 1/4-mile. Within the CSU area, use best available technology and (or) BMPs to minimize impacts. Wildlife and livestock watering facilities and recreation facilities will be allowed when no other alternatives exist and only when they meet management objectives. Waters other than Class 1 and Class 2 will be considered on a case-by-case basis.

Decision # 1036 provides: CSU within 500 feet of water wells, springs, or artesian and flowing wells.

The DEIS should explain how the goals, objectives and specific decisions outlined in the Casper RMP can be achieved in light of this massive development. It should also investigate and

analyze in a comprehensive way opportunities to avoid, minimize and compensate the loss of these critically important natural resources. Because Clean Water Action section 404(b)(1) requires an analysis of least environmentally damaging practical alternatives, oil and gas wells that may have an adverse impact on wetlands must receive an adequate project level analysis. The analysis of means to achieve the least environmentally damaging practical alternative should be done in the context of a NEPA analysis with opportunities for public review and comment, or if not a NEPA analysis per se, under the 404 regulations there still must be adequately opportunities for public review of the alternatives.

#### **Land Use (DEIS sections 3.5 and 4.5)**

The DEIS (at 3.5-6) indicates that 2,006 acres of the Sand Hills Management Area is located within the CCPA. This section of the DEIS does not disclose whether this area is open for oil and gas leasing and development, nor does it disclose whether any wells or project infrastructure will be constructed in this area.

The DEIS indicates that “the Sand Hills Management Area is designated a ROW exclusion area and therefore is administratively unavailable for oil and gas leasing.” DEIS at page 4.5-2. Are there any existing or grandfathered leases within this area that could be developed as part of the Converse County project, or is the area completely unencumbered by oil and gas leases and therefore “off limits” to development?

#### **Lands and Realty (DEIS sections 3.6 and 4.6)**

The DEIS (3.6.2.1) provides examples of BLM land use authorizations, which include development of oil and gas leases “subject to terms and conditions incorporated into the approved APD or ROW grant by BLM.” Many of the requirements incorporated into the APD derive from terms and conditions contained in the federal oil and gas lease as well as stipulations attached to the lease, such as timing limitations, controlled surface use, and no surface occupancy restrictions, all of which are intended to protect sensitive resources such as wildlife, wetlands, cultural properties and rare plants. The DEIS should display specific lease information in a table and figures (e.g., map or series of maps) in order to allow the reader to better understand and analyze surface constraints, and the authority for those constraints.

The BLM’s failure to include specific oil and gas lease information in the DEIS is a glaring omission that must be corrected in order to provide for an adequate disclosure of impacts. For example, a lease located in a location with overlapping resource concerns such as steep slopes/sensitive soils, wetlands, and wildlife concerns will likely have stipulations that limit or restrict surface occupancy which in turn will influence siting decisions for roads, pipelines, well pads and other infrastructure. This information is critical for analyzing specific environmental concerns associated with development on the lease, which the BLM is required to do to fulfill the legally required “hard look” under NEPA. The absence of this information in the DEIS makes it impossible to assess site-specific impacts, compounded by the fact that this level of analysis will likely not happen later given the BLM’s common practice of excluding well approvals from NEPA review under the Energy Policy Act. If site-specific environmental impacts from development activities on the lease are not analyzed in this DEIS, when will they

be analyzed under NEPA? All environmental impacts must be considered in an EIS. *Baltimore Gas & Elec. Co. v. Nat.Res. Def. Council*, 462 U.S. 87, 97 (1983) (requiring that agencies “consider every significant aspect of the environmental impact of a proposed action” and inform the public of the environmental impacts of agency proposals).

The DEIS is unclear as to whether surface occupancy will be permitted on *formerly used defense sites*. DEIS at 3.6-2. If surface occupancy is to be permitted, the BLM should disclose measures that will be taken to ensure public safety and protection of the environment.

The DEIS *assumes* that “APDs would address potential conflicts between oil and gas development and other land uses.” DEIS at 4.6-1. The DEIS should provide a specific reference to the regulatory requirement that supports this assumption, and provide provisions that ensure it is achieved. How exactly are conflicts resolved (or for that matter, even identified) when wells are categorically excluded from NEPA review?

#### **Range Resources (DEIS section 4.9)**

The DEIS states that the “OG has committed to applying water or chemicals for dust abatement during *dry periods*.” DEIS at page 4.9-4 (emphasis added). Since “dry periods” in this area of Wyoming can and do extend for several continuous months at a time, we suggest that greater clarity is required to specify exactly when dust suppressants will be applied. Obviously, dust suppressants should be applied when necessary, (i.e., at the first sign that dust is being generated by wind or vehicle traffic). To be effective, water will likely need to be applied on a daily basis throughout the summer months and perhaps more frequently depending on conditions. In our experience, dust is never controlled to the degree claimed in BLM’s environmental documents. Who will be responsible for monitoring compliance and reporting problems? If a local landowner is experiencing dust problems, will that problem be addressed by a single call to the local BLM office?

The DEIS states (at 4.9-4) that speed limits will be enforced. By whom? Will the operators and their various contractors voluntarily comply? Or is enforcement expected to be performed by county law enforcement? The concern is that despite posted speed limits, the actual speeds in oil and gas fields, particularly during the construction phases, tend to be higher than assumed, which results in impacts greater than disclosed in the EIS.

#### **Hazardous Materials, Solid Waste, and Public Health and Safety (DEIS sections 3.4 and 4.4)**

To reduce the risk to shallow groundwater in alluvial aquifers, we recommend that closed loop systems be used for oil *and* water-based mud systems. DEIS at 4.4-5. The Casper RMP, in Decision # 1034, states that: “On BLM-authorized drilling activities, require use of pitless drilling technology where there is potential for adverse impact to surface water, groundwater, or soils.” Since there is almost always a potential for adverse impacts to surface water, groundwater, or soils from the disposal of drill cuttings, we encourage the BLM to require the operators to utilize closed-loop (pitless) systems.

In all cases, the BLM should absolutely prohibit onsite disposal (burial) of drill cuttings generated through the use of oil-based drilling fluids. This requirement should be specified in the Record of Decision.

### **Cultural Resources, Historic Trails, and Resources of Native American Concern (DEIS sections 3.2 and 4.2)**

The DEIS discloses that important cultural resources are present within the CCPA including two NRHP-eligible Traditional Cultural Properties, and three nationally-important historic trails. The DEIS also discloses potentially significant impacts to these resources. However, because the DEIS has not identified the specific location of well pads, access roads, overhead powerlines, pipelines, and other project infrastructure, analyzing the precise impacts to cultural resources is claimed to be impossible. The challenge of properly assessing impacts to cultural properties is complicated further by the BLM's extensive use of categorical exclusions under Section 390 of the Energy Policy Act that results in no further NEPA analysis prior to the approval of proposed oil and gas wells. This situation can result in unmitigated impacts to heritage resources that have not been disclosed in a NEPA document. The BLM must provide a process that ensures proper consideration of cultural resources, historic trails and resources of Native American concern. Categorically excluding wells from further NEPA review is not that process.

The DEIS (at 4.2.2.5) identifies residual impacts to historic trails that will require compensatory mitigation, and directs the reader to Section 6.6.2 for more information. Importantly, Section 6.6.1, states that "the degree of impact would be analyzed ... during future site-specific NEPA during the APD stage of development." Because site-specific NEPA analysis is rarely prepared for APD approvals, the entire process outlined in the DEIS for compensatory mitigation is illusory.

### **Soils (DEIS sections 3.12 and 4.12)**

Under Alternative B, approximately 5,000 new oil and gas wells would be drilled on 1,500 multi-well pads over a period of 10 years (500 new wells per year). Additional surface disturbance would result from the construction of other service well pads, access roads, pipelines, electric power lines, freshwater impoundments, gas plants, compression facilities, and other ancillary facilities. An estimated 52,667 acres of disturbance would result from oil and gas development under Alternative B. DEIS 4.12.2.1 Impacts on Soils.

The DEIS proposes mitigation measures that include the following: "SOIL - 2: To the maximum extent possible, disturbance to soils with limiting characteristics will be avoided." The DEIS claims that this mitigation measure "would reduce damage to soils with limiting characteristics through avoidance. This also would result in reduced erosion, runoff and sediment loading."

Since the DEIS indicates that a substantial percentage of the CCPA contains soils with limiting characteristics, the effectiveness of this mitigation measure should be scrutinized and subjected to further analysis. See Table 3.12-1. The DEIS discloses that approximately:

- 14 percent of the soils within the CCPA are highly water erodible;
- 19 percent of the soils within the CCPA are wind erodible;
- 44 percent of the soils within the CCPA are droughty;
- 4 percent of the soils within the CCPA are hydric; and
- 30 percent of the soils in the CCPA are compaction prone.

Given the high percentage of soils with limitations in the CCPA, the BLM should explain and demonstrate through NEPA analyses exactly how sensitive soils will be avoided. In the abstract, avoidance of soils with limiting characteristics could be a highly effective mitigation measure, but as applied to this project, the on-the-ground implementation of this measure may be extremely difficult due to the pervasiveness of sensitive soils and level of proposed development in the project area. The supplemental DEIS should identify specific areas and locations where this mitigation measure will be applied, and incorporate the specifics into the ROD.

The Casper RMP contains numerous provisions addressing soils and soil health that are not adequately addressed in the DEIS. For example, Decision # 1020; Goal/Obj. PR:4.2 states that the BLM will: “Minimize the disturbance to highly erosive soils (575,788 acres of BLM federal mineral estate of which 256,240 acres are BLM surface). Proposed surface-disturbing activities will be modified (located) to avoid areas of highly erosive soils to the greatest extent practicable.” The BLM has not explained how it can accomplish this decision and still accommodate the level of development proposed by the OG.

Decision # 1017; Goal/Obj. PR:4.1 provides that: “On BLM-administered surface, conduct onsite soil investigations on highly controversial projects, or in areas of highly erosive soils, to evaluate the impacts of surface-disturbing activities. Onsite soil investigations may include mapping the soils to a series level, evaluating current erosion conditions, and prescribing mitigation and reclamation practices.” The BLM should specify that this decision will be implemented at the APD and ROW approval stage, with full opportunities for public review and comment.

Decision #10.22; Goal/Obj. PR:4.2 states that: “Surface disturbance or development on slopes greater than 25 percent is prohibited, unless individual site plans are submitted to and approved by the authorized officer meeting the following requirements. Engineered drawings for construction, site drainage design, and final rehabilitation contours with a written rationale describing how the proposed controls will prevent slope failure and erosion, while maintaining viable site topsoil for final reclamation. This plan should also include a timeline identifying the actions that will be applied during the construction, production and rehabilitation phases of the plan so appropriate monitoring protocols can be developed by the BLM to ensure that the plan is meeting the objectives described in its rationale.” The BLM should outline and provide a process that ensure compliance with this management decision. We recommend that the BLM prepare site-specific EAs, with opportunity for public review and comment, for projects proposed on steep slopes exceeding 25 percent. This RMP

provisions constitutes a “rebuttable presumption” under Section 390 of the Energy Policy Act that would otherwise allow a proposal to be categorically excluded from NEPA review.

Decision #1028; Goal/Obj. PR:4.2 requires BLM to: “Limit total long-term surface disturbance from all BLM-authorized activities to no more than 80 acres per square mile. Applies to BLM surface only.” The DEIS failed to adequately analyze, discuss or apply this decision.

Decision #1029; Goal/Obj. PR:4.2 states that: “Evaluate existing road and trail use in the planning area. Close and reclaim all roads and trails on BLM-administered surface that are in areas designated as highly erosive soils and that are not being utilized to meet public demand.”

We suggest that the BLM evaluate and potentially apply this decision as partial mitigation for soils that will be impacted by project development.

Finally, the BLM should explain how it intends to achieve rangeland health standards set forth in its regulations while also accommodating the OG’s proposal to develop 5,000 new oil and gas wells in the project area:

On lands administered by the BLM, soil resources primarily are addressed through BLM Handbook 21 H- 4810 - 1, Rangeland Health Standards, which are based on 43 CFR 4180.1, Fundamentals of Rangeland Health. This regulation directs the BLM to ensure that “watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian - wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

DEIS 3.12.1. Simply claiming the standard will be met is not sufficient; NEPA requires some level of objective analysis to demonstrate that compliance will be achieved.

### **DEIS Chapter 6 - Mitigation**

The BLM should carefully review for accuracy the list in Section 6.2.1 identifying resources that will be protected by avoidance. The list contains numerous errors. For example, the bullet for Class 1 and Class 2 waters is incorrect. Decision # 1035 of the Casper RMP requires *NSO within 500 feet*, and CSU from 500 feet to 1/4-mile. Within the CSU area, the RMP says the BLM will use best available technology and/or BMPs to minimize impacts. Waters other than Class 1 and Class 2 will be considered on a case-by-case basis.

The forth bullet incorrectly states that “slopes greater than 40 percent and soils susceptible to mass failure” will be avoided. Casper RMP Decision # 1022 explicitly provides that: “*Surface disturbance or development on slopes greater than 25 percent is prohibited, unless individual site plans are submitted to and approved by the authorized officer ...*” (emphasis added).

Under the process outlined in Chapter 6, compensatory mitigation would be required only “if residual effects are to resources that are considered important, scarce, sensitive, or have a protective legal mandate identified through a NEPA process warranting compensatory mitigation.” DEIS at 6.2.5.2. Obviously, the key to making mitigation effective and useful is the existence of a NEPA process. Unfortunately, as discussed elsewhere in these comments, the BLM routinely categorically excludes oil and gas wells from NEPA review under Section 390 of the Energy Policy Act, so there is no NEPA process that will identify the above-referenced resources. Consequently, given the absence of site-specific NEPA at the APD approval stage, the BLM should supplement this DEIS to provide a sufficient level of detail necessary to identify resources that warrant compensatory mitigation and to allow for identification of residual impacts.

**Transportation and Access (DEIS sections 3.13 and 4.13)**

The construction and use of approximately 1,970 miles of new roads added to 2,978 miles of roads already in place in the project area will have a significant and long-term impact to the environment, including but not limited to widespread fragmentation of natural landscapes, destruction of heritage resources, spread of noxious weeds and invasive plant species, water and air quality impacts, wildlife collisions, and loss of open spaces. Despite these severe impacts, the DEIS proposes very few meaningful measures to mitigate the transportation impacts.

“There are no OG-committed design features for this resource.” DEIS Chapter 6, Section 6.4.13. However, DEIS Section 6.5.13 identifies six actions the BLM may require, but none address the greatest environmental concern, which is the unplanned, rapid, and spontaneous development and expansion of an industrial road network across a vast rural landscape.

The Casper RMP makes the following provisions for transportation issues that should be incorporated into the DEIS:

Casper RMP Decision # 6071: Exclusion areas for ROW contain 442,040 acres of public land. ROW avoidance areas comprise 539,799 acres of public land.

Casper RMP Decision # 6072: When placement of a major facility within a designated corridor is not possible, and for smaller ROW facilities, placement will be adjacent to existing facilities or disturbances. Cross-country ROW placements will be allowed only when placement in a designated corridor or adjacent to an existing facility is not practical or feasible (from the ROD, resource management units, March 8, 2004 version).

The Casper RMP Objective: LR:3.4 requires that BLM “Maintain a transportation management system to meet resource management needs.”

The DEIS should discuss these requirements, and along with that consider developing a transportation management plan or plans for the project area. A transportation plan could

help reduce the number of new roads, and allow other roads that are no longer necessary to be decommissioned and reclaimed. The concern is that the construction of roads without advance planning and coordination among operators could lead to a proliferation of unnecessary roads in sensitive resource areas where they don't belong.

**Vegetation (DEIS sections 3.14 and 4.14)**

Invasive plants including noxious weeds are found throughout the project area. See DEIS Table 3.14-2. DEIS Figure 3.14-2 shows documented heavily infested locations of noxious weeds and invasive plants within the CCPA. These species are more likely to occur in surface-disturbed areas, such as oil and gas fields. DEIS at 3.14-6.

The DEIS states:

Surface disturbance and associated landscape fragmentation would increase the potential for noxious weeds and invasive plant species to spread and establish proportionate to the amount of disturbance. Surface disturbance increases the potential to provide pathways for further spread and establishment of noxious weeds and invasive plant species into adjacent undisturbed areas and serve as a source of propagules. Localized surface disturbances could facilitate the invasion of noxious weeds and invasive plant species by removing native vegetative communities, creating areas of bare ground, and increasing light and nutrient availability. Noxious weeds and invasive plant species would compete with native plants, degrade and modify native communities, and reduce resources for native species (e.g., moisture, soil nutrients, and light). Noxious weeds and invasive plant species also could be spread by vehicles, equipment, and workers.

Increased road networks and traffic volumes have a strong correlation to the invasion and spread of noxious weeds and invasive plant species. The disturbance and redistribution of seed propagules are difficult to control. Even when care is taken to identify and pretreat infested areas and establish vehicle wash stations, the construction of 386 miles of new roads likely would spread noxious weeds and invasive plant species to some extent, causing impacts to vegetation communities.

DEIS at 4.14.1.2 Impacts Related to Noxious Weeds and Invasive Plant Species (internal references omitted).

“The spread and establishment of noxious weeds and invasive plant species correlates with the amount of surface disturbance, and areas of bare ground would be more susceptible to invasion by non-native species than areas with established vegetation. Therefore, there would be a greater likelihood of spreading and aiding the establishment of noxious weeds and invasive plant species under Alternative B because there would be more surface disturbance



than under Alternative A.” See DEIS 4.14.2.2 Impacts Related to Noxious Weeds and Invasive Plant Species (Alternative B- Proposed Action).

The DEIS rejects the need for compensatory mitigation “due to the temporary and reversible nature of residual impacts.” 4.14.2.5. Yet the DEIS discloses that:

In some areas reclamation may be problematic, particularly in areas with soil reclamation constraints, low regional annual precipitation rates, and the invasion of noxious weeds and invasive plant species, successful reestablishment of native vegetation may take longer. Some plant communities may not return to pre-construction conditions due to alteration of soils, invasions of noxious weeds and invasive plant species, and loss of biological soil crust. The inability to revegetate disturbed areas with pre-disturbance or suitable native species would be a substantial impact.

DEIS at 4.14-8. It is clear that some form of mitigation for these impacts must be pursued; at a minimum, the BLM must commit to fully documenting invasions of noxious weeds and invasive species and specifying the extent to which they have been controlled if possible and if the control has been ineffective that should be publicly documented.

**Wildlife (DEIS sections 3.18 and 4.18)**

Because the DEIS does not identify locations for roads, pipelines, overhead powerlines, stream crossings, well pads, and other project-related infrastructure, specific impacts to wildlife are not disclosed. The highly generalized and generic discussion of wildlife impacts is of little use to the decision maker and the public other than to convey the point that wildlife in the project area will be impacted, potentially very significantly, by the development of this project. Surface disturbance, habitat fragmentation, noise, dust, human activity, and so on, will have a major impact on wildlife in the project area. The types of impacts to wildlife that can be expected from this project are described in the DEIS beginning at 4.18-3. Development in Wyoming Game and Fish Department (WGFD) strategic habitats (Figure 3.18-3), and during periods of high stress such as winter and parturition, will be particularly disruptive, and should therefore be avoided. DEIS 4.18-5. Wildlife impacts are expected to be greater on private lands that are not subject to BLM or USFS wildlife protection measures or reclamation requirements. Actual impacts from project activities will be dictated by many factors such as siting locations, well and road densities, adherence to lease stipulations and conditions of approval (COA), the effectiveness of mitigation measures, control of invasive plant species, proper monitoring and use of adaptive management, and reclamation success, to name a few.

Specific comments on impacts to wildlife resources:

Important Bird Areas (IBA). The DEIS indicates that under Alternative B, approximately 66.4 acres of surface disturbance would occur within the Rochelle Hills IBA. DEIS at 4.18-21. Because this area “provides critically important habitat for grassland, shrubland, and

wetland/riparian avian species” we recommend that surface occupancy and use be prohibited in the IBA.

Raptors. Over 500 raptor nests have been documents within the project area. DEIS Figure 3.18-9. The DEIS discloses that:

Raptors reported to occur in Converse County include the bald eagle, golden eagle, rough-legged hawk, ferruginous hawk, northern harrier, osprey, Swainson’s hawk, red-tailed hawk, Cooper’s hawk, merlin, northern goshawk, sharp-shinned hawk, peregrine falcon, American kestrel, and prairie falcon. Owl species reported to occur in Converse County include the great horned owl, burrowing owl, short-eared owl, and snowy owl.

DEIS at 3.18-24.

The DEIS notes “[u]nder Alternative B, exceptions to timing stipulations would be requested in the vicinity of raptor nests and greater sage-grouse leks outside PHMAs. To the extent possible, drilling and development operations within the CCPA would be conducted on a year-round basis. DEIS at 4.18-27. Due to the potential for very significant impacts (DEIS at 4.18-28), we do not support the waiver of, or the granting of exceptions to, wildlife stipulations that restrict development during certain times of the year to protect raptors. Year-round development may be possible in other areas of the CCPA where wildlife concerns are not present, but with respect to raptors, all protective stipulations must be enforced in the project area.

Umbrella Migratory Bird Conservation Plans (UMBCA). We strongly support and encourage the development of effective UMBCAs, and request an opportunity to review draft plans before they are finalized.

Residual Impacts – Alternative B. The DEIS contends that: “Due to the temporary nature of disturbance to migratory birds and the application of avoidance and minimization mitigation, OG-committed design features and the additional mitigation measures (Section 4.18.2.3), compensatory mitigation would not be warranted to offset the impacts resulting from development under Alternative B.” DEIS 4.18-35. This claim is unsupported. Indeed, the DEIS itself discloses that “long-term changes in migratory bird species occurrence and diversity could occur as a result of changes in habitat composition, quality, continuity, and breeding success.” DEIS at 4.18-28. With respect to mitigation, the DEIS states:

The proposed mitigation measure MIG-1 would protect migratory birds, including raptors, during the breeding season, *exclusive of possible exceptions that may be granted for raptor nests*. Raptor nests must be identified prior to surface disturbing activities for exceptions to be requested and granted. Natural areas would be maintained between human activity and around the active nest (landscape buffer). *Spatial avoidance buffers and seasonal*

*restrictions would be applied as required by applicable land and resource management plan stipulations unless exceptions are granted for raptor nests.*

DEIS at 4.18-34 (emphasis added).

If stipulations included in the Casper RMP to protect raptors are not enforced, impacts from project activities to these species will be both significant and long-term, through the life of project if not longer. See DEIS at 4.18-60 (“Granting exceptions to timing limit stipulations could adversely impact sensitive wildlife species by causing nest abandonment for raptors or sensitive bird species ...”). In this scenario, the severity of impacts that would occur to raptors clearly warrants compensatory mitigation to help offset development impacts. Some degree of compensatory mitigation could be achieved, for example, by deferring oil and gas development on federal lands/mineral estate that contain active raptor nests to provide refuge areas free from disturbance, at least for critical life-history periods.

#### Greater sage-grouse.

Five designated Priority Habitat Management Areas (PHMA) overlap the 1.5 million-acre project area: Douglas, North Glenrock, Thunder Basin, M Creek, and Bill. Average peak male attendance at leks in several of these areas have declined significantly since 2006; Douglas - 38% decline; Thunder Basin -75% decline; and M Creek -100% decline. The Bill PHMA is the smallest area of PHMA in the project area, and no leks occur within it. North Glenrock PHMA has experienced a 322% increase since 2006. These five core areas comprise approximately 19.5 percent of the project area, or about 293,458 acres (Version 4 map).

The remainder of the project area encompasses General Habitat Management Area (GHMA). Figure 3.18-12. This figure shows 17 occupied leks in GHMA, but for some reason male attendance numbers at the leks are not displayed in the DEIS. This omission should be corrected in a supplemental DEIS.

To aid the analysis, five “preliminary” DDCT assessment areas were created for this project, one for each core area, to identify existing and potential disturbance for impacts analysis. The analysis showed that four of the five DDCT assessment areas have existing disturbance totaling greater than five percent. The total percentage of existing disturbance in all of the DDCT assessment areas combined is 18.9 percent. DEIS at 3.18-51.

The DEIS indicates that, “in total, there are 46 greater sage-grouse leks in the CCPA; 29 are considered by WGFD to be occupied, 6 are undetermined, and 6 are unoccupied. An additional 8 occupied leks, all of which are considered occupied by WGFD, are located outside but within 2 miles of the CCPA. Twenty-five of the 48 leks are located in PHMAs. The remaining 23 leks are located in GHMA.” DEIS at 3.18-57. The DEIS discloses that “[o]verall, the 54 leks within 2 miles of the CCPA 2016 have experienced a reduction in peak male attendance of approximately 6 percent between 2006 and 2016. Attendance at all leks in the CCPA had slightly declined since 2006; however, peak male attendance is on an upward trend since a low in 2013. In 2013, no male sage-grouse were observed on at least 13, and possibly

as high as 39 (some leks were not counted in 2013 or data is missing) of the 54 leks. *Despite the recent upward trend in peak male attendance, all greater sage-grouse leks in the analysis area are at risk of being abandoned as development continues to increase.*” Id. (emphasis added).

For these reasons, exceptions to timing stipulations should not be granted. Under Alternative B, the oil and gas operators group would seek exceptions to BLM timing stipulations for greater sage-grouse leks outside of PHMA. Because the DEIS discloses significant impacts from project activities to greater sage-grouse, we recommend that all stipulations, required design features, and other conservation measures included in the 2015 ARMPA designed to protect sage-grouse be honored and enforced in the project area:

As discussed under Alternative A, there would be potential for mortalities of nesting sage-grouse resulting from the destruction of active nests due to the amount of habitat impacted. This potential typically would be limited by seasonal timing restrictions of oil and gas operations activities. However, under Alternative B, operators would request exceptions to timing stipulations for sage-grouse outside of PHMA. As described previously under Alternative A (Section 4.18.3.1), sage-grouse display one of the lowest nest success rates of all upland game birds, hens have been observed abandoning active nests due to human disturbance and ground disturbing activities within a certain proximity (Schroeder 1997), and habitat selection by sage-grouse is very specific. The potential for exceptions to timing stipulations would increase impacts to sage-grouse and associated habitat. Despite NSO stipulations around lek sites, by granting exceptions to timing limitations for sage-grouse, development activity could disrupt activity during sensitive time periods, lead to lek and nest abandonment, and prohibit use of associated habitats or relocation to less desirable habitat. As a result, there would be a reduction in the use of nesting habitat, lower reproductive success including lower brood survival, and a loss of foraging habitat.

DEIS at 4.18-65.

The DEIS goes on to disclose that oil and gas project activities –even with proposed mitigation measures– are anticipated to cause the abandonment of all leks in the project area:

Specific to sage-grouse, despite the implementation of the mitigation measures above, based on the recent downward trend in peak male attendance, all sage-grouse leks in the CCPA would be at risk of being abandoned as development would continue to increase in surrounding areas under Alternative B. As described above, habitat selection by sage-grouse is very specific. The potential for granting of exceptions to timing limit stipulations would increase impacts to sage-grouse and associated habitat as a result of disturbance by noise and human presence. Despite NSO stipulations around lek sites, by granting

exceptions to timing limitations within sensitive sage-grouse habitat, development activity could disrupt activity during sensitive time periods and prohibit use of associated habitats or cause relocation to less desirable habitat. As a result, there would be a reduction in the use of nesting habitat, lower reproductive success including lower brood survival, and a loss of foraging habitat.

DEIS at 4.18-72.

Due to the unnecessary or undue degradation that would result, we oppose any and all efforts to circumvent timing stipulations that apply to greater sage-grouse in general habitat management areas. The BLM's ARMPA and the Thunder Basin National Grassland plan should be fully complied with.

Inside of PHMA, project activities would be subject to "core area" restrictions that include density and disturbance limits as well as timing and controlled use stipulations. The DEIS explains that:

Any new surface disturbance in PHMAs and Core Areas within the CCPA would be subject to current BLM, USFS, and WGF D management regulations that would restrict surface disturbance and disruption in important sage-grouse habitats, including restrictions on surface disturbance exceeding the 5 percent disturbance threshold and 1 well pad and associated infrastructure per 640 acres, on average.

DEIS at 4.18-62 (internal references omitted).

On this point, the DEIS continues:

The programmatic nature of this document details that the current 5 percent disturbance cap is exceeded in four of the PHMA (Bill, Douglas, North Glenrock, and Thunder Basin). However, under Alternative B, development could be approved on a site-specific basis consistent with the DDCT process if found to be under the 5 percent cap.

DEIS at 4.18-63.

We understand that the BLM, State of Wyoming, and perhaps the Forest Service intend to authorize oil and gas development inside PHMA (Wyoming core area) even in situations where density/disturbance "caps" have been exceeded when deemed necessary to "protect valid existing rights." The BLM should confirm in this DEIS if this is the case. If so, the BLM must examine and disclose in a supplemental DEIS the existence of pre-ARMPA oil and gas leases inside each of the PHMA that lack the greater sage-grouse stipulations imposed by the 2015 ARMPA. The DEIS assumes that no new oil and gas development will be authorized in

the PHMA if density/ disturbance limits have been exceeded: “Based on existing disturbance in DDCT assessment areas that already exceed 5 percent disturbance for four of the five PHMAs, new surface disturbance could only be considered within the M Creek PHMA.” DEIS at 4.18-66. And the disclosure of environmental impacts is based on this assumption. This assumption may not be correct, and it is incumbent on the BLM to clarify this issue, and prepare the proper environmental analysis that reflects on-the-ground reality.

Included herewith are comments of Dr. Matt Holloran, a noted expert on greater sage-grouse and sage-grouse conservation. We ask that his comments be fully considered in a supplemental DEIS. In these comments, he points out that “In order to achieve sage-grouse conservation goals, the BLM and USFS must manage sage-grouse habitats at landscape spatial scales.” He engages in a detailed assessment of the qualitative and deductive analyses that are presented in the DEIS. “I provide evaluations of analyses pursued, suggestions for adjustments to analyses, and point out where the analyses could contribute to inaccurate conclusions given the framework of landscape-scale conservation.” He focuses on Alternative B, the preferred alternative, but his comments also relate to Alternative C. In this detailed analysis, Dr. Holloran considers infrastructure and density issues, surface disturbance levels, fragmentation of habitats, development and planning issues, invasive plants, residual impacts, and cumulative effects to sage-grouse populations and habitats. This report should clearly be carefully considered by the BLM as it develops the CCPA oil and gas project.

Sincerely,

*/s/ Dan Heilig*

Dan Heilig,  
John Rader  
Wyoming Outdoor Council  
262 Lincoln St  
Lander, WY 82520  
(307) 332-7031

ON BEHALF OF:

Wyoming Outdoor Council  
National Audubon Society  
The Wilderness Society

ENCLOSURES:

- Attachment A - Dr. Matt Holloran analysis
- Ambrose Noise study
- IPAA/Western Energy Alliance, et al., comments on Federal rulemaking