

Appendix E
Public Comments and Agency Response

#	Comment	Response
1	<p><u>Wyoming Game and Fish Department:</u></p> <p>There are 2 parcels (10, 11) that are of major concerns within the November 2016 Gas/Oil Preliminary Lease List. Our concern revolve around the fact that the parcels fall within big game crucial winter range, delineated migration routes and a combination of the previous 2 areas of concern that have recently shown impacts to mule deer in this area.</p> <p>We have major concerns with parcels 10 and 11 that fall within mule deer and pronghorn crucial winter range, mule deer migration routes and a combination of those two for mule deer in the Baggs Biologist District (Figure 1). Sawyer 2012 (Journal of Applied Ecology) found that high levels of development can alter migration behavior of mule deer which could have negative impacts to mule deer. In the area of parcels 9 and 10 we have seen high levels of development and mule deer migration routes impacted (Sawyer 2012). It has also been documented mule deer use in the Dad/Sandhills winter range complex has decreased since the development within the Catlina pod within the Atlantic Rim EIS (Table 1). Data from GPS collared doe mule deer from 2006-2010 suggest a high level of use by mule deer during the most critical period of winter (Jan- Mar, see Figure 1) in these areas.</p> <p>Based on the recent high level of development in the area of the Dad/Sandhills winter range and documented impacts to that portion of the Baggs mule deer herd we recommend removing these parcels from the November 2016 lease list until we can either develop a mitigation/development strategy or learn more about the impacts of energy activity to this portion of the Baggs mule deer herd.</p> <p>Thank you for considering the above recommendations.</p>	<p>Thank you for your comments.</p> <p>Resource management plans (RMP) make resource allocation decisions concerning the availability of lands for oil and gas leasing. This EA addresses whether nominated parcels are available for leasing in conformance with the existing RMP, and applies appropriate RMP stipulations to the lease sale parcels.</p> <p>These parcels have the following Special Lease Notice added:</p> <p>This parcel is located within areas of delineated crucial winter range and/or identified migration corridors. BLM will consider recommendations received by the Wyoming Game and Fish Department, generally contained within a document entitled "Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats" (http://wgfd.wyo.gov/web2011/Departments/Wildlife/pdfs/HABITAT_OILGASRECOMMENDATIONS0000333.pdf) if and when development of this lease is proposed. BLM will encourage the use of Master Development Plans in accordance with Onshore Order #1, on this lease parcel to the extent possible.</p> <p>This lease notice was previously developed in response to similar comments received by the WGFD for parcels within the subject area of concern. BLM is still willing to discuss any recommendations that the Baggs working group may formalize, and that the WGFD adopts.</p> <p>Site specific NEPA analysis will occur at the development stage that will analyze resource conflicts and identify mitigation for specific impacts. Additional mitigation and conditions of approval can be applied to post-lease actions (i.e., APDs, Sundry Notices,</p>

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2	<p><u>Sweetwater County Board of County Commissioners:</u></p> <p>Thank you for the opportunity to comment on the November 2016 Oil and Gas Lease sale Parcel Environmental Assessment. The following are Sweetwater County comments:</p> <p>Preferred Alternative B: Sweetwater County supports the BLM Preferred Alternative B, which proposes to lease a combined total of 21 parcels that contain 30,197.030 acres. If leased, these parcels will help support the oil and Gas industry that comprises approximately 44% of the assessed valuation for both Sweetwater County and the State of Wyoming. While Sweetwater County supports the BLM Preferred Alternative B it has the following concerns;</p>	<p>Rights-of-Way, etc.).</p> <p>Thank you for your comments.</p>

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3	<p>Sweetwater County Board of County Commissioners:</p> <p>Economic Impacts of Parcels Deferred: Sweetwater County is concerned with the number of parcels that have been deferred in this sale and in previous lease sales (see chart below). In this EA, of the 140 parcels proposed for sale, 127 of these parcels are deferred. Over the last three years (2014 through 2016), 363 parcels have been deferred.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">SUMMARY OF OIL AND GAS LEASE SALE PARCELS DEFERRED BLM High Desert District</th> </tr> <tr> <th style="text-align: center;">Year</th> <th style="text-align: center;">Sale Month</th> <th style="text-align: center;">Number Deferred Parcels</th> <th style="text-align: center;">DEFERRED ACRES</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2016</td> <td style="text-align: center;">November</td> <td style="text-align: center;">127</td> <td style="text-align: center;">227,184</td> </tr> <tr> <td style="text-align: center;">2016</td> <td style="text-align: center;">May</td> <td style="text-align: center;">53</td> <td style="text-align: center;">13,693</td> </tr> <tr> <td style="text-align: center;">2015</td> <td style="text-align: center;">November</td> <td style="text-align: center;">49</td> <td style="text-align: center;">72,025</td> </tr> <tr> <td style="text-align: center;">2015</td> <td style="text-align: center;">May</td> <td style="text-align: center;">53</td> <td style="text-align: center;">84,474</td> </tr> <tr> <td style="text-align: center;">2014</td> <td style="text-align: center;">November</td> <td style="text-align: center;">59</td> <td style="text-align: center;">86,090</td> </tr> <tr> <td style="text-align: center;">2014</td> <td style="text-align: center;">May</td> <td style="text-align: center;">22</td> <td style="text-align: center;">13,021</td> </tr> <tr> <td colspan="2" style="text-align: center;">GRAND TOTAL</td> <td style="text-align: center;">363</td> <td style="text-align: center;">496,487</td> </tr> </tbody> </table> <p>The county understands that these deferrals allow time for the BLM to prepare sage grouse instructional memorandums and for the completion of the Rock Springs EMP. However the county finds it difficult to accept the potential economic consequences of the growing number of deferred parcels.</p> <p>To highlight the socio-economic impacts of these oil and gas deferrals, Sweetwater County requests that the BLM, in EA Section 4.1.1 Socioeconomic Resources, provide a more in depth discussion regarding the economic impacts of the BLM lease parcel deferral program. This discussion should focus on the lost potential oil and gas investment opportunities, impacts on oil and gas industry employment and reductions in revenues to federal, state, and local governments. Sweetwater County encourages the BLM to provide a cumulative socio-economic impact analysis of the oil and gas deferrals that have occurred since 2010, the approximate beginning date of BLM sage grouse planning program,</p>	SUMMARY OF OIL AND GAS LEASE SALE PARCELS DEFERRED BLM High Desert District				Year	Sale Month	Number Deferred Parcels	DEFERRED ACRES	2016	November	127	227,184	2016	May	53	13,693	2015	November	49	72,025	2015	May	53	84,474	2014	November	59	86,090	2014	May	22	13,021	GRAND TOTAL		363	496,487	<p>The acres deferred at the State Director's discretion located in sage grouse Priority Habitat Management Areas. (PHMA), remain open to leasing. However, the BLM has exercised its discretion and determined that it is appropriate to defer these parcels from the set of the preliminary parcels analyzed in detail in the Environmental Assessment for the May 2016 oil and gas lease sale. These deferrals are consistent with the BLM's sage grouse conservation plans and strategy, which direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important GSG habitat and reduce development time and costs. Based on the foregoing, those portions of 8 parcels and 5 whole parcels within PHMA are deferred through State Director discretion.</p> <p>Oil and gas leasing is a discretionary activity. Deferrals from leasing are an administrative function, not a land use allocation decision.</p> <p>HDD parcels deferred from lease sales since 2010 through the November 2016 sale for sage grouse and other reasons identified in the individual lease sale NEPA documents, total approximately 914,600 acres. Some of the factors that determine how a competitive bid on a parcel is valued are based on: location, size, stipulations, and competitive interest. However, using the average \$/acre received at each sale, approximately \$35,800,000 in bonus bid, first year rental, and administrative fee receipts may have been deferred.</p> <p>The deferred acreage could be offered at a future sale and the economic effects are within the range of impacts analyzed in the subject RMP EIS'.</p>
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4	<p><u>Sweetwater County Board of County Commissioners:</u></p> <p>Deferral Management: Sweetwater County strongly encourages the BLM to keep this number of deferrals to a minimum and to establish clear guidelines for managing the length of time that parcels are deferred. This will help Sweetwater County concerns that deferrals may become permanent closures that could discourage the oil and gas industry within our county and state.</p>	<p>The September 2015 sage grouse RMP amendment directs direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important habitat and reduce development time and costs. The BLM is currently completing Instruction Memoranda on implementation of this decision. Once this policy is issued, BLM-WY will offer lands in compliance with the directive.</p>
5	<p><u>Sweetwater County Board of County Commissioners:</u></p> <p>Compliance with Wyoming sage Grouse Executive Order and BLM Sage Grouse Approved Resource Management Plan Amendment for Greater sage Grouse (ARMPA): This EA ha offered six parcels out of the 43 available within priority sage grouse habitat for sale. Sweetwater County appreciates the BLM offering these six priority habitat parcels for sale, but would encourage the BLM to expand the opportunity for lease sales in all 43 priority habitat parcels. Sweetwater County believes that this expansion of lease sales is justified due to the sage grouse protections that have been provided by the rules and regulations contained in the BLM ARMPA and the Wyoming Governor’s Executive Order (EO).</p>	<p>Please see response to comment #4.</p>
6	<p><u>Sweetwater County Board of County Commissioners:</u></p> <p>Compliance with local permits: Sweetwater County appreciates the EA statement that “Purchasers of oil and gas leases are required to obey all applicable federal, state, and local laws and regulations including obtaining all necessary permits should lease development occur...” The county welcomes the opportunity to work with developers in obtaining the necessary county permits which may range from Zoning and land Use Permits to road Access and Crossing Permits.</p>	<p>Thank you for your comments.</p>
7	<p><u>Sweetwater County Board of County Commissioners:</u></p> <p>Coalition of Local Governments: In addition to the comments provided in this letter, Sweetwater County supports and is party to the comments to be submitted by the Coalition of Local governments (CLG) regarding this EA.</p>	<p>Thank you for your comments.</p>
8	<p><u>Wyoming Outdoor Council:</u></p>	<p>Thank you for your comments.</p>

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	<p>Please accept these comments from the Wyoming Outdoor Council regarding the above referenced environmental assessment prepared by the Bureau of Land Management. The Wyoming Outdoor Council is the state's oldest independent conservation organization. We've worked for more than four decades to protect Wyoming's environment and quality of life for future generations.</p> <p>We support the decisions made by the State Director to defer leasing in greater sage-grouse priority habitat management areas pending the release of guidance regarding the implementation of sage-grouse plans. We are also particularly appreciative of the decisions made by the Rock Springs Field Office manager, Kimberlee Foster, and supported by State Director Mary Jo Rugwell, to preserve the decision space of the Rock Springs Resource Management Plan and defer almost all the leases that are outside of greater sage-grouse priority habitat, in that field office. We are particularly concerned about the negative impacts oil and gas leasing would have on the Big Sandy Foothills, inside the Wind River Front Special Management Area, and within the Jack Morrow Hills of the northern Red Desert. We look forward to full engagement with the agency and other stakeholders during the land-use plan revision as we work together deciding whether—or to what extent—oil and gas leasing should occur in those landscapes. We do not believe leasing is a wise decision in these areas, rich with important wildlife habitats and important recreational and scenic landscapes, especially given the low potential for oil and gas resources there.</p>	
9	<p><u>Wyoming Outdoor Council:</u></p> <p>We ask that the BLM also defer two parcels located in the Rawlins Field Office:</p> <p>WY-1611-010 and WY-1611-011.</p> <p>Parcel 10 and parcel 11, encompassing ~1,609 acres and ~307 acres, respectively, contain big game crucial winter range and/or big game migration routes. Recognizing the importance of these resources, the BLM attached a "Special Lease Notice" to each of these parcels advising that, "BLM will consider recommendations received by the Wyoming Game and Fish Department, generally contained within a document entitled "Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats."</p> <p>Specifically, energy development impacts to mule deer</p>	Please see response to comments #1 and #11

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	<p>migrating from the Dad Winter Range (which is included in portions of proposed lease parcels 10 and 11) through the Dry Cow Creek development was examined by Sawyer et al. (2013) where they found that, “[i]n migration routes exposed to a larger, more concentrated development (i.e. Dry Cow Creek), mule deer use declined by 53% and movement rates nearly doubled.” Thus, as highlighted by the Sawyer et al. (2013) study, this population has already experienced impacts from development during migration. We are concerned that additional development in this population’s winter range will only exacerbate impacts and result in additional population level impacts.</p> <p>The Wyoming Game and Fish Department has expressed “major concerns” with the proposed sale of these two parcels. In a letter dated February 22, 2016 (attached), obtained by the Wyoming Outdoor Council in response to a public records request, the WGFD stated that: “Based on the recent high level of development in the area of the Dad/Sandhills winter range and documented impacts to that portion of the Baggs mule deer herd we recommend removing these parcels from the November 2016 lease list until we can either develop a mitigation/development strategy or learn more about the impacts of energy activity to this portion of the Baggs mule deer herd.”</p> <p>We are concerned that development of these two parcels would cause unacceptable impacts to mule deer and pronghorn antelope and respectfully request that they be removed from the sale list.</p>	
10	<p><u>Wyoming Outdoor Council:</u></p> <p>In addition we request that BLM consider, in light of existing and reasonably foreseeable future development in the area, whether these two parcels should ever be leased for oil and gas development. A better option might be to dedicate these parcels to offsite mitigation—maintaining this habitat in its natural condition could become part of a strategy to compensate for expected impacts to mule deer and pronghorn occurring elsewhere, including within the Continental Divide-Creston natural gas field.</p>	<p>Dedicating parcels to offsite mitigation is beyond the scope of this document. Land use allocations are developed at the RMP level. They cannot be changed unless done at that level.</p>
11	<p><u>Wyoming Game and Fish Department:</u></p> <p>The staff of the Wyoming Game and Fish Department (WGFD) has reviewed the Environmental Assessment for the November 2016 Oil and Gas lease Parcels. We offer the following comments for your consideration. We support Alternative B, proposed Action, of the</p>	<p>Thank you for your comment.</p>

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	Environmental assessment.	
12	<p><u>WildEarth Guardians:</u></p> <p>The following are the comments of WildEarth Guardians on the Environmental Assessment of the Bureau of Land Management (“BLM”) Wyoming November 2016 oil and gas lease sale. Please provide notice to me at tream@wildearthguardians.org when further action, including but not limited to issuance of a finding of no significant impact, is taken on this lease sale. Please also provide notice when any period for a formal protest or predecisional objection is set or changed. Finally, if BLM ever analyzes site-specific climate emissions of an application for permit to drill, please inform me.</p> <p>For many years, the Bureau of Land Management has prioritized coal, oil, and gas leasing and related development over other uses, such as protecting wildlife, watersheds, and public recreation. The error of this approach is increasingly obvious. In this EA and throughout the agency’s work, BLM fails to recognize that already existing federal coal, oil, and gas leases, if fully developed, will result in climate emissions that far exceed a safe and livable global temperature rise and will render our oceans too acidic for much existing marine life.</p> <p>After years of waiting, the Secretary of the Interior has finally taken action with respect to the coal program. The Secretary, following on the heels of the President’s State of the Union, noted the tremendous impacts to taxpayers and the planet stemming from its coal leasing program. She ordered a programmatic environmental impact statement of the coal program and shut down all new leasing until that review is complete. The exact same solution is needed for the public lands oil and gas program.</p> <p>Instead, with every new set of oil and gas leases, like the ones proposed here, however, BLM further breaks the global carbon budget, signals that other countries can behave just as irresponsibly, and increases the intensity of current and future catastrophic climate impacts. See The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Ecoshift (August 2015) Ex. 1.</p> <p>As detailed below, the problems with this proposed lease sale and its compliance with the National Environmental Policy Act (“NEPA”) are such that BLM should adopt a no action alternative. In any case, it is clear that this NEPA analysis is inadequate to support project approval without supplemental analysis.</p>	<p>Thank you for your comments. In response, tream@wildearthguardians.org was previously added to the High Desert District interested public email list.</p> <p>The subject EA is tiered to the Greater Sage Grouse ARMPAs and the EA incorporates estimates of expected GHG emissions calculated from the Reasonably Foreseeable Development Scenario that was prepared for the RMP Amendments.</p> <p>When actual operations are proposed on an issued lease through an Application for Permit to Drill (APD) or Sundry Notice (SN) --information related to potential GHG emissions may be less speculative. In this case, that may be the appropriate point in time to estimate GHG emissions, if necessary and appropriate. Whenever BLM determines it is appropriate to estimate GHG emissions, those emissions levels cannot be translated from the global phenomenon to actual on the ground impacts (either beneficial or not) within the project area. In the EA, BLM has provided a qualitative discussion of GHG emissions and the expected changes in the region based on current climate models. Site-specific climate emissions of an application for permit to drill</p> <p>As stated in Section 1.1 of the EA, pursuant to 40 CFR 1508.28 and 1502.21, the EA tiers to and incorporates by reference the information and analysis contained in the EIS and RMP RODs for the Rawlins, Rock Springs, Pinedale, and Kemmerer Field Offices as amended (2015) and Bureau of Land Management September 21, 2015 Wyoming Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse (GRSG). Therefore, a new EIS for leasing is not necessary. These EIS documents analyzed the effects of oil and gas leasing and development, and the specific management goals, plans and monitoring</p>

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		actions are addressed in the RMPs.
13	<p><u>WildEarth Guardians:</u></p> <p>BLM Fails to Follow the Council on Environmental Quality Guidance on Climate Change and NEPA</p> <p>Well before this EA was completed, a December 2014 release of the Council on Environmental Quality’s (“CEQ”) “Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts” (“CEQ Guidance”) was provided to BLM. Ex. 2. Despite the intervening time, BLM continues to ignore most of the requirements set forth in the guidance. That such behavior is widespread throughout BLM’s oil and gas program suggests a failure of leadership at the highest levels of the Department and the Administration.</p>	<p>As noted in your comments, the Council on Environmental Quality (CEQ), which oversees NEPA compliance for all federal agencies, has issued “ Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts ” (Dec 2014). To date this draft guidance has not been finalized. If and when final guidance is received, BLM will comply in full. BLM has adequately disclosed reasonably foreseeable impacts resulting from climate change whether positive or negative, as required by NEPA.</p>
14	<p><u>WildEarth Guardians:</u></p> <p><u>A programmatic EIS is necessary</u></p> <p>Put simply, BLM is failing to describe or to analyze climate impacts from its oil and gas program and this EA is no exception. The repeated pattern and practice of such failure suggests that only a programmatic analysis at the national level can address this shortcoming. In fact, a programmatic analysis is exactly what the DEQ Guidance calls for. The Guidance suggests that for “long-range energy” actions, “it would be useful and efficient to provide an aggregate analysis of [greenhouse gas] emissions or climate change effects in a programmatic analysis and then incorporate by reference that analysis into future NEPA review.” CEQ Guidance at 29. The lack of climate analysis in this long-range energy EA demonstrates that the Wyoming office, along with other state offices as demonstrated in other recent oil and gas leasing EAs, is incapable or unwilling to undertake adequate review of greenhouse gas (“GHG”) emissions or climate change effects. This is exactly why the CEQ Guidance is correct in calling for programmatic analysis of climate emissions and effects for programs like the BLM oil and gas leasing program. In fact, when listing examples of “site-specific actions that can benefit from a programmatic NEPA review,” authorizing leases for oil and gas drilling is specifically mentioned. CEQ Guidance at 30. Thus, the CEQ Guidance creates an expectation that BLM would undertake a programmatic EIS of its oil and gas program, which it has thus far failed to do.</p> <p>But you don’t have to listen to us. BLM itself recently</p>	<p>The preparation of this leasing EA was done in compliance with all Federal rules, regulations, and laws. See our response to Comment #12.</p> <p>Because anticipated production from a particular lease parcel is speculative, and the resulting CO2 emissions from eventual combustion of that production are even more speculative, a qualitative evaluation of climate change at the lease sale stage is appropriate. Should expected impacts be outside the scope of the ARMPAs, additional quantitative analysis may be appropriate at that time.</p> <p>This lease sale EA has incorporated expected GHG emission information and discloses the relevant impacts potentially resulting from climate change and to air quality resources. An attempt to be more specific and quantitatively identify the potential impacts at the present stage was not employed because such an approach would be purely speculative and offer little value with respect to the informed decision-making objectives of the National Environmental Policy Act (“NEPA”). NEPA requires that agencies consider reasonably foreseeable impacts, but it does not require extensive consideration of</p>

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	<p>stated the following:</p> <p>CEQ recommends that an agency select the appropriate level of action for NEPA review at which to assess the effects of GHG emissions and climate change, either at a broad programmatic or landscape-scale level or at a project-specific level, and that the agency set forth a reasoned explanation for its approach. A specific example CEQ cited of a project-specific action that can benefit from a programmatic NEPA review is authorizing leases for oil and gas drilling. Given the aggregate nature of GHG contributions to global climate change, and the aggregate nature of climate change impacts to area-specific impacts analyzed in a field office NEPA document, it is readily apparent that the type of analysis suggested in the comments is more appropriate at a programmatic level, preferably at the regional or larger scale.</p> <p>BLM Utah Environmental Assessment for the May 2016 Oil and Gas Lease Sale (DOI-BLMUT-C020-2016-0002-EA) at 24.</p> <p>It is a wonderful advancement in BLM's thinking to acknowledge the CEQ Guidance and agree that programmatic analysis is necessary to take a "hard look" at climate emissions and impacts as required by NEPA. However, merely acknowledging this lack of analysis is not a substitute for it. In fact, it is an admission that the hard look required by NEPA has not yet been taken and is no different than an admission that BLM's current lease EA is not legally sufficient to support project approval. We agree that it would be nice for BLM State Offices to have a PEIS to tier to. Absent one, there are only two choices. Perform an equivalent analysis here or deny project approval. It would be reckless to do otherwise.</p> <p>Where an agency has chosen to ignore programmatic analysis in favor of site-specific climate analysis, it is required to "set forth a reasoned explanation" for that failure. CEQ Guidance at 4. Absent programmatic analysis, BLM is still required to adequately analyze climate impacts and to "apply fundamental NEPA principles to the analysis of climate change through assessing GHG emissions" as per the Guidance and the law itself. CEQ Guidance at 30. BLM has not done so in the relevant Resource Management Plans or in the EA in question. The failures to apply fundamental NEPA principles in analyzing climate emissions and effects in this leasing EA or in tiered documents are obvious and unfortunate.</p>	<p>impacts, the likelihood of which are speculative in nature. See e.g. <i>Robertson v. Methow Valley Citizens Council</i>, 490 U.S. 332, 356 (1989).</p> <p>The commenter's desire for national guidance is outside the scope of this EA and is a policy issue, not a NEPA issue.</p>

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15	<p><u>WildEarth Guardians:</u></p> <p><u>BLM does not have the discretion to ignore existing information and tools and simply wave away emissions as insignificant or incremental</u></p> <p>The touchstone of any NEPA analysis is to take a hard look at impacts and provide useful information to decision makers and the public; the analysis of climate impacts is no different. CEQ Guidance at 2. Such analysis does not require the development of new information or tools for analysis, but does require that existing information and tools are applied appropriately. CEQ Guidance at 4. (Examples would include air pollution models, reasonably foreseeable development scenarios, and emissions factors for various systems.) BLM should heed CEQ’s advice that providing climate change analysis will not only satisfy the critically important mandates of NEPA, but will also reduce the risk of litigation. CEQ Guidance at 2.</p> <p>It is true that agencies have discretion in how to apply available information and tools, but the depth of this discretion is a function of the agency’s “expertise and experience” with climate change and its impacts. CEQ Guidance at 5. It is clear that such expertise is largely absent in state and field BLM offices, including this office. Given this lack of experience and expertise at the state office, agency discretion to ignore the CEQ Guidance is at its low ebb. This is even more apparent at the district or field levels, again suggesting the need for national programmatic analysis of the BLM oil and gas leasing program. To address its lack of experience and expertise with climate analysis, it is not unusual, including in these documents, to find BLM offices relying on outdated and inapplicable boilerplate text to cover the gaps in analysis. “It is essential, however, that Federal agencies not rely on boilerplate text to avoid meaningful analysis, including consideration of alternatives or mitigation.” CEQ Guidance at 5-6. Unfortunately, that is exactly what has happened yet again in the EA and tiered documents in question.</p>	<p>This EA has incorporated specific estimates of GHG emissions resulting from the Reasonably Foreseeable Development Scenario prepared for the Greater Sage Grouse RMP amendments.</p> <p>Because anticipated production from a particular lease parcel is speculative, and the resulting CO2 emissions from eventual combustion of that production is even more speculative, a qualitative evaluation of climate change is appropriate.</p> <p>The BLM has acknowledged that climate science does not allow a precise connection between project-specific GHG emissions and specific environmental effects of climate change. This approach is consistent with the approach that federal courts have upheld when considering NEPA challenges to BLM federal coal leasing decisions. <i>WildEarth Guardians v. Jewell</i>, 738 F.3d 298, 309 n.5 (D.C. Cir. 2013) <i>WildEarth Guardians v. BLM</i>, , 8 F. Supp. 3d 17; 34 (D.D.C. 2014)</p>
16	<p><u>WildEarth Guardians:</u></p> <p><u>Actual emissions, including from oil and gas use, must be analyzed for lease sales</u></p> <p>The core of any climate change NEPA analysis is an actual analysis of emissions. It should be noted, all estimates of future project emissions are speculative to some degree,</p>	<p>Please see response to comments #12 and #15</p>

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	<p>but nonetheless required by NEPA whenever reasonably foreseeable. To estimate emissions here would not be difficult and has been and is being done by other BLM offices. BLM presented all the information necessary to do such an analysis.</p> <p>This might be because BLM thinks that fossil fuel leasing is a special example that absolves it of this requirement to estimate emissions. CEQ, however, makes a specific point, to state that such estimates are required when leasing fossil fuels. For example, the “development of a coal resource” requires an estimate of resulting emissions. CEQ Guidance at 12. Moreover, not just emissions, but the long-term climate effects of such an action must be analyzed to fulfill NEPA’s mandate. CEQ Guidance at 12.</p> <p>Please note, the Guidance is applicable to site-specific actions, like an individual lease, but also to “Federal land and resource management decisions,” like resource management plans. CEQ guidance at 8. Thus, GHG emissions and climate impacts should be analyzed in a Resource Management Plan, which was not done here, at the oil and gas leasing stage, which was not done here, and, at the application for permit to drill stage, which is not being done by BLM New Mexico either. Put simply, NEPA analysis is required for all proposed Federal actions, 40 CFR § 1508.18, and the analysis of climate impacts is no different, CEQ Guidance at 8.</p> <p>Emissions estimates are not limited only to the climate pollution that results from construction and production of fossil fuel projects. The “reasonably foreseeable effects” on our climate that must be analyzed under NEPA include those that come from “using the resource.” CEQ guidance at 12. Downstream, that is, combustion-related emissions should be accounted for in NEPA analysis. CEQ Guidance at 11. Thus, the analysis of emissions from the burning of oil and gas must be included in oil and gas leasing NEPA analysis, which was not done here.</p> <p>There is a presumption that climate emissions are quantitatively analyzed; if BLM chooses to do otherwise, it must “explain its basis for doing so.” CEQ guidance at 16. One basis for providing no more than a qualitative analysis is that the tools and information for producing quantitative analysis are not available. CEQ Guidance at 15. If, however, such tools and information are available, BLM “should conduct and disclose quantitative estimates of GHG emissions.” CEQ Guidance at 15. Again, such emissions estimates must include those from fossil fuel combustion. CEQ Guidance at 15.</p>	

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	<p>It is clear that BLM has the tools and information to estimate project emissions. For years, BLM state offices have estimated fossil fuel production from lease sales so that they could tout the economic impacts of the proposed projects. See, e.g., Ex. 3 – Utah BLM May 2015 Oil and Gas Lease Sale Environmental Assessment (December 2014) at 30-31. The U.S. Forest Service is also capable of estimating emissions from a BLM lease sale. See, e.g., Ex. 4 –Pawnee National Grassland Oil and Gas Leasing Analysis Draft Environmental Impact Statement (August 2014) at 277-87 and Previously Issued Oil and Gas Leases in the White River National Forest Draft Environmental Impact Statement, Bureau of Land Management (November 2015). BLM Miles City Field Office also created aggregated estimates of emissions from years of foreseeable projects. Miles City Proposed Resource Management Plan and Final Environmental Impact Statement (2015) at Chapter 4, Mile City Filed Office Resource Management Plan Air Resource Technical Support Document (2014).</p> <p>Once BLM has an estimate of possible fossil fuels produced from a project, it is quite simple to calculate the climate emissions that will result from the combustion of those fuels. Likewise, BLM has the information to estimate construction and production emissions and can easily apply the existing and widely known scientific literature to estimate methane releases. If uncertainty must be handled by presenting a range of possible estimates, that is an acceptable practice under NEPA.</p> <p>Here, BLM admits that increasing emissions of greenhouse gases will accelerate climate change. EA at 40. It acknowledges that climate change will have profound impacts on the West and on the planet. EA at 38. Likewise, it admits that oil and gas leasing lead to the increased emissions of greenhouse gases. EA at 42, 60. BLM acknowledges that 545 wells are spudded annually on BLM lands in Wyoming. EA at 55. But NEPA’s requirement to analyze reasonably foreseeable impacts ends there. BLM ignores its own Reasonably Foreseeable Development Scenario and claims it has no idea if a single lease offered will be developed. EA at 53, 56. This is despite the fact that BLM flatly states, “offering the proposed parcels may result in the development and production of new wells.” EA at 57. It is also despite the fact that when analyzing economic impacts of its decision, BLM is comfortable assuming all 21 parcels offered will be sold. EA at 52, 76.</p> <p>BLM seeks to absolve itself of its failure to adhere to NEPA standards through a number of unconvincing</p>	

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	<p>routes. BLM notes that it cannot identify “precisely” when climate impacts would hit. EA at 59. BLM notes that some years, and sometime for several years in a row, global temperatures go down, not up. EA at 59. BLM pleads that it cannot “know with certainty the net impacts from the proposed action on climate. EA t 60.</p> <p>These distractions are irrelevant. NEPA does not require impacts to be known “precisely” or with “certainty” before they are required to be included and analyzed. BLM’s analysis of economic impacts is again instructive. BLM presents two numbers of possible estimates of revenue lost from selection of the no action alternative: \$60,394 and \$2,560,705. EA at 52- 53. Thus, BLM is comfortable with and correct in providing a range of estimates with a higher number more than 42 times greater than its lower estimate. But while that kind of uncertainty (and the assumption of all parcels selling) is fine in estimating the benefits of the project, BLM throws up its hands and claims precision and certainty barriers for estimating climate emissions and impacts. That kind of putting one’s thumb on the scale is not allowed under NEPA. Thus, BLM failed to take a hard look at climate emissions and impacts and must supplement its analysis or deny project approval.</p> <p>Please note, although the CEQ Guidance suggests agencies’ should apply a rule of reason when determining the level of effort expended in analyzing GHG emissions, this is not a justification for avoiding a quantitative analysis for the project in question. First, as noted above, “[i]f tools or methodologies are available, . . . agencies should conduct and disclose quantitative emissions.” CEQ Guidance at 15. Second, the rule of reason means “reasonably proportionate to the importance of climate change related considerations to the agency action being evaluated.” CEQ Guidance at 14. Climate emissions from the BLM oil and gas leasing program have never been adequately evaluated at the programmatic, resource management plan, leasing, or applications for permit to drill levels. Onshore fossil fuels other than coal are currently responsible for a whopping 19% of federal leasing emissions. Ex. 5 - Cutting Greenhouse Gas From Fossil-Fuel Extraction on Federal Lands and Waters (CAP Report), Center for American Progress (March 19, 2015) at 4. That represents approximately 5% of all energy-related emissions in the U.S. See CAP Report at 1 noting total federal lands and waters energy-related emissions at 24% and multiplying by 19%. This is a huge and nationally important volume of emissions that has never been analyzed under NEPA in any fashion. Until BLM completes a quantitative analysis of emissions of its oil and gas leasing program at the programmatic level,</p>	

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	<p>there can be no doubt that emissions from individual federal lease sales warrant a quantitative estimate.</p> <p>Finally, the rule of reason still demands that BLM “ensure the professional and scientific integrity of [its] decisions and analysis.” CEQ Guidance at 14, citing 40 CFR § 1502.24. BLM offices still to this day cannot often admit of basic climate science conclusions. Calling climate science formative to dismiss the need for analysis, or claiming that the standard for such analysis is “certainty” lacks the required level of integrity. EA at 56-60.</p> <p>For these reasons, the CEQ Guidance makes clear that the rule of reason provides no rationale for avoiding a quantitative estimate of emissions for the projects in question. The EA in question is legally insufficient.</p>	
17	<p><u>WildEarth Guardians:</u></p> <p><u>Estimates of climate emissions need to be put in context and the social cost of carbon is an appropriate tool for doing so</u></p> <p>An estimate of emissions presented, without any context, means little to decision makers or the public. A ton or a gigaton of carbon dioxide equivalent (“CO2e”) has little meaning to all but those most deeply steeped in climate science. Thankfully, a simple tool that contextualizes emissions by translating tons of carbon into estimates of the costs to society of emitting that carbon is readily available. This social cost of carbon (“SCC”) evaluation tool is discussed in more depth in later sections.</p> <p>BLM has suggested in the past various reasons why the SCC is not an appropriate tool for contextualizing climate emissions. The CEQ Guidance recognizes that SCC estimates “vary over time, are associated with different discount rates and risks, and are intended to be updated as scientific and economic understanding improves.” CEQ Guidance at 16. These shortcomings, however, do not disqualify the methodology from use under NEPA or otherwise render it useless. <i>Id.</i> The CEQ Guidance discusses SCC solely in terms of costbenefit analyses. <i>Id.</i> This discussion does not, however, in any way suggest that the SCC is an inappropriate tool for other aspects of NEPA analysis.</p> <p>These comments do not call for a cost-benefit analysis. Instead, we merely contend that once emissions estimates for a project exist, it is a simple calculation to cast those emissions estimates in terms of the costs to society from resulting climate change. Failure to do so is a failure to</p>	<p>The Council on Environmental Quality (CEQ) regulations at 40 CFR 1502.23, state (in part), “...For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations.”</p> <p>The Social Cost of Carbon (SCC) protocol was developed by the Office of Management and Budget using an interagency working group in response to Executive Order 12866, which requires federal agencies, to the extent permitted by law, “to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.” SCC estimates the monetary cost incurred by the emission of one additional metric ton of carbon dioxide (CO2), and is not applicable to non-CO2 GHG emissions, such as methane. Estimating SCC is challenging because it is intended to model effects on the welfare of future generations at a global scale caused by additional carbon emissions occurring in the present and does not account for the complexity of multiple stressors and indicators. The SCC was developed to</p>

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	<p>provide decision makers and the public with a critical context for understanding the importance of a particular amount of climate emissions.</p> <p>In summary, the CEQ Guidance provides a meaningful roadmap for a BLM office that is clearly struggling with its ability to present meaningful analysis of the climate impacts of its fossil fuel projects. Unfortunately, BLM Wyoming has failed to employ nearly every relevant point presented by CEQ. This alone renders the EA inadequate to meet the requirements of NEPA.</p>	<p>support agencies in responding to EO 13514, not for use in making land management decisions.</p> <p>The November 2016 Oil and Gas Lease Sale is not a rulemaking action but rather a contract action through the offering, sale, and issuance of a Federal lease. The act of leasing land for oil and gas development in itself does not emit any carbon or greenhouse gasses. It is BLM's determination that in this particular instance, calculating the SCC from CO2 emissions from the combustion of an unknown quantity of produced oil and gas would be highly speculative but likely would be negligible in relation to the impacts from oil and gas burned on a nationwide or global basis. NEPA does not require a benefit-cost analysis, although CEQ NEPA regulations allow agencies to use it in NEPA analyses in certain circumstances (40 CFR § 1502.23). BLM's socioeconomic impact analysis acknowledges the monies received from leasing the parcels but because of the speculative nature of development does not attempt to quantify costs and benefits associated with drilling, possible production or eventual combustion of fluid minerals from the lease parcel. In contrast, SCC provides one element of a benefit-cost analysis: the monetization of all meaningful economic benefits and costs. Monetizing only certain effects on social welfare can lead to an unbalanced assessment. Reporting the SCC in isolation could be misleading. As a federal District Court in Oregon recently held in League of Wilderness Defenders/Blue Mts. Biodiversity Project v. Connaughton, 2014 U.S. Dist. LEXIS 170072 (D. Or. Dec. 9, 2014), a SCC analyses is not required to comply with NEPA where there is no clear way to quantify costs and benefits. Because anticipated production from a particular lease parcel is speculative, and the resulting CO2 emissions from eventual combustion of that production is even more speculative, a qualitative evaluation of climate change is appropriate.</p>

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		<p>The BLM also has acknowledged that climate science does not allow a precise connection between project-specific GHG emissions and specific environmental effects of climate change. This approach is consistent with the approach that federal courts have upheld when considering NEPA challenges to BLM federal coal leasing decisions. <i>WildEarth Guardians v. Jewell</i>, 738 F.3d 298, 309 n.5 (D.C. Cir. 2013) <i>WildEarth Guardians v. BLM</i>, , 8 F. Supp. 3d 17; 34 (D.D.C. 2014)</p>
18	<p><u>WildEarth Guardians:</u></p> <p>BLM Fails to Analyze Climate Emissions or Their Impacts</p> <p>A complete estimate and analysis of climate emissions and impacts from this project is required, but utterly missing. NEPA has a mandate to assess impacts at the earliest opportunity. Having already ignored such impacts by failing to analyze them in a programmatic analysis or in the analysis for RMPs, BLM cannot claim it will undertake analysis at the last possible moment, during an application for permit to drill analysis, rather than the earliest opportunity. “We will do it later” doesn’t cut it under NEPA, even the less so when the claim of later analysis is not true. Here, BLM doesn’t even reiterate its unmet promises from the past to analyze climate emissions and impacts when evaluating applications for permit to drill. At best, BLM promises to update its analysis when climate science advances to meet some undescribed BLM standard of excellence. EA at 60.</p> <p>The disdain BLM shows for the climate problem facing the world and the legal requirements of NEPA is shocking despite its repetition. BLM Wyoming has again ignored its own Headquarters office, ignored the White House’s Council on Environmental Quality, ignored the plain meaning of NEPA, and ignored common sense. The EA must be supplemented to include an analysis of climate change and project effects on climate change using the best available science and following agency and government-wide guidance and the law.</p>	<p>Please see response to comments #12 and #15</p>
19	<p><u>WildEarth Guardians:</u></p> <p>The Social Cost of Carbon Has Been Ignored</p> <p>The high costs to society from the leasing and subsequent</p>	<p>Please see response to comment #17</p>

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	<p>burning of public lands fossil fuels must be properly analyzed and that analysis presented to the public and agency decision makers. Historically, BLM has ignored the costs of fossil fuel leasing on public lands, especially the costs to society that result from global warming. Proper consideration of these social costs of carbon is simply good governance and good stewardship of public resources, and such consideration is legally required.</p>	
20	<p><u>WildEarth Guardians:</u></p> <p><i>Global warming is responsible for extreme costs to society already, and it will only get worse in the future.</i></p> <p>A recent consensus report, joined by more 190 countries, makes the basic science on global warming crystal clear. Global warming is unequivocal: since the 1950s the atmosphere and oceans have warmed, snow and ice have diminished, and seas have risen. Ex. 6, Climate Change 2013 – The Physical Science Basis - Summary for Policymakers, United Nation Intergovernmental Panel on Climate change (2013) (“AR5 summary”) at 4. There is little doubt that pollution from human activities is the cause of this warming. Id. at 17. The U.S. government’s own more recent report concludes that global warming is now affecting our country in far-reaching ways. Ex. 7, National Climate Assessment 2014 – Overview (“National Climate Assessment”). Climate pollution has warmed the U.S. almost 2°F, mostly since 1970, with another 2°F to 4°F expected in the next few decades. Id. Much greater warming in future decades is also possible, possibly up to an increase of 10°F above current temperatures by the end of the century. Id.</p> <p>These are not the estimates of “environmentalists.” This is the scientific consensus accepted both in the U.S. and around the world.</p> <p>The burning of coal, oil, and gas is the principle source of the largest contributor to global warming, carbon dioxide. Id.; see also AR5 summary at 13. At this time, approximately 25% of the carbon dioxide from fossil fuels produced in the U.S. comes from public lands leases. Ex. 8, Greenhouse Gas Emissions from Fossil Energy Extracted from Federal Lands and Waters, Stratus Consulting (February 1, 2012) at 15; see also, Ex. 9, Sales of Fossil Fuels Produced from Federal and Indian Lands – FY 2003 through FY 2013, U.S. Energy Information Administration (June 2014) at 2. Fossil fuels extracted from public lands release more than one and one-half billion metric tons of carbon dioxide equivalent per</p>	<p>Executive Order 13514 required Federal agencies to submit a 2020 greenhouse gas pollution reduction target within 90 days, and to increase energy efficiency, reduce fleet petroleum consumption, conserve water, reduce waste, support sustainable communities, and leverage Federal purchasing power to promote environmentally-responsible products and technologies. This EO does not apply to land management decisions. For a full copy of the EO, see http://www.whitehouse.gov/administration/eop/ceq/sustainability</p> <p>The Executive Order requires agencies to meet a number of energy, water, and waste reduction targets, including:</p> <ul style="list-style-type: none"> •30% reduction in vehicle fleet petroleum use by 2020; •26% improvement in water efficiency by 2020; •50% recycling and waste diversion by 2015; •95% of all applicable contracts will meet sustainability requirements; •Implementation of the 2030 net-zero-energy building requirement; •Implementation of the stormwater provisions of the Energy Independence and Security Act of 2007, section 438, and; •Development of guidance for sustainable Federal building locations in alignment with

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	<p>year. Id. at 12. That is the equivalent of more than 31 million passenger cars' annual climate pollution, just from producing and burning fossil fuels from our public lands alone. Greenhouse Gas Equivalencies Calculator, U.S. Environmental Protection Agency at http://www.epa.gov/cleanenergy/energy-resources/calculator.html (last checked July, 9 2015).</p> <p>BLM manages federal mineral rights, including the leasing and approval of extraction of public lands fossil fuels, on all federal lands. Therefore, BLM decision makers play a critical role in determining how much more climate pollution the U.S. will emit to the atmosphere, the extent that that pollution will exacerbate global warming, and the extent that society and future generations will have to bear the myriad related social costs of those decisions.</p> <p>Global warming is exacting costs on society in numerous ways. Agricultural productivity, including crops, livestock, and fisheries have been negatively impacted by global warming. National Climate Assessment – Overview. This has resulted from extreme weather events, changes in temperature and precipitation, and increasing pressure from pests and pathogens. Id. Both water quality and water quantity are being affected by global warming. Id. The degradation has resulted from changes in snowpack, extreme weather events, coastal flooding affecting aquifers, and from changes in temperature and precipitation. Id. Heat-related deaths and illnesses have grown and are growing. Id. Impacts to forest resources from increased forest fires and the resulting impacts to air quality put additional costs on society. Id. A wide variety of critical ecosystem functions are degraded by global warming, including habitat for fish and wildlife, drinking water storage, soils, and coastal barriers. Id. Carbon dioxide pollution is also responsible for increasing ocean acidification. This list represents only a subset of the social costs of carbon pollution from burning fossil fuels extracted from our public lands. Nonetheless, “[l]ower emissions of heat-trapping gases and particles mean less future warming and less-severe impacts; higher emissions mean more warming and more severe impacts.” Id.</p>	<p>the Livability Principles put forward by the Department of Housing and Urban Development, the Department of Transportation, and the Environmental Protection Agency.</p> <p>None of the requirements of these Executive Orders have bearing on land management through implementation of the availability of lands for oil and gas leasing and development designation in the RMP and triggered by receipt of an Expression of Interest in accordance with 43 CFR 3100.</p> <p>The Council on Environmental Quality (CEQ) regulations at 40 CFR 1502.23, state (in part), “...for the purposes of complying with the Act, the weighing of the merits and drawbacks of various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations.”</p> <p>Also, please see Response to Comments #15 and #17</p>
21	<p><u>WildEarth Guardians:</u></p> <p><i>BLM decision makers must consider the social cost of carbon from all proposed land management projects.</i></p> <p>The requirement to analyze the social cost of carbon is supported by the general requirements of the National</p>	<p>Please see response to comments #15, #17, #18, #19, and #20</p>

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	<p>Environmental Policy Act (“NEPA”) and specifically supported in federal case law. NEPA requires agencies to take a “hard look” at the consequences of proposed agency actions. 42 U.S.C. § 4321 et seq.; <i>Morris v. U.S. Nuclear Regulatory Commission</i>, 598 F.3d 677, 681 (10th Cir. 2010). Consequences that must be considered include direct, indirect, and cumulative consequences. 40 C.F.R. §§ 1502.16, 1508.7, 1508.8. A cumulative impact is the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7. Analysis of sitespecific impacts must take place at the lease stage and cannot merely be deferred until after receiving APDs to drill. See <i>New Mexico ex rel. Richardson v. Bureau of Land Management</i>, 565 F.3d 683, 717-18 (10th Cir. 2009); <i>Conner v. Burford</i>, 848 F.2d 1441 (9th Cir. 1988); <i>Bob Marshall Alliance v. Hodel</i>, 852 F.2d 1223, 1227 (9th Cir. 1988). Any NEPA analysis of a fossil fuel development project that fails to use the government-wide protocol for assessing the costs to society of carbon emissions from the proposed action has failed to take the legally required “hard look.”</p> <p>Courts have ordered agencies to assess the social cost of carbon pollution, even before a federal protocol for such analysis was adopted. In 2008, the Ninth Circuit Court of Appeals ordered the National Highway Traffic Safety Administration (“NHTSA”) to include a monetized assessment of carbon emissions reductions in an EA prepared under NEPA. <i>Center for Biological Diversity v. National Highway Traffic Safety Administration</i>, 538 F.3d 1172, 1203 (9th Cir. 2008). NHSTA had proposed a rule setting corporate average fuel economy standards for light trucks. A number of states and public interest groups challenged the rule for, among other things, failing to monetize the benefits that would accrue from a decision that led to lower carbon dioxide emissions. NHTSA’s EA had monetized the employment and sales impacts of the proposed action. <i>Id.</i> at 1199. The agency argued, however, that valuing the costs of carbon emissions was too uncertain. <i>Id.</i> At 1200. The court found this argument to be arbitrary and capricious. <i>Id.</i> The court noted that while estimates of the value of carbon emissions reductions occupied a wide range of values, the correct value was certainly not zero. <i>Id.</i> It further noted that other benefits were monetized by the agency although also uncertain. <i>Id.</i> at 1202.</p>	

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	<p>More recently, a federal court has done likewise for a proposed coal lease modification. High Country Conservation Advocates v. U.S. Forest Service, 2014 WL 2922751 (D. Colo. 2014), Slip Op. at 3, citing 40 C.F.R. § 1502.23. That court began its analysis by recognizing that a monetary cost-benefit analysis is not universally required by NEPA. High Country Conservation Advocates v. U.S. USFS, ---F. Supp.2d---, 2014 WL 2922751 (D. Colo 2014), citing 40 C.F.R. § 1502.23. However, when an agency prepares a cost-benefit analysis, “it cannot be misleading.” Id. at 3 (citations omitted). The quantification of the social cost of carbon was never prepared. BLM cannot rely on the stated benefits of the project in the RMP to justify project approval while wholly ignoring the costs to society that will accrue through climate change. This, the High Country court explained, was arbitrary and capricious. At 3. Any such approval would be based on a NEPA analysis with misleading economic assumptions, an approach long disallowed by courts throughout the country. Id. at 19-20.</p>	
22	<p><u>WildEarth Guardians:</u></p> <p><i>The social cost of carbon will be significant whenever fossil fuel leasing, or mining, or drilling is proposed.</i></p> <p>According to the U.S. Environmental Protection Agency (“EPA”), the social cost of carbon is “an estimate of the economic damages associated with a small increase” in emissions. Ex. 10, The Social Cost of Carbon, U.S. Environmental Protection Agency at http://www.epa.gov/climatechange/EPAactivities/economics/scc.html, last checked July 9, 2015. “This dollar figure also represents the value of damages avoided for a small emission reduction.” Id. Thus, it would be incorrect to assert that the social cost of carbon cannot be calculated for a project that represents a tiny fraction of global or even a tiny fraction of U.S. emissions. Estimates of the social cost of carbon are designed to do exactly that. In fact, the social cost of carbon is generally expressed in terms of the costs tolled by emitting or the benefits realized by avoiding a single ton of carbon dioxide emissions.</p> <p>However, it is very likely that the social cost of carbon protocol actually underestimates the true damages exacted on society by carbon pollution. Id. citing the IPCC Fourth Assessment Report. In particular, damages related to social and political conflicts, weather variability, extreme weather, and declining growth rates are either ignored or underestimated. Ex. 11, Omitted Damages: What’s Missing from the Social Cost of Carbon, Peter</p>	<p>Please see response to comments #15, #17, #18, #19, and #20</p>

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	<p>Howard, the Cost of Carbon Project (March 13, 2014). In fact, more recent studies have reported significantly higher carbon costs. For instance, a report published this year found that current estimates for the social cost of carbon should be increased six times for a mid-range value of \$220 per ton. See Ex. 12, Moore, C.F. and B.D. Delvane, "Temperature impacts on economic growth warrant stringent mitigation policy," Nature Climate Change (January 12, 2015) at 2. Thus, any application of the current social cost of carbon protocol is very likely a significant underestimate of the true cost of carbon pollution.</p> <p>Acknowledging the known tendency to underestimate costs, the federal government has been using its cost-benefit assessment tool since February 2010. See Ex. 13, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866 - Interagency Working Group on Social Cost of Carbon, United States Government (May 2013, Revised July 2015). In the last several years, the Departments of Agriculture, Energy, Transportation, and Housing and Urban Development and the Environmental Protection Agency and National Highway Traffic Safety Administration have all utilized the Social Cost of Carbon Protocol in public decision making documents.</p> <p>Although often utilized in the context of agency rulemakings, the protocol has been recommended for use and has been used in project-level decisions. For instance, the EPA recommended that an EIS prepared by the U.S. Department of State for the proposed Keystone XL oil pipeline include "an estimate of the 'social cost of carbon' associated with potential increases of GHG emissions." Ex. 14, EPA, Comments on Supplemental Draft EIS for the Keystone XL Oil Pipeline (June 6, 2011). The BLM has also utilized the social cost of carbon protocol in the context of oil and gas leasing. In recent Environmental Assessments for oil and gas leasing, the agency estimated "the annual SCC [social cost of carbon] associated with potential development on lease sale parcels." Ex. 15, BLM, "Environmental Assessment DOI-BLM-MT-C020-2014-0091-EA, Oil and Gas Lease Parcel, October 21, 2014 Sale" (May 19, 2014) at 76. In conducting its analysis, the BLM used a "3 percent average discount rate and year 2020 values," presuming social costs of carbon to be \$46 per metric ton. Id. Based on its estimate of greenhouse gas emissions, the agency estimated total carbon costs to be "\$38,499 (in 2011 dollars)." Id.</p> <p>The U.S. Government Accountability Office reviewed the</p>	

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	<p>process employed to develop the federal government’s assessment of the social cost of carbon. Ex. 16, Regulatory Impact Analysis – Social Cost of Carbon Estimates (July 2014). The GAO found that the process employed to develop the 2013 social cost of carbon estimates “used consensus-based decision making,” “relied on existing academic literature and models,” and “took steps to disclose limitations and incorporate new information.” Id. In short, while the social cost of carbon protocol, like other economic models, provides only estimates and is subject to further updates as new information becomes available, the federal government’s social cost of carbon protocol is a legitimate tool for performing a thorough and honest assessment of both costs and benefits of proposed actions as required under NEPA.</p> <p>Social Cost of CO₂, 2015-2050 a (in 2011 Dollars) Discount Rate and Statistic</p> <table border="1"> <thead> <tr> <th>Year</th> <th>5% Average</th> <th>3% Average</th> <th>2.5% Average</th> <th>3% 95th percentile</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>\$12</td> <td>\$39</td> <td>\$61</td> <td>\$116</td> </tr> <tr> <td>2020</td> <td>\$13</td> <td>\$46</td> <td>\$68</td> <td>\$137</td> </tr> <tr> <td>2025</td> <td>\$15</td> <td>\$50</td> <td>\$74</td> <td>\$153</td> </tr> <tr> <td>2030</td> <td>\$17</td> <td>\$55</td> <td>\$80</td> <td>\$170</td> </tr> <tr> <td>2035</td> <td>\$20</td> <td>\$60</td> <td>\$85</td> <td>\$187</td> </tr> <tr> <td>2040</td> <td>\$22</td> <td>\$65</td> <td>\$92</td> <td>\$204</td> </tr> <tr> <td>2045</td> <td>\$26</td> <td>\$70</td> <td>\$98</td> <td>\$220</td> </tr> <tr> <td>2050</td> <td>\$28</td> <td>\$76</td> <td>\$104</td> <td>\$235</td> </tr> </tbody> </table> <p>a The SCC values are dollar-year and emissions-year specific.</p> <p>Ex. 17, The Social Cost of Carbon, U.S. Environmental Protection Agency at http://www.epa.gov/climatechange/EPAactivities/economics/scc.html, (last checked July 9, 2015).</p> <p>As the table above makes clear, the social costs of carbon pollution are anything but trivial. For example, a project that released a mere 25,000 tons of carbon dioxide in 2025 would be responsible for costs to society, through global warming, of between \$375,000 and more than \$3.75 million for that year’s emissions alone. And again, this is very likely an underestimate of true costs.</p> <p>If the economy returns to fast-paced growth and global warming impacts are currently foreseen and properly estimated, the higher discount rates, 5%, and the lower social cost of carbon estimates will be most appropriate. If the economy grows long-term at slower rates and global warming impacts are currently foreseen and properly estimated, the higher social cost of carbon figures, the 2.5</p>	Year	5% Average	3% Average	2.5% Average	3% 95th percentile	2015	\$12	\$39	\$61	\$116	2020	\$13	\$46	\$68	\$137	2025	\$15	\$50	\$74	\$153	2030	\$17	\$55	\$80	\$170	2035	\$20	\$60	\$85	\$187	2040	\$22	\$65	\$92	\$204	2045	\$26	\$70	\$98	\$220	2050	\$28	\$76	\$104	\$235	
Year	5% Average	3% Average	2.5% Average	3% 95th percentile																																											
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	<p>% column, will be better estimates. A middle discount rate value, 3%, for mid-range growth estimates is also available. If, on the other hand, global warming impacts are greater or more costly than current mid-range estimates, the social cost of carbon would be better estimated by the 95th percentile figures. That means that the lowest social cost of carbon numbers are best-case scenarios for both the economy and global warming impacts. The highest numbers are for mid-range economic projections and close to worst-case estimates for global warming impacts.</p>	
23	<p><u>WildEarth Guardians:</u></p> <p><i>BLM's EA for the November 2016 Oil and Gas Lease Parcel Sale violates NEPA</i></p> <p>BLM fails to draw the necessary connection between the proposed project and increased climate impacts and costs. BLM improperly declines to assess the impacts of climate change, promising to assess them at some unknown time in the future. This violates NEPA's hard look doctrine. Court's have made clear that the leasing stage is an appropriate time to assess impacts that will not be mitigated by lease stipulations, as carbon emissions surely will not. This EA fails the hard look requirement. In addition, the project fails to take a hard look at climate impacts to society as contextualized in the social cost of carbon protocol.</p> <p>This project is one small piece resulting in tremendous cumulative impacts across the Department of the Interior fossil fuel leasing programs. Fossil fuels development on public lands and coastal waters results in more than one and one-half billion tons of carbon dioxide emissions per year. Using 2015 social cost of carbon values, the costs to society of the federal fossil fuel leasing program is between \$18 and \$177 billion per year. This same level of emissions in 20 years would incur costs from \$20 billion to more than a quarter of a trillion dollars per year, depending on the growth of the economy and the intensity of global warming impacts at that time. These costs, of course, do not include costs from air quality issues like smog and mercury emissions, do not include lost opportunity costs from lost recreation, or costs from direct degradation of ecosystem services. Recall also, that it is very likely that these numbers represent an underestimate of the true costs to society from global warming.</p> <p>These numbers, while shocking, do no more than reiterate what scientists have been telling us for years: extraction of fossil fuels are costing our society much more than they</p>	<p>Please see response to comments #15, #17, #18, #19, and #20</p>

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	<p>are providing in benefits. Of course numbers of such an alarming magnitude do not result from the approval of any single project. Instead, they represent the incessant accumulation of costs that result from BLM approving project after project while refusing to acknowledge that those projects have unspoken cumulative impacts on society, both individually and in the aggregate, that will continue to plague our country for many generations, in fact, for millenia. BLM must address the social costs of carbon that are likely to result from these projects.</p>	
24	<p><u>WildEarth Guardians:</u></p> <p>BLM ignores the Department of the Interior’s October 2015 Landscape-Scale Mitigation Policy, 600 DM 6</p> <p>The new Departmental Landscape-Scale Mitigation policy applies to BLM. 600 DM 6.2. Its purpose is to “avoid, minimize, and compensate for impacts to Department-managed resources.” 600 DM 6.1. The BLM is required to apply a “no net loss” policy to agency resources, including those impacted by oil and gas leasing and development. 600 DM 6.5. BLM is empowered to decline authorization of projects where mitigation and compensation cannot be achieved. 600 DM 6.6. Specifically, BLM is required to “[i]dentify and promote mitigation measures that help address the effects of climate change” and to consider “greenhouse gas emissions in design, analysis, and development of alternatives.” Id. These policies and principles should be employed “when developing and approving strategies and plans, reviewing projects, and issuing permits.” 600 DM 6.8.</p> <p>BLM has not undertaken to implement any aspect of this policy in the project at hand.</p>	<p>Absent a definitive development proposal for the lease it is not possible to conduct a more specific impact and/or cumulative effects analysis and as stated in Section 1.3 of the EA, BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be leased, or if leased, whether or not the lease would be explored or developed or at what intensity (spacing) development may occur. As further stated in Section 1.3 of the EA, “additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted.</p> <p>The identification and application of landscape scale mitigation, including adaptive management, may be developed during the site-specific NEPA analysis that would be required to address any specific post-lease exploration or development actions that are proposed and could include additional measures to mitigate identified direct, indirect or cumulative impacts resulting from any surface disturbing or disruptive proposal should the subject lands be offered, sold and development actually proposed. Until development of the tracts offered for lease is actually proposed and permits applications have been received, analysis of the Landscape Scale Mitigation Policy’s guidance to identify and propose mitigation measures is not appropriate.</p>
25	<p><u>WildEarth Guardians:</u></p> <p>The EA must analyze impacts from fracking</p>	<p>Hydraulic Fracturing is a specific well completion method that will be analyzed at the appropriate APD or project stage with the</p>

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	<p>wastewater, including the possibility of earthquakes produced by underground injection</p> <p>The EA largely ignores wastewater created by oil and gas extraction. This itself renders the EA inoperable. Despite BLM ignoring the issue however, it is well known that much fracking wastewater is injected into underground wells. That practice is known or suspected of causing earthquakes in Oklahoma, Texas, Ohio, Pennsylvania, California, and Canada and has been restricted for just that reason in some of those areas. BLM must, in a supplemental analysis, analyze the likelihood of such impacts in Wyoming before they occur and require mitigation before this project can proceed.</p> <p>Saline, produced water from wells, when injected into deeper sedimentary formations, appears to lubricate active fault lines. Ex. 18, Oklahoma's recent earthquakes and saltwater disposal, Science Advances (June 18, 2015). In some areas with previously rare earthquake activity, rates have increased ten-fold. It appears that the likelihood of induced seismicity is directly related to the rate of injection. High-rate injection is associated with the increase in U.S. mid-continent seismicity, M. Weingarten, et al., Science (June 19, 2015) at http://www.sciencemag.org/content/348/6241/1336; see also Ex. 19, Potential Injection-Induced Seismicity Associated with Oil and Gas Development, States First (2015).</p> <p>The EA does not attempt to analyze the degree or frequency of waste water injection. Likewise, no stipulations on such practices are included in the proposed leases. This possible impact must be studied and appropriate stipulations included to prevent these impacts in Wyoming.</p>	<p>necessary NEPA document. The impacts to resources affected will also be analyzed under that site specific NEPA document. See page 4, Section 1.3 of the lease sale EA, for a general discussion of development in relations to leasing. Also see Sections 3.2.9 and 4.2.9 for a discussion of water resources. As well, incorporated by reference in to the lease sale EA is Appendix D which contains a white paper on Hydraulic Fracturing.</p> <p>Since development cannot be reasonably determined at the leasing stage, any site specific impacts cannot realistically be analyzed at this time. At the time of APD proposal, should the parcels be sold and development proposed, an analysis of these resources will be completed.</p> <p>Earthquakes related to underground injection is adequately addressed in Appendix D, Hydraulic Fracturing White Paper which has been incorporated by reference into the EA, and summarized as appropriate. Because it was circulated with the EA, it was also subjected to public comment and is rightly part of the NEPA analysis.</p> <p>The potential for induced seismicity cannot be made at the leasing stage; as such, it will be evaluated at the APD stage should the parcel be sold/issued, and a development proposal submitted if the well is associated with, and permitted by the BLM because produced water volumes, and methods of disposal vary widely from basin to basin. Per EPA, the authority for permitting injection wells associated with Oil and Gas development has been delegated to the Wyoming Oil and Gas Commission. Further, analyzing impacts from injection to resources in North Dakota is outside the scope of this document.</p>
26	<p><u>WildEarth Guardians:</u></p> <p><u>• Sage Grouse</u></p>	<p>All parcels for the November 2016 proposed sale are being offered in conformance with the existing land use plans as required by 43</p>

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	<p>Parcels WY-1611-3, 4, 5, 6-9, 12, 13, 14, 17, 22, 23, 25-31, 32-73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85-105, 106, 107, 109-114, 116-119, 121-132, 137-140 are completely or partially within sage grouse Priority Habitat Management Areas (“PHMAs”). Parcels WY-1611-003, 010, 011, 012, 015, 016, 018, 019, 020, 021, 024, 074, 108, 115, 120, 133, 134, 135, and 136 are completely or partially within sage grouse General Habitat Management Areas (“GHMAs”). We remain concerned that sage grouse stipulations prescribed in BLM land-use plan amendments and revisions to protect greater sage grouse are scientifically unsound, legally invalid, and fail to grant an adequate level of protection to allow for the survival of greater sage grouse in the context of development on oil and gas leases, and therefore protest these parcels. Under BLM’s greater sage grouse plan amendments and revisions, the agency made an explicit commitment to prioritize oil and gas leasing and development outside PHMAs (which include SFAs) and GHMAs. Particularly relevant to this lease sale:</p> <p>“Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMAs and GHMAs. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMAs and GHMAs, and subject to applicable stipulations for the conservation of GRSG, priority will be given to development in non-habitat areas first and then in the least suitable habitat for GRSG.” Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices Approved RMP Amendment for Greater Sage-Grouse at 24.</p> <p>To comply with this direction, BLM should require leaseholders to diligently explore for and develop all existing fluid mineral leases, prioritizing those outside sage grouse habitats, before any new leases are offered at auction inside designated sage grouse habitats. Thus, all sage grouse parcels in this lease sale should be removed from the auction.</p> <p>We agree with BLM’s recommendations to defer the offering of Parcels WY-1611- 6-9, 17, 22, 23, 25-31, 32-73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85-105, 106, 107, 109-114 116-119, 121- 132, 137-140 in the Lease EAs, which fall entirely or partially within sage grouse PHMA habitats. We also agree with the need to withdraw Parcels 001, 002, and partial parcel 003, which lie within an area closed to oil and gas leasing under the Rawlins RMP. It is a wise decision to defer the long-term commitment of mineral leases in areas that are sensitive sage grouse</p>	<p>CFR 1610.5. Additional site specific NEPA analysis will occur at the development stage that will analyze resource conflicts and identify mitigation for specific impacts.</p> <p>The adequacy of existing stipulations or development of additional stipulations is beyond the scope of this document because stipulations for fluid minerals are developed at the RMP level. They cannot be changed unless done at that level.</p> <p>Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service support the timing limitation, surface occupancy, and surface use Stipulations developed in the ARMPA as they are consistent with the State of Wyoming’s Core Area Strategy as identified in multiple Executive Orders (2015-004).</p> <p>Additional mitigation, including adaptive management, could be developed during the site-specific NEPA analysis that would be required to address any specific post-lease exploration or development actions that are proposed</p> <p>Please see Response to Comments #4 and #5</p> <p>After careful review of the parcels, the BLM determined that it was appropriate to defer certain parcels nominated for inclusion in the November 2016 oil and gas lease sale. These deferrals were made consistent with the BLM's sage-grouse conservation plans and strategy, which direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important habitat and reduce development time and costs. The parcels remain eligible for leasing consideration in the future.</p> <p>Parcels WY-1611-007 and 008, which involve federal split-estate minerals that underlie private lands under conservation easement to protect sage grouse breeding, nesting, and</p>

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	<p>habitats. This is consistent with the Presidential Memorandum of November 6, 2015 titled “Mitigating Impacts on Natural Resources From Development and Encouraging Related Private Investment,” which directs federal agencies “to avoid and then minimize harmful effects to land, water, wildlife, and other ecological resources (natural resources) caused by land- or water-disturbing activities... .” 80 Fed. Reg. 68743, 68744. This Presidential Memorandum also directs agencies to identify areas “where natural resource values are irreplaceable”; sage grouse habitats clearly fall into this category, as there is no demonstrated possibility of creating or restoring sage grouse habitats once they have been destroyed due to the fragility and long recovery times of the sagebrush habitats upon which the grouse depend.</p> <p>Parcels WY-1611-003, 004, 005, 012, 013, and 014 fall entirely or partially within sage grouse Priority Habitat Management Areas based on our GIS analyses, yet not all are earmarked for complete (or in some cases, even partial) deferral. These parcels should be deferred from the lease auction to protect irreplaceable sage grouse habitats.</p> <p>We request that all parcels listed above be deferred from the lease sale. BLM should do its best to keep largely unleased areas of public land in designated sage grouse habitats unleased, regardless of mineral ownership patterns. Since 1965, grouse populations have declined significantly, and these declines continue in recent years, with the risk of sage grouse extirpation a sizeable threat over large portions of the species’ range. These declines are attributable at least in part to habitat loss due to mining and energy development and associated roads, and to habitat fragmentation due to roads and well fields. Oil and gas development poses perhaps the greatest threat to sage grouse viability in the region. The area within 5.3 miles of a sage grouse lek is crucial to both the breeding activities and nesting success of local sage grouse populations. In a study near Pinedale, Wyoming, sage grouse from disturbed leks where gas development occurred within 3 km of the lek site showed lower nesting rates (and hence lower reproduction), traveled farther to nest, and selected greater shrub cover than grouse from undisturbed leks.³ According to this study, impacts of oil and gas development to sage grouse include (1) direct habitat loss from new construction, (2) increased human activity and pumping noise causing displacement, (3) increased legal and illegal harvest, (4) direct mortality associated with reserve pits, and (5) lowered water tables resulting in herbaceous vegetation loss. These impacts have not been thoroughly evaluated with full NEPA analysis.</p>	<p>wintering habitat, are deferred from this sale. Permanently deferring a parcel is a land use allocations that are developed at the RMP level. They cannot be changed unless done at that level. The measures requested by the commenter were evaluated under the alternatives considered in the Greater Sage Grouse RMP amendment.</p> <p>As noted under Section 2.2, and in Table 3-1, of the EA the parcels proposed to be offered for sale are correctly identified as being within PHMA or GHMA: “Six (6) parcels containing approximately 6,967.540 acres are located in PHMA, and the remaining 15 are located in General Habitat Management Areas (GHMA)”.</p>

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	<p>In addition, many parcels contain designated sage grouse General Habitat Management Areas (GHMAs) under the BLM sage grouse plan amendments and revisions, including Parcels WY- 1611-003, 010, 011, 012, 015, 016, 018, 019, 020, 021, 024, 074, 108, 115, 120, 133, 134, 135, and 136 are completely or partially within sage grouse General Habitat Management Areas (“GHMAs”) according to our lease screens; we protest all of these parcels for the reasons set forth below. BLM’s failure to note which parcels in the November 2016 EA that overlap with sage grouse GHMAs is a failure of NEPA’s baseline information and hard look requirements. All portions of these parcels falling within GHMAs should be deferred as well, in order to implement the Mitigation Policy outlined earlier in these comments. The scientific information outlined elsewhere in these comments applies equally to GHMA, and the potential for significant impacts to sage grouse lek populations from oil and gas development springing from this lease sale is just as legally required in GHMA as in PHMA or SFA areas. In particular, the 0.25-mile ‘No Surface Occupancy’ buffers and 2-mile Timing Limitation Stipulations prescribed for PHMAs under BLM plans have explicitly been tested and found to result in significant negative impacts to sage grouse populations in the context of oil and gas development. According to Apa et al. (2008), “Buffer sizes of 0.25 mi., 0.5 mi., 0.6 mi., and 1.0 mi. result in estimated lek persistence of 5%, 11%, 14%, and 30%.” BLM’s own NEPA analysis for a recent Miles City Field Office oil and gas leasing EA provides a thorough synopsis:</p> <p>“Sage grouse are offered species specific protections through a stipulation. Under Alternative B, ¼ mile NSO buffers and 2 mile timing buffers would apply where relevant. Based on research, these stipulations for sage grouse are considered ineffective to ensure that sage grouse can persist within fully developed areas.</p> <p>With regard to existing restrictive stipulations applied by the BLM, (Walker et al. 2007a) research has demonstrated that the 0.4-km (0.25 miles) NSO lease stipulation is insufficient to conserve breeding sage-grouse populations in fully developed gas fields because this buffer distance leaves 98 percent of the landscape within 3.2 km (2 miles) open to full-scale development. Full-field development of 98 percent of the landscape within 3.2 km (2 miles) of leks in a typical landscape in the Powder River Basin reduced the average probability of lek persistence from 87 percent to 5 percent (Walker et al. 2007a).</p> <p>According to Walker et al. (2007),</p>	

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	<p>Current lease stipulations that prohibit development within 0.4 km of sage-grouse leks on federal lands are inadequate to ensure lek persistence and may result in impacts to breeding populations over larger areas. Seasonal restrictions on drilling and construction do not address impacts caused by loss of sagebrush and incursion of infrastructure that can affect populations over long periods of time.</p> <p>In its 2010 Final Rule finding the greater sage grouse “warranted, but precluded” for listing under the Endangered Species Act, the U.S. Fish and Wildlife Service made the following observations based on the best available scientific and commercial information:</p> <p style="padding-left: 40px;">The rationale for using a 0.4-km (0.25-mi) buffer as the basic unit for active lek protection is not clear, as there is no support in published literature for this distance affording any measure of protection.... this distance appears to be an artifact from the 1960s attempt to initiate planning guidelines for sagebrush management and is not scientifically based (Roberts 1991).</p> <p>In light of the overwhelming scientific evidence that the application of 0.25-mile NSO buffers and 2-mile timing stipulations are grossly inadequate to conserve sage grouse and their habitats in GHMA (or indeed elsewhere), BLM cannot rely on such current, scientifically unsound and invalid stipulations for the issuance of oil and gas leases in GHMA.</p> <p>Many parcels are located within 5.3 miles of one or more active sage grouse leks. The lands within 5.3 miles of active leks are typically used for nesting, a sensitive life history period when sage grouse are sensitive to disturbance from oil and gas drilling and production activities. The current standard sage grouse stipulations that apply outside PHMAs are biologically inadequate, and their effectiveness has not been established by BLM. Indeed, scientific studies demonstrate that these mitigation measures fail to maintain sage grouse populations in the face of full-field development, and significant impacts in terms of displacement of sage grouse from otherwise suitable habitat as well as significant population declines have been documented. BLM should not issue these sage grouse parcels unless a rigorous set of stipulations, far stronger than those provided in the EA (such as NSO stipulations), are applied to the parcels. This should include at minimum 4-mile No Surface Occupancy stipulations around active leks, in accordance with the recommendations of BLM’s own subject-matter experts. If</p>	

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	<p>these stipulations are implemented together with even stronger measures for PHMAs and Connectivity Areas, the BLM could make a credible case that impacts from leasing would not result in significant impacts.</p> <p>Outside PHMAs, current sage grouse lease stipulations provide an NSO stipulation of ¼ mile around active sage grouse leks. This is known to be an inadequate amount of protection for the lekking grouse during the breeding period, never mind for hens nesting on lands surrounding the lek. Studies have shown that the majority of hens nest within 3 miles of a lek, and that a 5.3-mile buffer would encompass almost all nesting birds in some cases. For Core Areas, the most scientifically supportable metric for NSO buffers would be 2 miles from the lek to protect breeding activities (after Holloran 2005, finding impacts from post-drilling production extend 1.9 miles from the wellsite)4 and 5.3 miles to protect nesting birds, with the understanding that the impacts of drilling and production activity would extend into the NSO buffer area from wells arrayed along its edge.</p> <p>Because leks sites are used traditionally year after year and represent selection for optimal breeding and nesting habitat, it is crucially important to protect the area surrounding lek sites from impacts. In his University of Wyoming dissertation on the impacts of oil and gas development on sage grouse, Matthew Holloran stated, “current development stipulations are inadequate to maintain greater sage grouse breeding populations in natural gas fields.” (Notably, these exact stipulations are being applied by BLM in this lease sale for GHMA sage grouse habitat parcels). The area within 5.3 miles of a sage grouse lek is crucial to both the breeding activities and nesting success of local sage grouse populations. At minimum, the prohibition of surface disturbance within 4 miles of a sage grouse lek is the absolute minimum starting point for sage grouse conservation.</p> <p>Other important findings on the negative impacts of oil and gas operations on sage grouse and their implications for the species are contained in three studies recently accepted for publication. Sage grouse mitigation measures have been demonstrated to be ineffective at maintaining this species at pre-development levels in the face of oil and gas development by Holloran (2005) and Naugle et al. (2006). This latter study found an 85% decline of sage grouse populations in the Powder River Basin of northeastern Wyoming since the onset of coalbed methane development there. BLM has repeatedly failed to provide any analysis, through field experiments or literature reviews, examining the effectiveness of the</p>	

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	<p>standard quarter-mile buffers where disturbance would be “avoided.” There is substantial scientific information in recent studies describing the impacts of oil and gas development to sage grouse. It is incumbent upon BLM to consider the most recent scientific evidence regarding the status of this species and to develop mitigation measures which will ensure the species is not moved toward listing under the Endangered Species Act. It is clear from the scientific evidence that the current protections are inadequate and are contributing to the further decline of the bird’s populations. This information constitutes significant new information that requires amendment of the Resource Management Plans before additional oil and gas leasing can move forward.</p> <p>State agency biologists have reached a consensus that the Timing Limitation Stipulations proposed for sage grouse in this lease sale are ineffective in the face of standard oil and gas development practices. These stipulations have likewise been condemned as inadequate by the U.S. Fish and Wildlife Service and renowned sage grouse expert Dr. Clait Braun. The BLM itself has been forced to admit that “New information from monitoring and studies indicate that current RMP decisions/actions may move the species toward listing...conflicts with current BLM decision to implement BLM’s sensitive species policy” and “New information and science indicate 1985 RMP Decisions, as amended, may not be adequate for sage grouse.” Continued application of stipulations known to be ineffective in the face of strong evidence that they do not work, and continuing to drive the sage grouse toward ESA listing in violation of BLM Sensitive Species policy, is arbitrary and capricious and an abuse of discretion under the Administrative Procedures Act.</p> <p>The restrictions contained in the recent Wyoming Greater Sage-Grouse Resource Management Plan Amendments and revisions are scientifically unsound and ineffective. Within Core Areas, the IM allows surface disturbing activity and surface occupancy just six tenths (0.6) of a mile from occupied sage-grouse leks, a far cry from the science-based 4-mile buffer recommended by the BLM’s own National Technical Team, and inconsistent with the findings of Manier et al. (2014), who described the range of appropriate lek buffers as 3.1 to 5 miles. By acreage, a 0.6- mile buffer encompasses less than 4% of the nesting habitat contained within the 4-mile buffer recommended by agency experts, and therefore does essentially nothing to protect sensitive nesting habitats. Even less protective, restrictions outside Core or Connectivity Areas allow surface disturbing activities and surface occupancy as close as one quarter (0.25) of a mile from leks. BLM has</p>	

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	<p>too great an abundance of data to the contrary to continue with scientifically unsound stipulations. BLM should apply the recommendations of the National Technical Team instead, and in the meantime defer leasing until these recommendations can be formally adopted through the plan amendment/revision process.</p> <p>The vague stipulations included in BLM's Notice of Competitive Oil and Gas Lease Sale for particular parcels do little to clarify to the interested public or potential lessees what restrictions might actually apply to protect sage grouse populations. For example, for some parcels, BLM imposes a Timing Limitation Stipulation and a Controlled Surface Use Stipulation. Such acceptable plans for mitigation of anticipated impacts must be prepared prior to issuing the lease in order to give the public full opportunity to comment, and to abide by the Department of Interior's stated new policy to complete site-specific environmental review at the leasing stage, not the APD stage. Without site-specific review and opportunity for comment, neither the public nor potential lessees can clearly gauge how restrictive or lax "acceptable plans for mitigation" might be, and whether they comply with federal laws, regulations, and agency guidelines and policies. Thus, absent such review, the leases should not issue at all.</p> <p>BLM has the scientific information needed to recognize that any use of these parcels will result in further population declines, propelling the sage grouse toward a listing under the Endangered Species Act, a ruling that is slated to be revisited in 2020. Again, it is in all interested parties favor (conservation groups, potential lessees, BLM and other federal agencies) for BLM to determine specific "modifications" prior to issuing leases, such as NSO restrictions. If the BLM fails to do so through site-specific environmental review before the APD stage, the agency will not adhere to the directive of Secretary Salazar and the Department of Interior's announced leasing reforms.</p> <p>No parcels which contain sage grouse leks, nesting habitat, breeding habitat, wintering habitat and brood-rearing habitat should be offered at auction. We request that these parcels be withdrawn from the lease sale. Failing withdrawal of the parcels, parcel-by-parcel NEPA analysis should occur (we have seen no evidence of this in the High Plains, High Desert, and Wind River-Bighorn Basin Leasing EAs in question), and 4-mile NSO buffer stipulations must be placed on all lease parcels with sage grouse leks. It is critical that these stipulations be attached at the leasing stage, when BLM has the maximum authority to restrict activities on these crucial habitats for</p>	

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	<p>the protection of the species, and that no exceptions to the stipulations be granted. BLM's failure to do so will permit oil and gas development activities which will contribute to declining sage grouse populations and ultimately listing by the U.S. Fish and Wildlife Service as a threatened or endangered species, in violation of BLM's duty to take all actions necessary to prevent listing under its Sensitive Species Manual.</p> <p>We remain concerned that development activities on the sage grouse parcels noted above will result in significant impacts to sage grouse occupying these parcels and/or the habitats nearby, and the BLM's programmatic NEPA underlying this lease sale does not adequately address these significant impacts.</p> <p>The parcels protested in this section are entirely or partially within PHMAs and GHMAs designated for sage grouse protection. In addition to the concerns outlined above, these parcels cannot be legally offered for sale because the Resource Management Plan and EIS underlying them contain significant legal deficiencies. In the past, BLM has noted that the deferral of sage grouse PHMA (sometimes termed "Core Area" in Wyoming parcels is largely responsible for overall reductions in PHMA acreage leased and therefore reduced threats to sage grouse:</p> <p style="padding-left: 40px;">The relatively subdued pace of new leasing in Core Areas is the direct result of the application of the BLM's sage-grouse leasing screen, whereby many parcels in recent sales have been deferred from sale until the sage-grouse RMP amendments and ongoing plan revisions are completed.</p> <p>Wind River – Bighorn Basin [WY] August 2015 Lease EA at 4-44, and see graph on same page. The cessation of deferral for PHMAs in this lease auction will reverse this progress.</p> <p>Since the greater sage grouse is a BLM Sensitive Species and remains an open possibility for listing under the Endangered Species Act in 2020, the leasing of these lands under biologically inadequate stipulations is a violation of BLM Sensitive Species Policy, and constitutes undue degradation of sage grouse habitats and populations. Because alternate stipulations that are indeed biologically sufficient are available, and their implementation would avert significant impacts to sage grouse populations, the impacts incurred as a result of developing the leases in question are completely unnecessary.</p>	

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	<p>The No Surface Occupancy stipulation of 0.6 miles surrounding lek locations is insufficient to prevent significant impacts to lek populations based on the best available science. No scientific study has ever recommended a 0.6-mile lek buffer. In Wyoming, Holloran (2005) examined thresholds of distance from oil and gas wells and access roads (accessing 5 or more wellpads), and found that significant impacts to sage grouse lek populations occurred when a well or access road was sited within 1.9 miles of a sage grouse lek, irrespective of whether the intrusion was visible from the lek itself. Manier et al. (2014) reviewed the available scientific literature and determined that buffers in the range of 3.1 to 5 miles from the lek were appropriate based on the best available science. A 0.6-mile NSO buffer does not fall within this range. The agency's own experts conducted an earlier review of the best available science (National Technical Team 2011) and recommended no future leasing in sage grouse Priority Habitats, and applying a 4- mile No Surface Occupancy buffer around leks for previously existing leases.</p> <p>The programmatic RMP allows a 5% level of surface disturbance within sage grouse Core Areas, a level of surface disturbance that is incompatible with maintaining sage grouse populations and preventing population declines caused by excessive habitat destruction and fragmentation. No scientific study supports this level of surface disturbance. The National Technical Team (2011) recommended a 3% disturbance cap, to be applied on a per-square-mile-section basis. Knick et al. (2013) found that virtually all active leks were surrounded by lands with less than 3% surface disturbance. No scientific study supports the 5% threshold.</p> <p>The recently adopted Greater Sage-Grouse RMP Amendments and Revisions RMP also prescribe the use of a Disturbance Density Calculation Tool (DDCT) or equivalent method (often called "project analysis area") to arrive at the density of wellsites as well as the overall disturbance percentage. Because the DDCT area is always much larger than the project area when sage grouse leks are present within 4 miles of the project area boundary, this method always underestimates the density of disturbances in cases where sage grouse breeding habitat is potentially affected by development. This allows a density of development inside the project area that far exceeds scientifically determined thresholds at which significant sage grouse population declines occur. No scientific study has ever tested what would be the thresholds of disturbance causing significant impacts to sage grouse populations using a DDCT. The National Technical</p>	

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	<p>Team (2011), by contrast, recommends that well and disturbance densities be calculated on a square-mile-section basis, not using a larger area.</p> <p>Current stipulations to protect sage grouse from oil and gas-related noise are inadequate. Noise can mask the breeding vocalizations of sage grouse (Blickley and Patricelli 2012), displaces grouse from leks (Blickley et al. 2012a), and causes stress to the birds that remain (Blickley et al. 2012b). According to Blickley et al. (2010),</p> <p style="padding-left: 40px;">The cumulative impacts of noise on individuals can manifest at the population level in various ways that can potentially range from population declines up to regional extinction. If species already threatened or endangered due to habitat loss avoid noisy areas and abandon otherwise suitable habitat because of a particular sensitivity to noise, their status becomes even more critical.</p> <p>Noise must be limited to a maximum of 10 dBA above the ambient natural noise level after the recommendations of Patricelli et al. (2012); the ambient noise level in central Wyoming was found to be 22 dBA (Patricelli et al. 2012) and in western Wyoming it was found to be 15 dBA (Ambrose and Florian 2014, Ambrose 2015; Ambrose et al. 2015). Ex. 20 provides a review of the relevant literature on noise including analysis that indicates sage grouse lek population declines once noise levels exceed the 25 dBA level. With this in mind, ambient noise levels should be defined as 15 dBA and allowable cumulative noise should be limited to 25 dBA in occupied breeding, nesting, brood-rearing, and wintering habitats, which equates to 10 dBA above the scientifically-derived ambient threshold.</p> <p>In addition, it is critically important for BLM to identify and protect winter concentration areas. See Ex. 21. Oil and gas development has known impacts on sage grouse (Doherty et al. 2008). Thus far, the location of these habitats remains largely undetermined. These lands should be closed to fluid mineral leasing, with Conditions of Approval applying NSO stipulations inside and within 2 miles of these areas. The proposal to simply apply timing stipulations to these areas is insufficient because it allows construction of well pads and roads known to be deleterious to wintering sage grouse inside these key habitats as long as construction/drilling occurs outside the winter season, and further allows production-related activities throughout winter. Thus, the sage grouse may return to their winter habitats to find an industrialized, fragmented habitat that no longer has any habitat function</p>	

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	<p>due to the birds' avoidance of such areas.</p> <p>In addition, Parcels WY-1611-007 and 008 involve federal split-estate minerals that underlie private lands under conservation easement to protect sage grouse breeding, nesting, and wintering habitat. Federally-permitted development of these private lands will nullify their value for which they were purchased – to protect habitats for greater sage grouse and other native wildlife. BLM must absolutely withdraw these parcels from the lease auction in order to avoid causing a resource conflict for the private landowners seeking to manage their lands for maximal sage grouse habitat effectiveness.</p>	
27	<p><u>WildEarth Guardians:</u></p> <p>Conclusion</p> <p>Thank you for the opportunity to provide comments on this project. For the reasons given above, BLM should withdraw its EA and either supplement it or forgo leasing altogether.</p> <p>It is now clear that the extraction of fossil fuels from public lands is inconsistent with a livable world in the future and with the continued existence of the greater sage grouse. The sooner BLM transitions away from this activity, the better it will be for the land it manages and for the American people.</p>	Thank you for your comments.
28	<p><u>Rocky Mountain Wild:</u></p> <p>The following are the lands and wildlife comments from Rocky Mountain Wild on the Wyoming BLM's November 2016 Lease Sale EA. For many years, the BLM has prioritized oil and gas leasing and development over other multiple uses such as wildlife, wilderness quality lands, watersheds, public health and public recreation. It is time for the BLM to restore some balance among resource uses in Wyoming, and render extractive industries more compatible with maintaining healthy ecosystems and public enjoyment of the land. Generally speaking, we would support a modified version of the BLM Preferred Alternative adjusted to address our concerns.</p> <p>BLM attaches a number of stipulations, most notably timing stipulations, and relies upon them to reduce impacts to sensitive wildlife resources without ever analyzing the effectiveness of these stipulations. Many of these stipulations are known to be ineffective as outlined below. See Attachment 1 (Rocky Mountain Wild's Assessment of Biological Impacts (ABI) GIS Screen) for a full list of</p>	Thank you for your comments.

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29	<p>values impacted by this proposed leasing decision.</p> <p><u>Rocky Mountain Wild:</u></p> <p><u>Sage Grouse</u></p> <p>We agree with BLM’s recommendations to defer in whole or in part the offering of many parcels which fall entirely or partially within Core Areas. See Attachment 1. However, the failure to defer parcels 4, 5, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 24, 108, 115, 134, 135, and 136 is improper. These parcels are all within a 4-mile buffer of a occupied greater sage-grouse lek and will have unacceptable impacts on this species.</p> <p>Under NEPA, BLM must consider a range of reasonable alternatives, including those that are outside the agency’s authority to implement. In this case, an alternative deferring all parcels within 4 miles of a lek would be fully within BLM’s authority to analyze and implement.</p> <p>We request that all parcels listed herein be deferred from the lease sale. BLM should do its best to keep largely unleased areas of public land, regardless of mineral ownership patterns. Wyoming sage grouse populations are some of the largest left in the nation and were relatively stable until the last decade, when sage grouse populations experienced major declines range-wide. The Wyoming Game and Fish Department reported that since 1952, there has been a 20% decline in the overall Wyoming sage grouse population, with some fragmented populations declining more than 80%; one of WGFD’s biologists reported a 40% statewide decline over the last 20 years.³ As of 2014, WGFD data reports a 60% population decline statewide since 2007. Since these figures were published, grouse populations have continued to decline over the long term. These declines are attributable at least in part to habitat loss due to mining and energy development and associated roads, and to habitat fragmentation due to roads and well fields. Oil and gas development poses perhaps the greatest threat to sage grouse viability in the region. The area within 2 to 3 miles of a sage grouse lek is crucial to both the breeding activities and nesting success of local sage grouse populations. In a study near Pinedale, sage grouse from disturbed leks where gas development occurred within 3 km of the lek site showed lower nesting rates (and hence lower reproduction), traveled farther to nest, and selected greater shrub cover than grouse from undisturbed leks.⁴ According to this study, impacts of oil and gas development to sage grouse include (1) direct habitat loss from new construction, (2) increased human activity and pumping noise causing displacement, (3) increased legal and illegal harvest, (4) direct mortality associated with reserve pits, and (5) lowered water tables resulting in herbaceous vegetation loss. These impacts</p>	<p>Resource management plans (RMP) make resource allocation decisions concerning the availability of lands for oil and gas leasing. This EA addresses whether nominated parcels are available for leasing in conformance with the existing RMP, and applies appropriate RMP stipulations to the lease sale parcels.</p> <p>The adequacy of existing stipulations or development of additional stipulations are beyond the scope of this document. Oil and gas stipulations are developed at the RMP level. They cannot be changed unless done at that level. Please see our response to comment #28.</p> <p>Additional mitigation, including adaptive management, could be developed during the site-specific NEPA analysis that would be required to address any specific post-lease exploration or development actions that are proposed.</p> <p>Also, please see our response to Comment #26</p>

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	<p>have not been thoroughly evaluated with full NEPA analysis.</p> <p>The lands within 4 miles of active leks are typically used for nesting, a sensitive life history period when sage grouse are sensitive to disturbance from oil and gas drilling and production activities. The current standard sage grouse stipulations that apply outside Core Areas are biologically inadequate, and their effectiveness has not been established by BLM. Indeed, scientific studies demonstrate that these mitigation measures fail to maintain sage grouse populations in the face of full-field development, and significant impacts in terms of displacement of sage grouse from otherwise suitable habitat as well as significant population declines have been documented. BLM should not issue these sage grouse parcels unless a rigorous set of stipulations, far stronger than those provided in the EA (such as NSO stipulations), are applied to the parcels. This should include 4-mile No Surface Occupancy stipulations around active leks. If these stipulations are implemented together with even stronger measures for Core and Connectivity Areas, the BLM could make a credible case that impacts from leasing would not result in significant impacts.</p> <p>Outside Core Areas, current sage grouse lease stipulations provide an NSO stipulation of ¼ mile around active sage grouse leks. This is inadequate amount of protection for the lekking grouse during the breeding period, never mind for hens nesting on lands surrounding the lek. Studies have shown that the majority of hens nest within 3 miles of a lek, and that a 5.3-mile buffer would encompass almost all nesting birds in some cases. For Core Areas, the most scientifically supportable metric for NSO buffers would be 2 miles from the lek to protect breeding birds (after Holloran 2005, finding impacts from post-drilling production extend 1.9 miles from the wellsite) and 5.3 miles to protect nesting birds, with the understanding that the impacts of drilling and production activity would extend into the NSO buffer area from wells arrayed along its edge.</p> <p>Because leks sites are used traditionally year after year and represent selection for optimal breeding and nesting habitat, it is crucially important to protect the area surrounding lek sites from impacts. In his University of Wyoming dissertation on the impacts of oil and gas development on sage grouse, Matthew Holloran stated, “current development stipulations are inadequate to maintain greater sage grouse breeding populations in natural gas fields.” (Notably, these exact stipulations are being applied by BLM in this lease sale for non-Core Area</p>	

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	<p>sage grouse habitat parcels). The area within 2 or 3 miles of a sage grouse lek is crucial to both the breeding activities and nesting success of local sage grouse populations. Dr. Clait Braun, the world's most eminent expert on sage grouse, has recommended NSO buffers of 3 miles from lek sites, based on the uncertainty of protecting sage grouse nesting habitat with smaller buffers. Thus, the prohibition of surface disturbance within 3 miles of a sage grouse lek is the absolute minimum starting point for sage grouse conservation.</p> <p>Other important findings on the negative impacts of oil and gas operations on sage grouse and their implications for the species are contained in three studies recently accepted for publication. Sage grouse mitigation measures have been demonstrated to be ineffective at maintaining this species at pre-development levels in the face of oil and gas development by Holloran (2005) and Naugle et al. (2006). This study found an 85% decline of sage grouse populations in the Powder River Basin of northeastern Wyoming since the onset of coalbed methane development there. BLM has repeatedly failed to provide any analysis, through field experiments or literature reviews, examining the effectiveness of the standard quarter-mile buffers where disturbance would be "avoided." There is substantial new information in recent studies to warrant supplemental NEPA analysis of the impacts of oil and gas development to sage grouse. It is incumbent upon BLM to consider the most recent scientific evidence regarding the status of this species and to develop mitigation measures which will ensure the species is not moved toward listing under the Endangered Species Act. It is clear from the scientific evidence that the current protections are inadequate and are contributing to the further decline of the bird's populations. This information constitutes significant new information that requires amendment of the Resource Management Plans before additional oil and gas leasing can move forward.</p> <p>Wyoming Game and Fish Department biologists have reached a consensus that the Timing Limitation Stipulations proposed for sage grouse in this lease sale are ineffective in the face of standard oil and gas development practices. These stipulations have likewise been condemned as inadequate by the U.S. Fish and Wildlife Service and renowned sage grouse expert Dr. Clait Braun. The BLM itself has been forced to admit that "New information from monitoring and studies indicate that current RMP decisions/actions may move the species toward listing...conflicts with current BLM decision to implement BLM's sensitive species policy" and "New information and science indicate 1985 RMP Decisions, as</p>	

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	<p>amended, may not be adequate for sage grouse.” Continued application of stipulations known to be ineffective in the face of strong evidence that they do not work, and continuing to drive the sage grouse toward ESA listing in violation of BLM Sensitive Species policy, is arbitrary and capricious and an abuse of discretion under the Administrative Procedures Act.</p> <p>The vague stipulations included in BLM’s Notice of Competitive Oil and Gas Lease Sale for particular parcels do little to clarify to the interested public or potential lessees what restrictions might actually apply to protect sage grouse populations. For example, for some parcels, BLM imposes a Timing Limitation Stipulation and a Controlled Surface Use Stipulation. Such acceptable plans for mitigation of anticipated impacts must be prepared prior to issuing the lease in order to give the public full opportunity to comment, and to abide by the Department of Interior’s stated new policy to complete site-specific environmental review at the leasing stage, not the APD stage. Without site-specific review and opportunity for comment, neither the public nor potential lessees can clearly gauge how restrictive or lax “acceptable plans for mitigation” might be, and whether they comply with federal laws, regulations, and agency guidelines and policies. Thus, absent such review, the leases should not issue at all.</p> <p>BLM has the scientific information needed to recognize that any use of these parcels will result in further population declines. Again, it is in all interested parties favor (conservation groups, potential lessees, BLM and other federal agencies) for BLM to determine specific “modifications” prior to issuing leases, such as NSO restrictions.</p> <p>We recommend against the sale of any lease parcels which contain sage grouse leks, nesting habitat, breeding habitat, wintering habitat and brood-rearing habitat. We request that these parcels be withdrawn from the lease sale. Failing withdrawal of the parcels, parcel-by-parcel NEPA analysis should occur, and NSO stipulations must be placed on all lease parcels with sage grouse leks. In addition, three-mile buffers must be placed around all leks. It is critical that these stipulations be attached at the leasing stage, when BLM has the maximum authority to restrict activities on these crucial habitats for the protection of the species, and that no exceptions to the stipulations be granted. BLM’s failure to do so will permit oil and gas development activities which will contribute to declining sage grouse populations and ultimately could result in listing by the U.S. Fish and Wildlife Service as a threatened or</p>	

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	<p>endangered species, in violation of BLM's duty to take all actions necessary to prevent listing under its Sensitive Species Manual.</p> <p>We remain concerned that development activities on the sage grouse parcels noted above will result in significant impacts to sage grouse occupying these parcels and/or the habitats nearby, and the BLM's programmatic NEPA underlying this lease sale does not adequately address these significant impacts in light of new information. Therefore, the requisite NEPA analysis to support the leasing of the sage grouse parcels listed above in the absence of an Environmental Impact Statement does not exist.</p>	
30	<p><u>Rocky Mountain Wild:</u></p> <p><u>Hydraulic Fracturing</u></p> <p>The EA fails to consider the impacts of hydraulically fracturing these oil and gas wells. There is not adequate analysis of wildlife impacts, seismic activity, health impacts, or many of the other known impacts of hydraulic fracturing. Around 90 percent of wells have used hydraulic fracking to get more gas flowing, according to the drilling industry.⁹ With the very high probability that this practice will occur on the specific parcels it is arbitrary and capricious of BLM to neglect this highly controversial and impactful practice in its environmental analysis.</p> <p>At a minimum, "the agency's [Environmental Assessment] must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum." <i>Grand Canyon Trust v. F.A.A.</i>, 290 F.3d 339, 342 (D.C. Cir. 2002). More specifically, "an environmental impact statement must analyze not only the direct impacts of a proposed action, but also the indirect and cumulative impacts." <i>Utahns for Better Transp. v. U.S. Dep't of Transp.</i>, 305 F.3d 1152, 1172 (10th Cir. 2002) (citing <i>Custer County Action Assoc. v. Garvey</i>, 256 F.3d 1024, 1035 (10th Cir. 2001)) (internal quotation omitted); see also 40 C.F.R. § 1509.25(a)(2) (2009) (scope of EIS is influenced by cumulative actions and impact); <i>Greenpeace v. Nat'l Marine Fisheries Serv.</i>, 80 F. Supp. 2d 1137, 1149 (W.D. Wash. 2000) (management plans were unlawful for failing to consider cumulative impacts on species). <i>Conner v. Burford</i> holds that the inability at the lease sale stage to fully ascertain effects of development "is not a justification for failing to estimate what those effects might be." <i>Conner v. Burford</i>, 848 F.2d 1441 (9th Cir. 1988); see also <i>Methow Valley Citizens Council</i>, 490 U.S. 332 (1989).</p>	Please see response to Comment # 25

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	<p>Cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7 (2009). The Tenth Circuit recently noted that the BLM’s own Handbook for Fluid Mineral Resources recognizes that “BLM has a statutory responsibility under NEPA to analyze and document the direct, indirect and cumulative impacts of past, present and reasonably foreseeable future actions resulting from Federally authorized fluid minerals activities.” Pennaco Energy Inc., v. U.S. Dep’t of Interior, 377 F.3d 1147, 1160 (10th Cir. 2004).</p>	
31	<p><u>Rocky Mountain Wild:</u></p> <p><u>Conclusion</u></p> <p>Thank you for considering our comments on the November 2016 Leasing EA. For the reasons outlined in this comment BLM should consider deferring additional parcels, a broader range of alternatives and conduct further analysis about the impacts of leasing these parcels. BLM is tasked with managing its lands for multi-use and leasing within important sage-grouse habitat violates this mandate.</p>	<p>Thank you for your comments.</p>
32	<p><u>Frank W. Maurer, Jr.</u></p> <p>We have received your Notice of 19 April 2016 Referral 3100 (WY D00). I have recently spoken with Mr. Tom Foertsch about our ranch being in the Sage Grouse priority management core area (PHMA) and that the BLM State Director has already made the decision that our ranch is deferred from sale and not available for leasing at this time.</p> <p>We are in the WY -1611 – 007 (1680.22 acres).</p> <p style="padding-left: 40px;">T.0210N, R.0910W, 06th PM, WY Sec 002 LOTS 1-4 002 S2N2, S2; 012 ALL; 014 E2 NE, S2;</p> <p>Included in our ranch is part of WY -1611 – 008. Sweetwater County</p> <p>Enclosed are past correspondence and a map from Rocky Mountain Wild.</p> <p>We wish it to be known once again that our ranch is being</p>	<p>Thank you for your comments.</p> <p>Permanently deferring a parcel is a land use allocation decision that is developed at the RMP level. They cannot be changed unless done at that level.</p>

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	<p>managed for wildlife and sage grouse with conservation easements on the Windy Hill area held by the now Green River Valley Land Trust.</p> <p>It would be appreciated if you could permanently defer our ranch from leasing.</p>	
33	<p><u>Coalition of Local Governments:</u></p> <p>The Coalition of Local Governments (“Coalition”) submits the following comments regarding the Environmental Assessment (“EA”) and Finding of No Significant Impact (“FONSI”) for the November 1, 2016 Competitive Lease Sale. We appreciate the opportunity to provide our insights on the Bureau of Land Management’s (“BLM”) proposed action. The November lease sale defers 127 parcels of the 140 that were nominated. In the past three years, BLM has deferred 363 parcels for various reasons – most often sage-grouse. The consequence of these deferrals is a massive decrease in assessed value to counties and the State of Wyoming and significant socioeconomic impacts to the communities that depend on energy as an economic driver. With this background, the Coalition offer’s the following comments. The Coalition incorporates those comments submitted by Sweetwater County.</p>	Thank you for your comments.
34	<p><u>Coalition of Local Governments:</u></p> <p>I. <u>Statement of Interest</u></p> <p>The Coalition and members of the Coalition are not merely members of the public. The Coalition provides the technical guidance for local government cooperating agencies in writing comments and identifying issues. The Coalition is a voluntary association of local governments organized under the laws of the State of Wyoming to educate, guide, and develop public land policy in the affected counties. Wyo. Stat. §§11-16-103, 11-16-122. Coalition members include Lincoln County, Sweetwater County, Uinta County, Sublette County, Lincoln County Conservation District, Sweetwater Conservation District, Uinta County Conservation District, Sublette County Conservation District, Star Valley Conservation District, and Little Snake River Conservation District. The Coalition serves many purposes for its members, including the promotion of policies and land and water management that protect vested rights of individuals and industries dependent on utilizing and conserving existing water resources and public lands, promotes and supports habitat improvement, supports and finds scientific studies addressing federal land use plans and projects, and providing comments on behalf of members for the</p>	Thank you for your comments.

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	<p>educational benefit of those proposing federal land use plans and land use projects.</p> <p>Both county and conservation district members of the Coalition have authority to protect the public health and welfare of Wyoming citizens while promoting and protecting public lands and water resources. Wyo. Stat. §§18-5-208; Wyo. Stat. §§11-16-122. Conservation Districts have statutory authority to develop and implement comprehensive resource use and management plans for range improvement and stabilization, conservation of soil, water and vegetative resources. Wyo. Stat. § 11-16-122(xvi). The Conservation District’s jurisdiction includes matters pertaining to the acquisition, construction, operation or administration of any land utilization, soil conservation, erosion control, erosion prevention, flood prevention projects, conservation of water, water utilization, disposal of water in watershed areas and other water projects. Id. at (xix).</p> <p>By statute, boards of county commissioners “shall be deemed to have special expertise on all subject matters for which it has statutory responsibility, including but not limited to, all subject matters directly or indirectly related to the health, safety, welfare, custom, culture and socio-economic viability of a county.” Wyo. Stat. Ann. § 18-5-208 (emphasis added). As such, each county “may regulate and restrict . . . the use, condition of use or occupancy of lands for residence, recreation, agriculture, industry, commerce, public use and other purposes in the unincorporated area of the county.” Id. at §201.</p>	
35	<p><u>Coalition of Local Governments:</u></p> <p>II. <u>Citizen Proposed Wilderness</u></p> <p>Section 201 of FLPMA requires the Secretary of the Interior to “prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern.” 43 U.S.C. § 1711(a). This inventory must be kept current in order to reflect any changed conditions and “to identify new and emerging resource and other values.” Id. In addition to the requirement to prepare an inventory, FLPMA requires that “[t]he preparation and maintenance of [the] inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.” Id. (emphasis added).</p> <p>FLPMA expressly requires “[t]he Secretary shall manage the public lands under principles of multiple use and</p>	<p>Parcels 106, 109, 111, 122, 113, and 114 are in the Cedar Mountain Canyons Citizen Proposed Wilderness Area. Third party inventory information was received by BLM in December 2015. This information will be evaluated during the 2016 field season.</p> <p>These parcels are also within sage grouse PHMA and as stated on page 2 of the EA have been deferred at BLM’s discretion. These deferrals are consistent with the BLM’s sage grouse conservation plans and strategy, which direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important Greater Sage Grouse (GSG) habitat and reduce development time and costs.</p>

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	<p>sustained yield, in accordance with the land use plans . . .” 17 U.S.C. § 1732(a) (emphasis added); Lopez v. Davis, 531 U.S. 230, 241 (2001) (“Congress used ‘shall’ to impose discretion less obligations.”). Significantly, “wilderness” is not one of those principal uses. Id. at 1702(c). Congress reserved to itself the sole authority to designate wilderness. 16 U.S.C. § 1131(a). While Congress granted authority to the Interior Secretary to identify and study lands meeting the definition of wilderness, that authority expired in 1993. 43 U.S.C. § 1782.</p> <p>Despite this clear and unchanged statutory framework, BLM now defers leases for Citizen Proposed Wilderness Areas. See EA at Appendix C (deferring parcels in the Cedar Mountain Canyons Citizen Proposed Wilderness Areas). This de facto wilderness management is inconsistent with and contrary to the RMPs in question, which direct that the lands in question be managed for many compatible uses, including oil and gas development. 43 U.S.C. § 1732(a) (“The Secretary shall manage the public lands under the principles of multiple use and sustained yield, in accordance with the land use plans . . .”); 43 C.F.R. §§ 1610.5-3(a) (“All future resource management authorizations and actions . . . and subsequent more detailed or specific planning, shall conform to the approved plan.”). Thus, the deferrals are inconsistent with BLM’s statutory guidance and the governing RMP’s and unlawful.</p>	
36	<p><u>Coalition of Local Governments:</u></p> <p>III. <u>Sage-Grouse Habitat “Prioritization” is A De Facto Mineral Withdrawal</u></p> <p>Appendix A lists all nominated acres, acres deferred, and the reasoning for those deferrals. 71,816.7 acres were deferred as “consistent with the BLM’s sage grouse conservation plans and strategy, which direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important GSG habitat and reduce development time and costs.” FONSI at 3. Another 155,366.85 acres were deferred pending completion of the Rock Springs Field Office RMP but Appendix A lists the reasons for that deferral as sage-grouse Priority Habitat Management Areas (“PHMA”) and Sagebrush Focal Areas (“SFA”). Neither justification is appropriate and flies in the face of FLPMA and the National Environmental Policy Act.</p> <p>According to the Rocky Mountain Greater Sage-Grouse</p>	See Response to Comment #3

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	<p>Sub-Region Record of Decision (“ROD”), the BLM is to “[p]rioritize the leasing and development of fluid mineral resources outside GRSG habitat.” ROD at 1-19. According to the ROD, “prioritizing” leasing would “further limit future surface disturbance and encourage new development in areas that would not conflict with GRSG. This objective is intended to guide development to lower conflict areas and as such protect important habitat and reduce the time and cost associated with oil and gas leasing development by avoiding sensitive areas, reducing the complexity of environmental review and analysis of potential impacts on sensitive species, and decreasing the need for compensatory mitigation.” ROD at 1-25.</p> <p>Based on this rationale, the BLM defers the lion’s share of the nominated parcels. A deferral, however, has no definite terminus – a deferred parcel may remain in limbo for years, even decades. A deferral, therefore, is the functional equivalent of a mineral withdrawal. However, as the ROD states, the sage-grouse amendment “will not change the BLM’s responsibility to comply with applicable laws, rules, and regulations” nor will the ROD “change the BLM’s obligation to conform to current or future national policy.” ROD at 2-2</p> <p>FLPMA defines a withdrawal as:</p> <p>[W]ithholding an area of Federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of Federal land, other than "property" governed by the Federal Property and Administrative Services Act, as amended (40 U.S.C. 472) from one department, bureau or agency to another department, bureau or agency</p> <p>43 U.S.C. §1702(j). By this definition, any decision of BLM to withhold public lands from sale under the Mineral Leasing Act to protect wildlife (or “citizen proposed wilderness” for that matter) falls squarely within the definition of a withdrawal under FLPMA.</p> <p>BLM must comply with Section 204 of FLPMA which governs the withdrawal procedures. Section 204(c) applies to virtually all mineral closures involving more than 5,000 acres. 43 U.S.C. §1714(c). First, the Secretary must publish notice of the withdrawal. 43 U.S.C. §1714(b)(1). Second, the Secretary must notify the respective resource committees in Congress and provide data and analysis on</p>	

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	<p>12 separate issues. Id. at §1714(c)(2)(1)-(12). The Secretary is required to: (1) explain the proposed land use that makes the withdrawal necessary; (2) inventory of current natural resource uses and values; (3) describe effects on adjacent non-federal land, possible environmental degradation, and economic impacts of land use change on individuals, local communities, and the nation; (4) identify present land users and effects by proposed use; (5) analyze how existing and potential resources conflict with proposed use, with provisions to continue or terminate existing uses and economic effects; (6) state how the withdrawn land will be used; (7) state how lands would be used if the proposed use were to proceed, and suitable alternative sites, (consultation with other federal agencies, regional, state and local governments, effect of proposed use on state and local economies; (9) the duration of withdrawal; (10) identify time and place of public hearings; (11) identify location of records; and (12) provide a report by engineer or geologist documenting known depositions, mineral production, mining claims, mineral leases, potential, and market demands.</p> <p>The Wyoming district court has twice concluded that Forest Service leasing moratoria, which were enforced by BLM, must comply with Section 204 procedures. <i>Mountain States Legal Foundation v. Andrus</i>, 499 F. Supp. 383 (D. Wyo 1980) (“MSLF I”) (deferring action on mineral lease applications pending RARE II violated §204); and <i>Mountain States Legal Foundation v. Hodel</i>, 668 F. Supp. 1466 (D. Wyo. 1987) (“MSLF II”) (deferring mineral lease applications pending completion of EIS and land use plans violated Section 204). The United States never appealed either decision and instead proceeded to process the pending lease applications.</p> <p>These decisions demonstrate that BLM cannot close specific areas of land to mineral leasing without complying with Section 204 of FLPMA. The Wyoming RMPs involved in the November lease sale fit squarely within the facts found in the MSLF cases. The management decision process is quite different from a withdrawal, because it omits Secretarial review. In addition, there is no professional mineral report, estimate of economic impacts or evaluation of the impacts on adjacent private land. Most important, the closures are not recorded on the BLM plat books while withdrawals are.</p> <p>BLM, therefore, must offer the deferred parcels justified as being prioritized for sage-grouse habitat or else it runs the risk of violating FLPMA. The Coalition would encourage BLM to reconsider each parcel or perform that 12 step</p>	

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	withdrawal analysis in Section 204 of FLPMA.	
37	<p><u>Center for Biological Diversity:</u></p> <p>The Center for Biological Diversity (the “Center”), Friends of the Earth, Great Old Broads for Wilderness, and Sierra Club write to submit the following comments on the Environmental Assessment (“EA”) for the proposed November 2016 Competitive Oil and Gas Lease Sale. The Bureau of Land Management (“BLM”) Wyoming State Office is offering 21 parcels in southwest Wyoming encompassing approximately 30,197 acres of federal lands in the Rock Springs, Kemmerer, Pinedale, and Rawlins Field Offices (collectively, “planning areas”).</p> <p>We are deeply concerned that new fossil fuel leasing within the planning areas will contribute to worsening the climate crisis. To preserve any chance of averting catastrophic climate disruption, the vast majority of all proven fossil fuels must be kept in the ground. Opening up new areas to oil and gas exploration and unlocking new sources of greenhouse gas pollution would only fuel greater warming and contravenes BLM’s mandate to manage the public lands “without permanent impairment of the productivity of the land and the quality of the environment.” BLM should end all new leasing in the planning areas and all other areas that it manages in order to limit the climate change effects of its actions; at a minimum, it should defer any such leasing until such time as it can conduct a comprehensive review of the climate consequences of its leasing activities, at the national and regional scale.</p> <p>BLM should also ban new hydraulic fracturing (“fracking”) and other unconventional well stimulation activities in the planning areas. BLM must analyze the consequences of alternatives other than simply leasing and no action, including a no-fracking alternative. The Environmental Impact Statements (“EIS”) for the Green River, Kemmerer, Pinedale, and Rawlins Resource Management Plans (“RMP”) do not adequately analyze the relatively new and dangerous extraction methods of fracking and horizontal drilling, or the increased seismic risks from such extraction methods. Given the likelihood that fracking and other similarly harmful techniques would be employed in the exploration and development of the parcels, BLM must analyze and disclose the potential impacts resulting from such frequently used practices, including at the lease-parcel scale. BLM must fully analyze the public health, environmental justice, and industrialization impacts of unconventional fossil fuel extraction and especially hydraulic fracturing across the planning areas.</p>	<p>Thank you for your comments.</p> <p>Requests for policy decisions are beyond the scope of this document. There are no direct impacts to air quality or climate change through the administrative action of leasing. Should the leases be developed in the future, impacts to air quality or climate change will be analyzed through additional site-specific NEPA analysis, and conformance with state and Federal air quality standards and regulations will be evaluated. As new information is gathered it will be incorporated into BLM decisions, and may require conditions of approval to mitigate adverse impacts to air quality or climate change.</p> <p>As provided for in the Greater Sage Grouse-RMP amendments, impacts to air quality were evaluated against the potential for oil and gas development. These emission estimates are disclosed in the subject EA.</p> <p>The use of hydraulic fracturing completion techniques have been adequately considered in this lease sale EA. Please see Appendix D. Information from this Appendix has been incorporated into the subject NEPA analysis. Additional analysis of HF beyond what has been provided is not ripe for review.</p>

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	<p>For the reasons set forth in this letter, we insist that BLM: (1) cease all new leasing of fossil fuels in the planning areas, including oil and natural gas; or, at a minimum (2) defer the proposed November 2016 sale pending a programmatic review of all federal fossil fuel leasing which must consider a “no leasing” and “no fracking” plan amendments. Should BLM proceed with the sale, BLM must: (1) initiate formal consultation with the Fish and Wildlife Service, as required by the Endangered Species Act (“ESA”); and (2) prepare a full EIS for the proposed lease sale in consideration of significant unexamined impacts from the consequences of leasing. Any such EIS must consider a full range of alternatives, including an alternative that bans new hydraulic fracturing and other unconventional well stimulation activities, and require strict controls on natural gas emissions and leakage.</p>	
38	<p><u>Center for Biological Diversity:</u></p> <p>I. BLM Must End All New Fossil Fuel Leasing and Hydraulic Fracturing.</p> <p>Climate change is a problem of global proportions resulting from the cumulative greenhouse gas emissions of countless individual sources. A comprehensive look at the impacts of fossil fuel extraction, and especially fracking, across all of the planning areas affected by the leases in updated RMPs is absolutely necessary. BLM has never thoroughly considered the cumulative climate change impacts of all potential fossil fuel extraction and fracking (1) within each of the planning areas, (2) across the state, and (3) across all public lands. Proceeding with new leasing proposals ad hoc in the absence of a comprehensive plan that addresses climate change and fracking is premature and risks irreversible damage before the agency and public have had the opportunity to weigh the full costs of oil and gas and other fossil fuel extraction and consider necessary limits on such activities. Therefore BLM must cease all new leasing at least until the issue is adequately analyzed in a programmatic review of all U.S. fossil fuel leasing, or at least within amended RMPs.</p>	<p>See Response to Comments #12, #14 and #37.</p>
39	<p><u>Center for Biological Diversity:</u></p> <p>A. BLM Must Limit Greenhouse Gas Emissions By Keeping Federal Fossil Fuels In the Ground</p> <p>Expansion of fossil fuel production will substantially increase the volume of greenhouse gases emitted into the atmosphere and jeopardize the environment and the health and well being of future generations. BLM’s mandate to</p>	<p>Please see response to comments # 15, #17, #18, #19, #20 and #37</p>

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	<p>ensure “harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment” requires BLM to limit the climate change effects of its actions. Keeping all unleased fossil fuels in the ground and banning fracking and other unconventional well stimulation methods would lock away millions of tons of greenhouse gas pollution and limit the destructive effects of these practices.</p> <p>A ban on new fossil fuel leasing and fracking is necessary to meet the U.S.’s greenhouse gas reduction commitments. On December 12, 2015, 197 nation-state and supra-national organization parties meeting in Paris at the 2015 United Nations Framework Convention on Climate Change Conference of the Parties consented to an agreement (Paris Agreement) committing its parties to take action so as to avoid dangerous climate change. As the United States signed the treaty on April 22, 2016 as a legally binding instrument through executive agreement, the Paris Agreement commits the United States to critical goals—both binding and aspirational—that mandate bold action on the United States’ domestic policy to rapidly reduce greenhouse gas emissions.</p> <p>The United States and other parties to the Paris Agreement recognized “the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge.” The Paris Agreement articulates the practical steps necessary to obtain its goals: parties including the United States have to “reach global peaking of greenhouse gas emissions as soon as possible . . . and to undertake rapid reductions thereafter in accordance with best available science,” imperatively commanding that developed countries specifically “should continue taking the lead by undertaking economy-wide absolute emission reduction targets” and that such actions reflect the “highest possible ambition.” The Paris Agreement codifies the international consensus that climate change is an “urgent threat” of global concern, and commits all signatories to achieving a set of global goals. Importantly, the Paris Agreement commits all signatories to an articulated target to hold the long-term global average temperature “to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels” (emphasis added).</p> <p>In light of the severe threats posed by even limited global warming, the Paris Agreement established the international goal of limiting global warming to 1.5°C above pre-industrial levels in order to “prevent dangerous</p>	

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	<p>anthropogenic interference with the climate system,” as set forth in the UNFCCC, a treaty which the United States has ratified and to which it is bound. The Paris consensus on a 1.5°C warming goal reflects the findings of the IPCC and numerous scientific studies that indicate that 2°C warming would exceed thresholds for severe, extremely dangerous, and potentially irreversible impacts.¹⁴ Those impacts include increased global food and water insecurity, the inundation of coastal regions and small island nations by sea level rise and increasing storm surge, complete loss of Arctic summer sea ice, irreversible melting of the Greenland ice sheet, increased extinction risk for at least 20-30% of species on Earth, dieback of the Amazon rainforest, and “rapid and terminal” declines of coral reefs worldwide. As scientists noted, the impacts associated with 2°C temperature rise have been “revised upwards, sufficiently so that 2°C now more appropriately represents the threshold between ‘dangerous’ and ‘extremely dangerous’ climate change.” Consequently, a target of 1.5 °C or less temperature rise is now seen as essential to avoid dangerous climate change and has largely supplanted the 2°C target that had been the focus of most climate literature until recently. Immediate and aggressive greenhouse gas emissions reductions are necessary to keep warming below a 1.5° or 2°C rise above pre-industrial levels. Put simply, there is only a finite amount of CO₂ that can be released into the atmosphere without rendering the goal of meeting the 1.5°C target virtually impossible. A slightly larger amount could be burned before meeting a 2°C became an impossibility. Globally, fossil fuel reserves, if all were extracted and burned, would release enough CO₂ to exceed this limit several times over. The question of what amount of fossil fuels can be extracted and burned without negating a realistic chance of meeting a 1.5 or 2°C target is relatively easy to answer, even if the answer is framed in probabilities and ranges. The IPCC Fifth Assessment Report and other expert assessments have established global carbon budgets, or the total amount of remaining carbon that can be burned while maintaining some probability of staying below a given temperature target.</p> <p>According to the IPCC, total cumulative anthropogenic emissions of CO₂ must remain below about 1,000 gigatonnes (GtCO₂) from 2011 onward for a 66% probability of limiting warming to 2°C above pre-industrial levels.¹⁸ Given more than 100 GtCO₂ have been emitted since 2011, the remaining portion of the budget under this scenario is well below 900 GtCO₂. To have an 80% probability of staying below the 2°C target, the budget from 2000 is 890 GtCO₂, with less than 430 GtCO₂ remaining.</p>	

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	<p>To have even a 50% probability of achieving the Paris Agreement goal of limiting warming to 1.5°C above pre-industrial levels equates to a carbon budget of 550-600 GtCO₂ from 2011 onward, of which more than 100 GtCO₂ has already been emitted. To achieve a 66% probability of limiting warming to 1.5°C requires adherence to a more stringent carbon budget of only 400 GtCO₂ from 2011 onward, of which less than 300 GtCO₂ remained at the start of 2015. An 80% probability budget for 1.5°C would have far less than 300 GtCO₂ remaining. Given that global CO₂ emissions in 2014 alone totaled 36 GtCO₂, humanity is rapidly consuming the remaining burnable carbon budget needed to have even a 50/50 chance of meeting the 1.5°C temperature goal.</p> <p>According to a recent report by EcoShift Consulting commissioned by the Center and Friends of the Earth, unleased (and thus unburnable) federal fossil fuels represent a significant source of potential greenhouse gas emissions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Potential GHG emissions of federal fossil fuels (leased and unleased) if developed would release up to 492 gigatons (Gt) (one gigaton equals 1 billion tons) of carbon dioxide equivalent pollution (CO₂e); representing 46 percent to 50 percent of potential emissions from all remaining U.S. fossil fuels. <input type="checkbox"/> Of that amount, up to 450 Gt CO₂e have not yet been leased to private industry for extraction; <input type="checkbox"/> Releasing those 450 Gt CO₂e (the equivalent annual pollution of more than 118,000 coal-fired power plants) would be greater than any proposed U.S. share of global carbon limits that would keep emissions below scientifically advised levels. <p>Fracking has also opened up vast reserves that otherwise would not be available, increasing the potential greenhouse gas emissions that can be released into the atmosphere. BLM must consider a ban on this dangerous practice and a ban on new leasing to prevent the worst effects of climate change</p>	
40	<p><u>Center for Biological Diversity:</u></p> <p>B. BLM Must Consider A Ban on New Oil and Gas Leasing and Fracking in a Programmatic Review and Halt All New Leasing and Fracking in the Meantime.</p> <p>Development of unleased oil and gas resources will fuel climate disruption and undercut the needed transition to a clean energy economy. As BLM has not yet had a chance</p>	<p>Please see response to comments #12, #14 and #37.</p>

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	<p>to consider no-leasing and no-fracking alternatives as part of any of its RMP planning processes or a comprehensive review of its federal oil and gas leasing program, BLM should suspend new leasing until it properly considers this alternative in updated RMPs or a programmatic EIS for the entire leasing program. BLM demonstrably has tools available to consider the climate consequences of its leasing programs, and alternatives available to mitigate those consequences, at either a regional or national scale.</p> <p>BLM would be remiss to continue leasing when it has never stepped back and taken a hard look at this problem at the programmatic scale. Before allowing more oil and gas extraction in the planning area, BLM must: (1) comprehensively analyze the total greenhouse gas emissions which result from past, present, and potential future fossil fuel leasing and all other activities across all BLM lands and within the various planning areas at issue here, (2) consider their cumulative significance in the context of global climate change, carbon budgets, and other greenhouse gas pollution sources outside BLM lands and the planning area, and (3) formulate measures that avoid or limit their climate change effects. By continuing leasing and allowing new fracking in the absence of any overall plan addressing climate change BLM is effectively burying its head in the sand.</p> <p>A programmatic review and moratorium on new leasing would be consistent with the Secretary of Interior's recent order to conduct a comprehensive, programmatic EIS (PEIS) on its coal leasing program, in light of the need to take into account the program's impacts on climate change, among other issues, and "the lack of any recent analysis of the Federal coal program as a whole." Specifically, the Secretary directed that the PEIS "should examine how best to assess the climate impacts of continued Federal coal production and combustion and how to address those impacts in the management of the program to meet both the Nation's energy needs and its climate goals, as well as how best to protect the public lands from climate change impacts."</p> <p>The Secretary also ordered a moratorium on new coal leasing while such a review is being conducted. The Secretary reasoned:</p> <p>Lease sales and lease modifications result in lease terms of 20 years and for so long thereafter as coal is produced in commercial quantities. Continuing to conduct lease sales or approve lease modifications during this programmatic review risks locking in for decades the future development of large quantities of coal under</p>	

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	<p>current rates and terms that the PEIS may ultimately determine to be less than optimal. This risk is why, during the previous two programmatic reviews, the Department halted most lease sales with limited exceptions.... Considering these factors and given the extensive recoverable reserves of Federal coal currently under lease, I have decided that a similar policy is warranted here. A pause on leasing, with limited exceptions, will allow future leasing decisions to benefit from the recommendations that result from the PEIS while minimizing any economic hardship during that review.</p> <p>The Secretary’s reasoning is also apt here. A programmatic review assessing the climate change effects of public fossil fuels is long overdue. And there is no shortage of oil and gas that would preclude a moratorium while such a review is conducted, as evidenced by very low natural oil and gas prices. More importantly, BLM should not “risk[] locking in for decades the future development of large quantities of [fossil fuels] under current...terms that a [programmatic review] may ultimately determine to be less than optimal.” BLM should cancel the sale and halt all new leasing and fracking until a programmatic review is completed.</p>	
41	<p><u>Center for Biological Diversity:</u></p> <p><u>II. The Dangers of Hydraulic Fracking and Horizontal Drilling</u></p> <p>New information, not adequately addressed in the Green River, Rawlins, Pinedale, and Kemmerer RMPs, makes clear that the use of hydraulic fracturing within the area is both readily foreseeable and already occurring with significant environment environmental consequences. NEPA regulations and case law require that BLM evaluate all “reasonably foreseeable” direct and indirect effects of its leasing.</p> <p>The proposed leasing action is part of a dramatic recent increase in oil and gas leasing in the areas at issue, and reflects increased industry interest in developing Wyoming’s fossil fuel resources. The entire basis for this surge of interest is the possibility that hydraulic fracturing and other advanced recovery techniques will allow the profitable exploitation of geologic formations previously perceived as insufficiently valuable for development. Elements of these technologies have been used individually for decades. However, the combination of practices employed by industry recently is new: “Modern formation stimulation practices have become more complex and the process has developed into a sophisticated,</p>	<p>Please see response to comments #12, #14, #25 and #37.</p> <p>The State of Wyoming regulates hydraulic fracturing under Wyoming Oil and Gas Regulation, Chapter 3, Section 45.</p>

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	<p>engineered process in which production companies strive to design a hydraulic fracturing treatment to emplace fracture networks in specific areas.”</p> <p>Hydraulic fracturing brings with it all of the harms to water quality, air quality, the climate, species, and communities associated with traditional oil and gas development, but also brings increased risks in many areas. Analysis of the consequences of this practice, prior to irrevocable consequences, is therefore required at the leasing stage. Oil and gas leasing is an irrevocable commitment to convey rights to use of federal land – a commitment with readily predictable environmental consequences that BLM is required to address. These include the specific geological formations, surface and ground water resources, seismic potential, or human, animal, and plant health and safety concerns present in the area to be leased.</p> <p>Hydraulic fracturing, a dangerous practice in which operators inject toxic fluid underground under extreme pressure to release oil and gas, has greatly increased industry interest in developing tightly held oil and gas deposits such as those in the proposed lease area. The first aspect of this technique is the hydraulic fracturing of the rock. When the rock is fractured, the resulting cracks in the rock serve as passages through which gas and liquids can flow, increasing the permeability of the fractured area. To fracture the rock, the well operator injects hydraulic fracturing fluid at tremendous pressure. The composition of fracturing fluid has changed over time. Halliburton developed the practice of injecting fluids into wells under high pressure in the late 1940s; however, companies now use permutations of “slick-water” fracturing fluid developed in the mid-1990s. The main ingredient in modern fracturing fluid (or “frack fluid”) is generally water, although liquefied petroleum has also been used as a base fluid for modern fracking. The second ingredient is a “proppant,” typically sand, that becomes wedged in the fractures and holds them open so that passages remain after pressure is relieved. In addition to the base fluid and proppant, a mixture of chemicals are used, for purposes such as increasing the viscosity of the fluid, keeping proppants suspended, impeding bacterial growth or mineral deposition.</p> <p>Frack fluid is hazardous to human health, although industry’s resistance to disclosing the full list of ingredients formulation of frack fluid makes it difficult for the public to know exactly how dangerous. A congressional report sampling incomplete industry self-reports found that “[t]he oil and gas service companies</p>	

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	<p>used hydraulic fracturing products containing 29 chemicals that are (1) known or possible human carcinogens, (2) regulated under the Safe Drinking Water Act for their risks to human health, or (3) listed as hazardous air pollutants under the Clean Air Act.”</p> <p>Recently published scientific papers also describe the harmfulness of the chemicals often in fracking fluid. One study reviewed a list of 944 fracking fluid products containing 632 chemicals, 353 of which could be identified with Chemical Abstract Service numbers. The study concluded that more than 75 percent of the chemicals could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems; approximately 40 to 50 percent could affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37 percent could affect the endocrine system; and 25 percent could cause cancer and mutations.</p> <p>The impacts associated with the fracking-induced oil and gas development boom has caused some jurisdictions to place a moratorium or ban on fracking. For instance, in 2011 France became the first country to ban the practice.⁴¹ In May, Vermont became the first state to ban fracking. Vermont’s governor called the ban “a big deal” and stated that the bill “will ensure that we do not inject chemicals into groundwater in a desperate pursuit for energy.” New York State halted fracking within its borders in 2008, continued the moratorium in 2014 and banned the practice in 2015. The state’s seven-year review concluded that fracking posed risks to land, water, natural resources and public health. Also, New Jersey’s legislature recently passed a bill that would prevent fracking waste, like toxic wastewater and drill cuttings, from entering its borders, and Pennsylvania, ground zero for the fracking debate, has banned “natural-gas exploration across a swath of suburban Philadelphia” Numerous cities and communities, like Buffalo, Pittsburgh, Raleigh, Woodstock, and Morgantown have banned fracking.</p> <p>Separate from hydraulic fracturing, the second technological development underlying the recent shale boom is the use of horizontal drilling. Shale oil and shale gas formations are typically located far below the surface, and as such, the cost of drilling a vertical well to access the layer is high. The shale formation itself is typically a thin layer; however, such that a vertical well only provides access to a small volume of shale—the cylinder of permeability surrounding the well bore. Although hydraulic fracturing increases the radius of this cylinder of shale, this effect is often itself insufficient to allow profitable extraction of shale resources. Horizontal drilling</p>	

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	<p>solves this economic problem: by drilling sideways along the shale formation once it is reached, a company can extract resources from a much higher volume of shale for the same amount of drilling through the overburden, drastically increasing the fraction of total well length that passes through producing zones. The practice of combining horizontal drilling with hydraulic fracturing was developed in the early 1990s.</p> <p>A third technological development is the use of “multi-stage” fracking. In the 1990s industry began drilling longer and longer horizontal well segments. The difficulty of hydraulic fracturing increases with the length of the well bore to be fractured, however, both because longer well segments are more likely to pass through varied conditions in the rock and because it becomes difficult to create the high pressures required in a larger volume. In 2002 industry began to address these problems by employing multi-stage fracking. In multi-stage fracking, the operator treats only part of the wellbore at a time, typically 300 to 500 feet. Each stage “may require 300,000 to 600,000 gallons of water,” and consequently, a frack job that is two or more stages can contaminate and pump into the ground over a million gallons of water.</p> <p>Notwithstanding the grave impacts that these practices have on the environment, this new combination of multi-stage slickwater hydraulic fracturing and horizontal drilling has made it possible to profitably extract oil and gas from formations that only a few years ago were generally viewed as uneconomical to develop.⁵⁶ The effect of hydraulic fracturing on the oil and gas markets has been tremendous, with many reports documenting the boom in domestic energy production. A recent congressional report notes that “[a]s a result of hydraulic fracturing and advances in horizontal drilling technology, natural gas production in 2010 reached the highest level in decades.” A 2011 U.S. EIA report notes how recently these changes have occurred, stating that “only in the past 5 years has shale gas been recognized as a ‘game changer’ for the U.S. natural gas market.” With respect to oil, the EIA notes that oil production has been increasing, with the production of shale oil resources pushing levels even higher over the next decade:</p> <p>Domestic crude oil production has increased over the past few years, reversing a decline that began in 1986. U.S. crude oil production increased from 5.0 million barrels per day in 2008 to 5.5 million barrels per day in 2010. Over the next 10 years, continued development of tight oil, in combination with the ongoing development</p>	

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	<p>of offshore resources in the Gulf of Mexico, pushes domestic crude oil production higher.</p> <p>Thus, it is evident that fracking, including fracking with the most recent techniques that have been associated with serious adverse impacts in other areas of the country, is poised to expand; it is further evident that the oil and gas industry is still exploring new locations to develop, and the nation has not yet seen the full extent of fracking's impact on oil and gas development and production.</p> <p>In large part through the use of fracking, the oil and gas sector is now producing huge amounts of oil and gas throughout the United States, rapidly transforming the domestic energy outlook. Fracking is occurring in the absence of any adequate federal or state oversight. The current informational and regulatory void on the state level makes it even more critical that the BLM perform its legal obligations to review, analyze, disclose, and avoid and mitigate the impacts of its oil and gas leasing decisions. Further, given the failure of the existing Green River, Rawlins, Kemmerer, and Pinedale RMPs to adequately address the impacts of fracking, it would be inappropriate for BLM to simply refer to the environmental analysis for these documents.</p>	
42	<p><u>Center for Biological Diversity:</u></p> <p>III. Unconventional Oil and Gas Operations Pose Risks to Water Resources</p> <p>While much remains to be learned about fracking, it is clear that the practice poses serious threats to water resources. Across the U.S., in states where fracking or other types of unconventional oil and gas recovery has occurred, surface water and groundwater have been contaminated. Recent studies have concluded that water contamination attributed to unconventional oil and gas activity has occurred in several states, including Colorado, Wyoming, Texas, Pennsylvania, Ohio, and West Virginia.</p> <p>The likelihood that the sale will result in fracking raises several issues that BLM must address:</p> <p><input type="checkbox"/> Where will the water come from and what are the impacts of extracting it?</p> <p><input type="checkbox"/> What chemicals will be used in the drilling and fracking process?</p> <p><input type="checkbox"/> How will BLM ensure the collection and disclosure of that information?</p> <p><input type="checkbox"/> What limitations will BLM place on the chemicals used in order to protect public health and the environment?</p> <p><input type="checkbox"/> What measures will BLM require to ensure adequate</p>	<p>Please see response to comment #25</p> <p>As stated in Section 1.1 of the EA, pursuant to 40 CFR 1508.28 and 1502.21, the EA tiers to and incorporates by reference the information and analysis contained in the EIS and RMP RODs for the Rawlins, Rock Springs, Pinedale, and Kemmerer Field Offices as amended (2015) and Bureau of Land Management September 21, 2015 Wyoming Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse (GRSG). Therefore, a new EIS for leasing is not necessary. These EIS documents analyzed the effects of oil and gas leasing and development, and the specific management goals, plans and monitoring actions are addressed in the RMPs.</p> <p>Section 4.18, Water Shed and Water Quality, in the ARMPA FEIS adequately address these impacts.</p> <p>Parcels offered for lease sale are subject to the parcel specific stipulations shown in the</p>

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	<p>monitoring of water impacts, both during and after drilling?</p> <p><input type="checkbox"/> What baseline data is available to ensure that monitoring of impacts can be carried out effectively? How will BLM collect baseline data that is not currently available?</p> <p><input type="checkbox"/> Much of the fracking fluid return to the surface as toxic waste. Where will the discharge go?</p> <p><input type="checkbox"/> Is there the potential for subsurface migration of fracking fluids, or the potential for those fluids to escape into the groundwater by way of a faulty casing?</p> <p><input type="checkbox"/> What kinds of treatment will be required?</p> <p><input type="checkbox"/> What is the potential footprint and impact of the necessary treatment facilities?</p> <p>BLM's analysis of potential impacts to water must take account of all significant and "foreseeable" impacts to water that may arise from the sale, including the following issues.</p> <p style="padding-left: 40px;"><i>1. Surface Water Contamination</i></p> <p>Surface waters can be contaminated in many ways from unconventional well stimulation. In addition to storm water runoff, surface water contamination may also occur from chemical and waste transport, chemical storage leaks, and breaches in pit liners. The spilling or leaking of fracking fluids, flowback, or produced water is a serious problem. Harmful chemicals present in these fluids can include volatile organic compounds ("VOCs"), such as benzene, toluene, xylenes, and acetone. As much as 25 percent of fracking chemicals are carcinogens, and flowback can even be radioactive. As described below, contaminated surface water can result in many adverse effects to wildlife, agriculture, and human health and safety. It may make waters unsafe for drinking, fishing, swimming and other activities, and may be infeasible to restore the original water quality once surface water is contaminated. BLM should consider this analysis in the EIS.</p> <p style="padding-left: 40px;"><i>i. Chemical and Waste Transport</i></p> <p>Massive volumes of chemicals and wastewater used or produced in oil and gas operations have the potential to contaminate local watersheds. Between 2,600 to 18,000 gallons of chemicals are injected per hydraulically fracked well depending on the number of chemicals injected. Approximately 32,515 billion gallons of wastewater are produced by oil and gas production per year in Wyoming. This waste can reach fresh water aquifers and drinking</p>	<p>Appendix B for each Field Office, which are derived from the RMPs, as well as protections under Lease Notices and Lease Stipulations applicable to each lease sale parcel.</p> <p>Absent a definitive development proposal it is not possible to conduct a more specific impact and/or cumulative effects analysis and as stated in Section 1.3 of the EA, BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be leased, or if leased, whether or not the lease would be explored or developed or at what intensity development may occur. As further stated in Section 1.3 of the EA, "additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted.</p> <p>Additional mitigation, including adaptive management, could be developed during the site-specific NEPA analysis that would be required to address any specific post-lease exploration or development actions that are proposed and could include additional measures to mitigate impacts to wintering big game from production related activities. With appropriate site-specific analysis, restrictions on production related activities could be imposed. G&F is encouraged to participate in the review of all APDs in big game crucial winter range, and to submit "best practices" they feel are necessary to mitigate any potential negative impacts, at that time in accordance with our MOU. WEG as well, is encouraged to participate in this process.</p>

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	<p>water.</p> <p>Produced waters that fracking operations force to the surface from deep underground can contain high levels of total dissolved solids, salts, metals, and naturally occurring radioactive materials. If spilled, the effects of produced water or brine can be more severe and longerlasting than oil spills, because salts do not biodegrade or break down over time. The only way to deal with them is to remove them. The accumulation of long-lived isotopes of radium has been observed in the sediments and soils of produced-water spill sites. Due to its relatively long half-life, radium contamination could remain in the soil for thousands of years. Flowback waters (i.e., fracturing fluids that return to the surface) may also contain similar constituents along with fracturing fluid additives such as surfactants and hydrocarbons. Given the massive volumes of chemicals and wastewater produced, their potentially harmful constituents, and their persistence in the environment, the potential for environmental disaster is real.</p> <p>Fluids must be transported to and/or from the well, which presents opportunities for spills. Unconventional well stimulation relies on numerous trucks to transport chemicals to the site as well as collect and carry disposal fluid from the site to processing facilities. A U.S. Government Accountability Office (GAO) study found that up to 1,365 truck loads can be required just for the drilling and fracturing of a single well pad while the New York Department of Conservation estimated the number of "heavy truck" trips to be about 3,950 per horizontal well (including unloaded and loaded trucks). Accidents during transit may cause leaks and spills that result in the transported chemicals and fluids reaching surface waters. Chemicals and waste transported by pipeline can also leak or spill. There are also multiple reports of truckers dumping waste uncontained into the environment. The EIS should evaluate how often accidents can be expected to occur, and the effect of chemical and fluid spills. Such analysis should also include identification of the particular harms faced by communities near oil and gas fields. The EIS must include specific mitigation measures and alternatives based on a cumulative impacts assessment, and the particular vulnerabilities of environmental justice communities in both urban and rural settings.</p> <p>ii. On-site Chemical Storage and Processing</p> <p>Thousands of gallons of chemicals can be potentially stored on-site and used during hydraulic fracturing and other unconventional well stimulation activities. These</p>	

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	<p>chemicals can be susceptible to accidental spills and leaks. Natural occurrences such as storms and earthquakes may cause accidents, as can negligent operator practices.</p> <p>Some sites may also use on-site wastewater treatment facilities. Improper use or maintenance of the processing equipment used for these facilities may result in discharges of contaminants. Other spill causes include equipment failure (most commonly, blowout preventer failure, corrosion and failed valves) and failure of container integrity. Spills can result from accidents, negligence, or intentional dumping.</p> <p>The EIS should examine and quantify the risks to human health and the environment associated with on-site chemical and wastewater storage, including risks from natural events and negligent operator practices. Again, such analysis must also include an analysis of potential impacts faced by environmental justice communities in both rural and urban settings.</p> <p><i>2. Groundwater Contamination</i></p> <p>Studies have reported many instances around the country of groundwater contamination due to surface spills of oil and gas wastewater, including fracking flowback. Fracking and other unconventional techniques likewise pose inherent risks to groundwater due to releases below the surface, and these risks must be properly evaluated. Once groundwater is contaminated, it is very difficult, if not impossible, to restore the original quality of the water. As a result, in communities that rely on groundwater drinking water supplies, groundwater contamination can deprive communities of usable drinking water. Such long-term contamination necessitates the costly importation of drinking water supplies.</p> <p>Groundwater contamination can occur in a number of ways, and the contamination may persist for many years. Improper well construction and surface spills are cited as a confirmed or potential cause of groundwater contamination in numerous incidents at locations across the U.S. including but not limited to Colorado, Wyoming, Pennsylvania, Ohio, West Virginia, and Texas. These sorts of problems at the well are not uncommon. Dr. Ingraffea of Cornell has noted an 8.9 percent failure rate for wells in the Marcellus Shale. Older wells that may not have been designed to withstand the stresses of hydraulic fracturing but which are reused for this purpose are especially vulnerable.</p> <p>Current federal rules do not ensure well integrity. The EIS</p>	

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	<p>should study the rates of well casing failures over time and evaluate the likelihood that well casing failures can lead to groundwater contamination.</p> <p>Also, fluids and hydrocarbons may contaminate groundwater by migrating through newly created or natural fractures. Many unconventional techniques intentionally fracture the formation to increase the flow of gas or oil. New cracks and fissures can allow the additives or naturally occurring elements such as natural gas to migrate to groundwater. “[T]he increased deployment of hydraulic fracturing associated with oil and gas production activities, including techniques such as horizontal drilling and multi-well pads, may increase the likelihood that these pathways could develop,” which, “in turn, could lead to increased opportunities for impacts on drinking water sources.” Fluids can also migrate through pre-existing and natural faults and fractures that may become pathways once the fracking or other method has been used.</p> <p>A well in which stimulation operations are being conducted may also “communicate” with nearby wells, which may lead to groundwater and surface contamination, particularly if the nearby wells are improperly constructed or abandoned. In the last 150 years, as many as 12 million “holes” have been drilled across the United States in search of oil and gas, many of which are old and decaying, or are in unknown locations. Fracking can contaminate water resources by intersecting one of those wells. For instance, one study found at least nineteen instances of fluid communication in British Columbia and Western Alberta. Wells as far away as 1.8 miles away have provided pathways for surface contamination. The EIS must consider long-term studies on the potential for fluid migration through newly created subsurface pathways</p> <p>According to the EPA, “evidence of any fracturing-related fluid migration affecting a drinking water resources...could take years to discover.” Another study based on modeling found that advective transport of fracking fluid from a fracked well to an aquifer could occur in less than 10 years.</p> <p>Contamination of groundwater of drinking water sources is a real risk The EPA’s Draft Investigation of Groundwater Contamination near Pavillion, Wyoming, found that chemicals found in samples of groundwater were from fracked wells. These results have been confirmed with follow-up analyses. Groundwater contamination in the Barnett Shale region is likely a result of unconventional well development activities. One</p>	

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	<p>study detected “multiple volatile organic carbon compounds throughout the region, including various alcohols, the BTEX family of compounds, and several chlorinated compounds” in private and public drinking water well samples drawn from aquifers overlying the Barnett shale formation.” Another study found that “arsenic, selenium, strontium and total dissolved solids (TDS) exceeded the Environmental Protection Agency’s Drinking Water Maximum Contaminant Limit (MCL) in some samples from private water wells located within 3 km of active natural gas wells. Many of the detected compounds were associated with unconventional oil and gas extraction.</p> <p>Fracking fluid can also spill at the surface during the fracking process. For instance, mechanical failure or operator error during the process has caused leaks from tanks, valves, and pipes. At the surface, pits or tanks can leak fracking fluid or waste. Surface pits, in which wastewater is often dumped, are a major source of pollution. In California, a farmer was awarded \$8.5 million in damages after his almond trees died when he irrigated them with well water that had been contaminated by nearby oil and gas operations. The contamination was traced to unlined pits where one of California’s largest oil and gas producers for decades dumped billions of gallons of wastewater that slowly leached pollutants into nearby groundwater.</p> <p>Unfiltered drinking water supplies, such as drinking water wells, are especially at risk because they have no readily available means of removing contaminants from the water. Even water wells with filtration systems are not designed to handle the kind of contaminants that result from unconventional oil and gas extraction. In some areas hydraulic fracturing may occur at shallower depths or within the same formation as drinking water resources, resulting in direct aquifer contamination. The EIS must disclose where the potential for such drilling exists.</p> <p>Setbacks may not be adequate to protect groundwater from potential fracking fluid contamination. A recent study by the University of Colorado at Boulder suggests that setbacks of even up to 300-feet may not prevent contamination of drinking water resources. The study found that 15 organic compounds found in hydraulic fracturing fluids may be of concern as groundwater contaminants based on their toxicity, mobility, persistence in the environment, and frequency of use. These chemicals could have 10 percent or more of their initial concentrations remaining at a transport distance of 300 feet, the average “setback” distance in the U.S. The</p>	

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	<p>effectiveness and feasibility of any proposed setbacks must be evaluated.</p> <p><i>3. Disposal of Drilling and Fracking Wastes</i></p> <p>Finally, disposal of wastes from oil and gas operations can also lead to contamination of water resources. Potential sources of contamination include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> leaching from landfills that receive drilling and fracking solid wastes; <input type="checkbox"/> spreading of drilling and fracking wastes over large areas of land; <input type="checkbox"/> wastewaters discharged from treatment facilities without advanced “total dissolved solids” removal processes, or inadequate capacity to remove radioactive material removal; and <input type="checkbox"/> breaches in underground injection disposal wells. <p>U.S. EPA has found that California’s Class II underground injection well program to be insufficiently protective of groundwater resources.</p> <p>The EIS must evaluate the potential for contamination from each of these disposal methods.</p>	
43	<p><u>Center for Biological Diversity:</u></p> <p>A. <u>More Intensive Oil and Gas Development Will Increase Storm Water Runoff</u></p> <p>Oil and gas operations require land clearance for access roads, pipelines, well pads, drilling equipment, chemical storage, and waste disposal pits. As a result, new oil and gas development will cause short-term disturbance as well as long-term disturbance within the areas for lease. While undisturbed land can retain greater amounts of water through plants and pervious soil, land that has been disturbed or developed may be unable to retain as much water, thereby increasing the volume of runoff. The area of land that is able to retain water will be significantly decreased if unconventional oil and gas extraction methods are permitted to expand.</p> <p>Water from precipitation and snowmelt can serve as an avenue through which contaminants travel from an operation site to sensitive areas, including population centers. Contaminated water runoff may seep into residential areas, polluting streets, sidewalks, soil, and vegetation in urban areas, adversely affecting human</p>	<p>Please see response to comment # 25 and #42.</p> <p>Storm water discharge is regulated by the State of Wyoming, Department of Environmental Quality. All necessary controls will be required at the time development is proposed.</p>

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	<p>health. Thus, not only do these oil and gas activities create pollution, they create greater conduits for storm water runoff to carry those pollutants from the operation site, into areas in which significant harm can be caused.</p> <p>Rapid runoff, even without contaminants, can harm the environment by changing water flow patterns and causing erosion, habitat loss, and flooding. Greater runoff volumes may also increase the amount of sediment that is carried to lakes and streams, affecting the turbidity and chemical content of surface waters. Because a National Pollutant Discharge Elimination System permit is not required for oil and gas operations, it is particularly important that the impact of runoff is considered as part of the NEPA process.</p> <p>In southern Wyoming, substantial increases in salinization of streams has been linked to surface disturbance of naturally salt rich soil by oil and gas development activities (such as pipeline, road, and well pad construction).</p>	
44	<p><u>Center for Biological Diversity:</u></p> <p>B. Fossil Fuel Development Depletes Enormous Amounts of Water</p> <p>Some unconventional extraction techniques, most notably fracking, require the use of tremendous amounts of freshwater. Typically between 2 and 5.6 million gallons of water are required to frack each well. These volumes far exceed the amounts used in conventional natural gas development.</p> <p>Water used in large quantities may lead to several kinds of harmful environmental impacts. The extraction of water for fracking can, for example, lower the water table, affect biodiversity, harm local ecosystems, and reduce water available to communities.</p> <p>Withdrawal of large quantities of freshwater from streams and other surface waters will undoubtedly have an impact on the environment. Withdrawing water from streams will decrease the supply for downstream users, such as farmers or municipalities. Rising demand from oil and gas operators has already led to increased competition for water between farmers and oil and gas operators. In some regions of Colorado, farmers have had to fallow fields due to astronomical water prices. For example, in prior years, farmers in Colorado have paid at most \$100 per acre-feet of water in auctions held by cities with excess supplies, but in 2013 energy companies paid \$1200 to \$2,900 per acre-feet. Reductions in stream flows may also lead to</p>	<p>Please see response to comments #25, #37 and #42.</p>

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	<p>downstream water quality problems by diminishing the water bodies' capacity for dilution and degradation.</p> <p>Furthermore, withdrawing large quantities of water from subsurface waters to supply oil and gas production will likely deplete and harm aquifers. Removing water from surface water or directly from underground sources of water faster than the rate that aquifers can be replenished will lower the volume of water available for other uses. Depletion can also lead to compaction of the rock formation serving as an aquifer, after which the original level of water volume can never be restored. Depleted aquifer water resources may also adversely affect agriculture, species habitat and ecosystems, and human health.</p> <p>The freshwater in the planning areas therefore would be greatly affected by the increased demand for water if fracking and other unconventional oil and gas extraction are permitted. A no-fracking alternative would preserve scarce water resources and keep critical sources of drinking water in the planning area safe and clean. The EIS must analyze where water will be sourced, how much, and the effects on water sources under different alternatives. All of these effects must be analyzed in the context of increasing water scarcity in Wyoming due to climate change, drought, and increasing population growth.</p>	
45	<p><u>Center for Biological Diversity:</u></p> <p style="padding-left: 40px;">C. Oil and Gas Developments Harm Aquatic Life and Habitat</p> <p>When streams and other surface waters are depleted, the habitat for countless plants and animals will be harmed, and the depletion places tremendous pressure on species that depend on having a constant and ample stream of water. Oil and gas activities in the Rock Springs, Kemmerer, and Rawlins planning areas, for example, may harm the endangered Colorado Pikeminnow, razorback sucker, humpback chub, and bonytail ("endangered fish") in the Colorado River sub-basin and other areas downstream, due to an increased risk of toxic spills and massive water depletions required for hydraulic fracturing and horizontal drilling. A pair of studies that compared water quality downstream from a wastewater injection site in West Virginia to that of upstream areas found (1) downstream sites had elevated levels of endocrine disrupting chemicals at levels known to adversely affect aquatic organisms; and (2) microbial communities in downstream sediments had lower diversity and shifts in community composition, altering microbial</p>	Please see response to comments # 25 and #42.

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	<p>activity and potentially impacting nutrient cycling.</p> <p>Physical habitats such as banks, pools, runs, and glides (low gradient river sections) are important yet susceptible to disturbance with changing stream flows. Altering the volume of water can also change the water's temperature and oxygen content, harming some species that require a certain level of oxygenated water. Decreasing the volume of streamflow and stream channels by diverting water to fracking would have a negative impact on the environment.</p> <p>The physical equipment itself that is designed to intake and divert water may also pose a threat to certain wildlife. If not properly designed, such equipment and intake points may be a risk to wildlife.</p>	
46	<p><u>Center for Biological Diversity:</u></p> <p>D. <u>Harm to Wetlands</u></p> <p>Oil and gas development, and particularly the practice of fracking, pose an immense threat to water resources. High volume removal of surface or groundwater can result in damage to wetlands, which rely on ample water supplies to maintain the fragile dynamics of a wetland habitat. Damage can also occur from spills of chemicals or wastewater, filling operations, and sediment runoff. BLM in its environmental document must fully vet the impacts from every potential aspect of the proposed sale.</p> <p>Many plant and animal species depend on wetland habitats, and even small changes can lead to significant impacts. Wetlands provide a variety of "eco-service" functions, including water purification, protection from floods, and functioning as carbon sinks. The ecological importance of wetlands is unquestionable, and their full protection is paramount. The EIS must analyze these potential impacts to wetlands, and the related, potential indirect impacts that may stem from such impacts.</p>	<p>Please see response to comments #25 and #42.</p>
47	<p><u>Center for Biological Diversity:</u></p> <p>IV. <u>Oil and Gas Operations Harm Air Quality</u></p> <p>Oil and gas operations emit numerous air pollutants, including volatile organic compounds (VOCs), NOX, particulate matter, hydrogen sulfide, and methane. Fracking operations are particularly harmful, emitting especially large amounts of pollution, including air toxic air pollutants. Permitting fracking and other well stimulation techniques will greatly increase the release of harmful air emissions in these and other regions. BLM should disallow new leasing, or else adopt a no-fracking</p>	<p>Please see response to comments # 15, #17, #18, #19, #20 and #37</p>

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	<p>alternative, which would prevent further degradation of local air quality, respiratory illnesses, premature deaths, hospital visits, as well as missed school and work days.</p>	
48	<p><u>Center for Biological Diversity:</u></p> <p>A. Types of Air Emissions</p> <p>Unconventional oil and gas operations emit large amounts of toxic air pollutants, also referred to as Hazardous Air Pollutants, which are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. The reporting requirements recently implemented by the California South Coast Air Quality Management District (“SCAQMD”) have shown that at least 44 chemicals known to be air toxics have been used in fracking and other types of unconventional oil and gas recovery in California. Through the implementation of these new reporting requirements, it is now known that operators have been using several types of air toxics in California, including crystalline silica, methanol, hydrochloric acid, hydrofluoric acid, 2-butoxyethanol, ethyl glycol monobutyl ether, xylene, amorphous silica fume, aluminum oxide, acrylic polymer, acetophenone, and ethylbenzene. Many of these chemicals also appear on the U.S. EPA’s list of hazardous air pollutants. EPA has also identified six “criteria” air pollutants that must be regulated under the National Ambient Air Quality Standards (NAAQS) due to their potential to cause primary and secondary health effects. Concentrations of these pollutants—ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead—will likely increase in regions where unconventional oil and gas recovery techniques are permitted.</p> <p>VOCs, from car and truck engines as well as the drilling and completion stages of oil and gas production, make up about 3.5 percent of the gases emitted by oil or gas operations. The VOCs emitted include the BTEX compounds – benzene, toluene, ethyl benzene, and xylene – which are listed as Hazardous Air Pollutants. There is substantial evidence showing the grave harm from these pollutants. Recent studies and reports confirm the pervasive and extensive amount of VOCs emitted by unconventional oil and gas extraction. In particular, a study covering sites near oil and gas wells in five different states found that concentrations of eight volatile chemicals, including benzene, formaldehyde and hydrogen sulfide, exceeded risk-based comparison values under several operational circumstances. Another study determined that vehicle traffic and engine exhaust were likely the sources of intermittently high dust and benzene</p>	<p>Please see response to comments # 15, #17, #18, #19, #20and #37</p>

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	<p>concentrations observed near well pads. Recent studies have found that oil and gas operations are likely responsible for elevated levels of hydrocarbons such as benzene downwind of the Denver-Julesburg Fossil Fuel Basin, north of Denver. Another study found that oil and gas operations in this area emit approximately 55% of the VOCs in northeastern Colorado.</p> <p>VOCs can form ground-level (tropospheric) ozone when combined with nitrogen oxides (“NOX”), from compressor engines, turbines, other engines used in drilling, and flaring, and sunlight. This reaction can diminish visibility and air quality and harm vegetation. Tropospheric ozone can also be caused by methane, which is leaked and vented at various stages of unconventional oil and gas development, as it interacts with nitrogen oxides and sunlight. In addition to its role as a greenhouse gas, methane contributes to increased concentrations of ground-level ozone, the primary component of smog, because it is an ozone precursor. Methane’s effect on ozone concentrations can be substantial. One paper modeled reductions in various anthropogenic ozone precursor emissions and found that “[r]educing anthropogenic CH4 emissions by 50% nearly halves the incidence of U.S. high-O3 events”</p> <p>Like methane, VOCs and NOX are also ozone precursors; therefore, many regions around the country with substantial oil and gas operations are now suffering from extreme ozone levels due to heavy emissions of these pollutants. Ozone can result in serious health conditions, including heart and lung disease and mortality. A recent study of ozone pollution in the Uintah Basin of northeastern Utah, a rural area that experiences hazardous tropospheric ozone concentrations, found that oil and gas operations were responsible for 98 to 99 percent of VOCs and 57 to 61 percent of NOX emitted from sources within the Basin considered in the study’s inventory.</p> <p>Oil and gas operations can also emit hydrogen sulfide. The hydrogen sulfide is contained in the natural gas and makes that gas “sour.” Hydrogen sulfide may be emitted during all stages of operation, including exploration, extraction, treatment and storage, transportation, and refining. Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.</p> <p>The oil and gas industry is also a major source of particulate matter. The heavy equipment regularly used in the industry burns diesel fuel, generating fine particulate matter that is especially harmful. Vehicles traveling on</p>	

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	<p>unpaved roads also kick up fugitive dust, which is particulate matter. Further, both NOX and VOCs, which as discussed above are heavily emitted by the oil and gas industry, are also particulate matter precursors. Some of the health effects associated with particulate matter exposure are “premature mortality, increased hospital admissions and development of chronic respiratory disease.”</p> <p>Fracking results in additional air pollution that can create a severe threat to human health. One analysis found that 37 percent of the chemicals found at fracked gas wells were volatile, and that of those volatile chemicals, 81 percent can harm the brain and nervous system, 71 percent can harm the cardiovascular system and blood, and 66 percent can harm the kidneys. Also, the SCAQMD has identified three areas of dangerous and unregulated air emissions from fracking: (1) the mixing of the fracking chemicals; (2) the use of the silica, or sand, as a proppant, which causes the deadly disease silicosis; and (3) the storage of fracking fluid once it comes back to the surface. Preparation of the fluids used for well completion often involves onsite mixing of gravel or proppants with fluid, a process which potentially results in major amounts of particulate matter emissions. Further, these proppants often include silica sand, which increases the risk of lung disease and silicosis when inhaled. Finally, as flowback returns to the surface and is deposited in pits or tanks that are open to the atmosphere, there is the potential for organic compounds and toxic air pollutants to be emitted, which are harmful to human health as described above.</p> <p>The EIS should study the potential for oil and gas operations sites in the planning area to emit such air toxics and any other pollutants that may pose a risk to human health, paying particular attention to the impacts of air pollution on environmental justice communities that already bear the burden of disproportionately high levels of air pollution. The EIS should rely on the most up-to-date information regarding the contribution of oil and gas operations to VOC and air toxics levels.</p>	
49	<p><u>Center for Biological Diversity:</u></p> <p>B. Sources of Air Emissions</p> <p>Harmful air pollutants are emitted during every stage of unconventional oil and gas recovery, including drilling, completion, well stimulation, production, and disposal. Drilling and casing the wellbore require substantial power from large equipment. The engines used typically run on diesel fuel, which emits particularly harmful types of air pollutants when burned. Similarly, high-powered</p>	<p>Please see response to comments # 15, #17, #18, #19, #20 and #37</p>

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	<p>pump engines are used in the fracturing and completion phase. This too can result in large volumes of air pollution. Flaring, venting, and fugitive emissions of gas are also a potential source of air emissions. Gas flaring and venting can occur in both oil and gas recovery processes when underground gas rises to the surface and is not captured as part of production. Fugitive emissions can occur at every stage of extraction and production, often leading to high volumes of gas being released into the air. Methane emissions from oil and gas production is as much as 270 percent greater than previously estimated by calculation. Recent studies show that emissions from pneumatic valves (which control routine operations at the well pad by venting methane during normal operation) and fugitive emissions are higher than EPA estimates.</p> <p>Evaporation from pits can also contribute to air pollution. Pits that store drilling waste, produced water, and other waste fluid may be exposed to the open air. Chemicals mixed with the wastewater—including the additives used to make fracking fluids, as well as volatile hydrocarbons, such as benzene and toluene, brought to the surface with the waste—can escape into the air through evaporation. Some pits are equipped with pumps that spray effluents into the air to hasten the evaporation process. Even where waste fluid is stored in so-called “closed loop” storage tanks, fugitive emissions can escape from tanks.</p> <p>As mentioned above, increased truck traffic will lead to more air emissions. Trucks capable of transporting large volumes of chemicals and waste fluid typically use large engines that run on diesel fuel. Air pollutants from truck engines will be emitted not only at the well site, but also along truck routes to and from the site.</p>	
50	<p><u>Center for Biological Diversity:</u></p> <p style="text-align: center;">C. Impact of Increased Air Pollution</p> <p>The potential harms resulting from increased exposure to the dangerous air pollutants described above are serious and wide ranging. The negative effects of criteria pollutants are well documented and are summarized by the U.S. EPA’s website:</p> <p><i>Nitrogen oxides (NOx)</i> react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death. NOx and volatile organic compounds react in the presence of heat</p>	Please see response to comments # 15, #17, #18, #19, #20 and #37

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	<p>and sunlight to form ozone.</p> <p><i>Particulate matter (PM)</i> – especially fine particles – contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: premature death in people with heart or lung disease, increased mortality, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.</p> <p><i>Sulfur Dioxide (SO₂)</i> has been shown to cause an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics.</p> <p><i>Carbon Monoxide (CO)</i> can cause harmful health effects by reducing oxygen delivery to the body's organs (like the heart and brain) and tissues. At extremely high levels, CO can cause death. Exposure to CO can reduce the oxygen-carrying capacity of the blood. People with several types of heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart), often accompanied by chest pain (angina), when exercising or under increased stress. For these people, short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion.</p> <p><i>Ozone (O₃)</i> can trigger or worsen asthma and other respiratory ailments. Ground level ozone can have harmful effects on sensitive vegetation and ecosystems. Ozone may also lead to loss of species diversity and changes to habitat quality, water cycles, and nutrient cycles.</p> <p>Air toxics and hazardous air pollutants, by definition, can result in harm to human health and safety. The full extent of the health effects of exposure is still far from being complete, but already there are numerous studies that have found these chemicals to have serious health consequences for humans exposed to even minimal amounts. The range of illnesses that can result are summarized in a study by Dr. Theo Colburn, which charts which chemicals have been shown to be linked to certain illnesses.</p> <p>Natural gas drilling operations result in the emissions of</p>	

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	<p>numerous non-methane hydrocarbons (NMHCs) that have been linked to numerous adverse health effects. A recent study that analyzed air samples taken during drilling operations near natural gas wells and residential areas in Garfield County, detected 57 chemicals between July 2010 and October 2011, including 44 with reported health effects. For example:</p> <p>Thirty-five chemicals were found to affect the brain/nervous system, 33 the liver/metabolism, and 30 the endocrine system, which includes reproductive and developmental effects. The categories with the next highest numbers of effects were the immune system (28), cardiovascular/blood (27), and the sensory and respiratory systems (25 each). Eight chemicals had health effects in all 12 categories. There were also several chemicals for which no health effect data could be found.</p> <p>The study found extremely high levels of methylene chloride, which may be used as cleaning solvents to remove waxy paraffin that is commonly deposited by raw natural gas in the region. These deposits solidify at ambient temperatures and build up on equipment. While none of the detected chemicals exceeded governmental safety thresholds of exposure, the study noted that such thresholds are typically based on "exposure of a grown man encountering relatively high concentrations of a chemical over a brief time period, for example, during occupational exposure." Consequently, such thresholds may not apply to individuals experiencing "chronic, sporadic, low-level exposure," including sensitive populations such as children, the elderly, and pregnant women. For example, the study detected polycyclic aromatic hydrocarbon (PAH) levels that could be of "clinical significance," as recent studies have linked low levels of exposure to lower mental development in children who were prenatally exposed. In addition, government safety standards do not take into account "the kinds of effects found from low-level exposure to endocrine disrupting chemicals..., which can be particularly harmful during prenatal development and childhood.</p> <p>Another study reviewed exposures to emissions from unconventional natural gas development and noted that trimethylbenzenes are among the largest contributors to non-cancer threats for people living within a half mile of a well, while benzene is the largest contributor to cumulative cancer risk for people, regardless of the distance from the wells.</p>	
51	<u>Center for Biological Diversity:</u>	Please see response to comments # 15, #17,

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	<p>D. Air Modeling</p> <p>BLM should use air modeling to understand what areas and communities will most likely be affected by air pollution. It is crucial to gather independent data rather than relying on industry estimates, which may be inaccurate or biased. Wind and weather patterns, and atmospheric chemistry, determine the fate and transport of air pollution over a region, over time. The EIS should be informed by air modeling to show where the air pollution will flow.</p>	<p>#18, #19, #20 and #37</p>
52	<p><u>Center for Biological Diversity:</u></p> <p>V. Fossil Fuel Development Will Exacerbate Climate Change</p> <p>A. BLM Must Fully Analyze Greenhouse Gas Emissions of Oil and Gas Operations.</p> <p>BLM cannot ignore the mounting evidence proving that oil and gas operations are a major cause of climate change. This is due to emissions from the operations themselves, and emissions from the combustion of the oil and gas produced. Every step of the lifecycle process for development of these resources results in significant carbon emissions, including but not limited to:</p> <p><i>End-user oil and gas combustion emissions.</i> The combustion of extracted oil and gas will add vast amounts of carbon dioxide to the atmosphere, further heating the climate and moving the Earth closer to catastrophic and irreversible climate change. Though much of the oil is used as gasoline to fuel the transportation sector, the produced oil may also be used in other types of products. The EIS should study all end-uses as contributors to climate change.</p> <p><i>Combustion in the distribution of product.</i> To the extent that distribution of raw and endues products will rely on rail or trucks, the combustion of gasoline or diesel to transport these products will emit significant greenhouse gas emissions.</p> <p><u>Emissions from Refineries and Production.</u> Oil and gas must undergo intensive refinery and production processes before the product is ready for consumption. Refineries and their auxiliary activities constitute a significant source of emissions.</p> <p><u>Vented emissions.</u> Oil and gas wells may vent gas that flows to the surface at times where the gas cannot otherwise be captured and sold. Vented gas is a significant source of greenhouse gas emissions and can also pose a safety hazard.</p>	<p>Please see response to comments # 15, #17, #18, #19, #20 and #37</p>

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	<p><i>Combustion during construction and extraction operations.</i> Operators rely on both mobile and stationary sources of power to construct and run their sites. The engines of drilling or excavation equipment, pumps, trucks, conveyors, and other types of equipment burn large amounts of fuel to operate. Carbon dioxide, methane, and nitrous oxide (another potent greenhouse gas) are emitted from oxidized fuel during the combustion process. Engines emit greenhouse gases during all stages of oil and gas recovery, including drilling rig mobilization, site preparation and demobilization, completion rig mobilization and demobilization, well drilling, well completion (including fracking and other unconventional extraction techniques), and well production. Transportation of equipment and chemicals to and from the site is an integral part of the production process and contributes to greenhouse gas emissions. Gas flaring is another important source of carbon dioxide emissions. Significant sources of emissions in oil production include pneumatic devices, dehydrators and pumps, and compressors, and system upsets.</p> <p><i>Fugitive emissions.</i> Potent greenhouse gases can leak as fugitive emissions at many different points in the production process, especially in the production of gas wells. Recent studies suggest that previous estimates significantly underestimate leakage rates. New research shows methane leakage from some gas wells may be as high as 17.3 percent. Moreover, new research has shown that unconventional gas wells are up to 2.7 times more likely than a conventional well to have a cement or casing impairment, which can lead to methane leaks. The intersection of new fractures with nearby abandoned wells can also result in methane migration to the surface. Leakage can also occur during storage, processing, and distribution to customers.</p> <p>Natural gas emissions are generally about 84 percent methane. Methane is a potent greenhouse gas that contributes substantially to global climate change. Its global warming potential is approximately 34 times that of carbon dioxide over a 100 year time frame and at least 86 times that of carbon dioxide over a 20 year time frame. Oil and gas operations release large amounts of methane. While the exact amount is not clear, EPA has estimated that “oil and gas systems are the largest human-made source of methane emissions and account for 37 percent of methane emissions in the United States and is expected to be one of the most rapidly growing sources of anthropogenic methane emissions in the coming decades.” That proportion is based on an estimated calculation of methane emissions, rather than measured actual emissions,</p>	

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	<p>which indicate that methane emissions may be much greater in volume than calculated.</p> <p>Fracked wells leak an especially large amount of methane, with some evidence indicating that the leakage rate is so high that shale gas is worse for the climate than coal. In fact, a research team associated with the National Oceanic and Atmospheric Administration recently reported that preliminary results from a field study in the Uinta Basin of Utah suggest that the field leaked methane at an eye-popping rate of nine percent of total production.</p> <p>The EIS must weigh the no-leasing and no-fracking alternatives' climate-change benefits against the impacts of allowing new leasing and fracking, and address the following:</p>	
53	<p><u>Center for Biological Diversity:</u></p> <p><i>1. Sources of Greenhouse Gases</i></p> <p>In performing a full analysis of climate impacts, BLM must consider all potential sources of greenhouse gas emissions (e.g. greenhouse gas emissions generated by transporting large amounts of water for fracking). BLM should also perform a full analysis of all gas emissions that contribute to climate change, including methane and carbon dioxide. The EIS should calculate the amount of greenhouse gas that will result on an annual basis from (1) each of the fossil fuels that can be developed within the planning area, (2) each of the well stimulation or other extraction methods that can be used, including, but not limited to, fracking, acidization, acid fracking, and gravel packing, and (3) cumulative greenhouse gas emissions expected over the long term (expressed in global warming potential of each greenhouse pollutant as well as CO₂ equivalent), including emissions throughout the entire fossil fuel lifecycle discussed above.</p> <p><i>2. Effects of Climate Change</i></p> <p>In addition to quantifying the total emissions that would result from the lease sale, an EIS should consider the environmental effects of these emissions, resulting from climate disruption's ecological and social effects.¹⁹¹ Release of greenhouse gases (from extraction, leakage, and downstream combustion) is not merely a reasonably foreseeable consequence of fracking extraction, it is the necessary and intended consequence. CEQ and the courts have repeatedly cautioned federal agencies that they cannot ignore either climate change generally, or the combustion impacts of fossil fuel extraction in particular.</p>	<p>Please see response to comments # 15, #17, #18, #19, #20 and #37</p>

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	<p>On December 12, 2015, nearly 200 governments, including the United States, agreed to the commitments enumerated in the Paris Agreement to “strengthen the global response to the threat of climate change.” The Paris Agreement codified the international consensus that the climate crisis is an urgent threat to human societies and the planet, with the parties recognizing that:</p> <p style="padding-left: 40px;">Climate change represents an urgent and potentially irreversible threat to human societies and the planet and thus requires the widest possible cooperation by all countries, and their participation in an effective and appropriate international response, with a view to accelerating the reduction of global greenhouse gas emissions (emphasis added).</p> <p>Numerous authoritative scientific assessments have established that climate change is causing grave harms to human society and natural systems, and these threats are becoming increasingly dangerous. The Intergovernmental Panel on Climate Change (IPCC), in its 2014 Fifth Assessment Report, stated that: “Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased” and that “[r]ecent climate changes have had widespread impacts on human and natural systems.”</p> <p>The 2014 Third National Climate Assessment, prepared by a panel of non-governmental experts and reviewed by the National Academy of Sciences and multiple federal agencies similarly stated that “That the planet has warmed is ‘unequivocal,’ and is corroborated through multiple lines of evidence, as is the conclusion that the causes are very likely human in origin” and “[i]mpacts related to climate change are already evident in many regions and are expected to become increasingly disruptive across the nation throughout this century and beyond.” The United States National Research Council similarly concluded that: “[c]limate change is occurring, is caused largely by human activities, and poses significant risks for—and in many cases is already affecting—a broad range of human and natural systems.”</p> <p>The IPCC and National Climate Assessment further decisively recognize the dominant role of fossil fuels in driving climate change:</p> <p style="padding-left: 40px;">While scientists continue to refine projections of the</p>	

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	<p>future, observations unequivocally show that climate is changing and that the warming of the past 50 years is primarily due to human-induced emissions of heat-trapping gases. These emissions come mainly from burning coal, oil, and gas, with additional contributions from forest clearing and some agricultural practices. ***</p> <p>CO2 emissions from fossil fuel combustion and industrial processes contributed about 78% to the total GHG emission increase between 1970 and 2010, with a contribution of similar percentage over the 2000–2010 period (high confidence).</p> <p>These impacts ultimately emanating from the extraction and combustion of fossil fuels are harming the United States in myriad ways, with the impacts certain to worsen over the coming decades absent deep reductions in domestic and global GHG emissions. EPA recognized these threats in its 2009 Final Endangerment Finding under Clean Air Act Section 202(a), concluding that greenhouse gases from fossil fuel combustion endanger public health and welfare: “the body of scientific evidence compellingly supports [the] finding” that “greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare.” In finding that climate change endangers public health and welfare, EPA has acknowledged the overwhelming evidence of the documented and projected effects of climate change upon the nation:</p> <p><i>Effects on air quality:</i> “The evidence concerning adverse air quality impacts provides strong and clear support for an endangerment finding. Increases in ambient ozone are expected to occur over broad areas of the country, and they are expected to increase serious adverse health effects in large population areas that are and may continue to be in nonattainment. The evaluation of the potential risks associated with increases in ozone in attainment areas also supports such a finding.”</p> <p><i>Effects on health from increased temperatures:</i> “The impact on mortality and morbidity associated with increases in average temperatures, which increase the likelihood of heat waves, also provides support for a public health endangerment finding.”</p> <p><i>Increased chance of extreme weather events:</i> “The evidence concerning how human induced climate change may alter extreme weather events also clearly supports a finding of endangerment, given the serious adverse</p>	

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	<p>impacts that can result from such events and the increase in risk, even if small, of the occurrence and intensity of events such as hurricanes and floods. Additionally, public health is expected to be adversely affected by an increase in the severity of coastal storm events due to rising sea levels.”</p> <p><i>Impacts to water resources:</i> “Water resources across large areas of the country are at serious risk from climate change, with effects on water supplies, water quality, and adverse effects from extreme events such as floods and droughts. Even areas of the country where an increase in water flow is projected could face water resource problems from the supply and water quality problems associated with temperature increases and precipitation variability, as well as the increased risk of serious adverse effects from extreme events, such as floods and drought. The severity of risks and impacts is likely to increase over time with accumulating greenhouse gas concentrations and associated temperature increases.”</p> <p><i>Impacts from sea level rise:</i> “The most serious potential adverse effects are the increased risk of storm surge and flooding in coastal areas from sea level rise and more intense storms. Observed sea level rise is already increasing the risk of storm surge and flooding in some coastal areas. The conclusion in the assessment literature that there is the potential for hurricanes to become more intense (and even some evidence that Atlantic hurricanes have already become more intense) reinforces the judgment that coastal communities are now endangered by human induced climate change, and may face substantially greater risk in the future. Even if there is a low probability of raising the destructive power of hurricanes, this threat is enough to support a finding that coastal communities are endangered by greenhouse gas air pollution. In addition, coastal areas face other adverse impacts from sea level rise such as land loss due to inundation, erosion, wetland submergence, and habitat loss. The increased risk associated with these adverse impacts also endangers public welfare, with an increasing risk of greater adverse impacts in the future.”</p> <p><i>Impacts to energy, infrastructure, and settlements:</i> “Changes in extreme weather events threaten energy, transportation, and water resource infrastructure. Vulnerabilities of industry, infrastructure, and settlements to climate change are generally greater in high-risk locations, particularly coastal and riverine areas, and areas whose economies are closely linked with climate-sensitive resources. Climate change will likely interact with and possibly exacerbate ongoing environmental change and</p>	

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	<p>environmental pressures in settlements, particularly in Alaska where indigenous communities are facing major environmental and cultural impacts on their historic lifestyles.”</p> <p><i>Impacts to wildlife:</i> “Over the 21st century, changes in climate will cause some species to shift north and to higher elevations and fundamentally rearrange U.S. ecosystems. Differential capacities for range shifts and constraints from development, habitat fragmentation, invasive species, and broken ecological connections will likely alter ecosystem structure, function, and services, leading to predominantly negative consequences for biodiversity and the provision of ecosystem goods and services.”</p> <p>In addition to these acknowledged impacts on public health and welfare more generally, climate change is causing and will continue to cause serious impacts on natural resources that the Department of Interior is specifically charged with safeguarding.</p> <p><i>Impacts to Public Lands:</i> Climate change is causing and will continue to cause specific impacts to public lands ecosystem services. Although public lands provide a variety of difficult-to-quantify public benefits, one recent Forest Service attempt at quantification estimates the public land ecosystem services at risk from climate change at between \$14.5 and \$36.1 billion annually. In addition to the general loss of ecosystem services, irreplaceable species and aesthetic and recreational treasures are at risk of permanent destruction. High temperatures are causing loss of glaciers in Glacier National Park; the Park’s glaciers are expected to disappear entirely by 2030, with ensuing warming of stream temperatures and adverse effects to aquatic ecosystems. With effects of warming more pronounced at higher latitudes, tundra ecosystems on Alaska public lands face serious declines, with potentially serious additional climate feedbacks from melting permafrost. In Florida, the Everglades face severe ecosystem disruption from already-occurring saltwater incursion. Sea level rise will further damage freshwater ecosystems and the endangered species that rely on them.</p> <p><i>Impacts to Biodiversity and Ecosystems:</i> Across the United States ecosystems and biodiversity, including those on public lands, are directly under siege from climate change— leading to the loss of iconic species and landscapes, negative effects on food chains, disrupted migrations, and the degradation of whole ecosystems. Specifically, scientific evidence shows that climate change is already causing changes in distribution, phenology, physiology, genetics, species interactions, ecosystem</p>	

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	<p>services, demographic rates, and population viability: many animals and plants are moving poleward and upward in elevation, shifting their timing of breeding and migration, and experiencing population declines and extirpations. Because climate change is occurring at an unprecedented pace with multiple synergistic impacts, climate change is predicted to result in catastrophic species losses during this century. For example, the IPCC concluded that 20% to 30% of plant and animal species will face an increased risk of extinction if global average temperature rise exceeds 1.5°C to 2.5°C relative to 1980-1999, with an increased risk of extinction for up to 70% of species worldwide if global average temperature exceeds 3.5°C relative to 1980-1999.</p> <p>In sum, climate change, driven primarily by the combustion of fossil fuels, poses a severe and immediate threat to the health, welfare, ecosystems and economy of the United States. These impacts are felt across the nation, including upon the public lands the Secretary of the Interior is charged with safeguarding. A rapid and deep reduction of emissions generated from fossil fuels is essential if such threats are to be minimized and their impacts mitigated.</p> <p>Although cost-benefit analysis is not necessarily the ideal or exclusive method for assessing contributions to an adverse effect as enormous, uncertain, and potentially catastrophic as climate change, BLM does have tools available to provide one approximation of external costs and has previously performed a “social cost of carbon” analysis in prior environmental reviews. Its own internal memo identifies one available analytical tool: “For federal agencies the authoritative estimates of [social cost of carbon] are provided by the 2013 technical report of the Interagency Working Group on Social Cost of Carbon, which was convened by the Council of Economic Advisers and the Office of Management and Budget.” As explained in that report:</p> <p>The purpose of the “social cost of carbon” (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analyses of regulatory actions that impact cumulative global emissions. The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.</p>	

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	<p>Further, other analytical tools exist to evaluate the cost of methane emissions. EPA has peer reviewed and employed such a tool in its “Regulatory Impact Analysis of the Proposed Emission Standards for New and Modified Sources in the Oil and Natural Gas Sector.”</p> <p>Leasing and development of unconventional wells could exact extraordinary financial costs to communities and future generations, setting aside the immeasurable loss of irreplaceable, natural values that can never be recovered. The EA fails to provide an accounting of these potential costs.</p>	
54	<p><u>Center for Biological Diversity:</u></p> <p>B. The EA Fails to Analyze the Auction’s Greenhouse Gas Impacts</p> <p>The EA fails to fully analyze the impacts of increased oil and gas development on greenhouse gas emissions and climate change. It makes no attempt to even identify the various sources of greenhouse gas pollution that could result from new leasing, much less quantify potential emissions. It also incorrectly suggests that because “accurate” assessment of greenhouse gas emissions is not possible, it need not make any effort to quantify these emissions.</p> <p>NEPA requires “reasonable forecasting,” which includes the consideration of “reasonably foreseeable future actions...even if they are not specific proposals” N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1079 (9th Cir. 2011) (citation omitted). Full development of the areas for lease is entirely foreseeable in light of the Reasonably Foreseeable Development Scenarios for each of the field offices. The EA notes that many of the areas for lease are in “high” or “very high” oil and gas potential areas. It is therefore reasonably foreseeable that the leasing of these parcels will result in the commercial production of oil and gas. BLM must fully quantify the greenhouse gas emissions resulting from full commercial production, including emissions sources listed in section V.A above.</p> <p>That BLM cannot “accurately” calculate the total emissions expected from full development is not a rational basis for cutting off its analysis. “Because speculation is . . . implicit in NEPA,” agencies may not “shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry.” Id. Indeed, the EA for a recent lease sale in Utah undercuts BLM’s assertion here that GHGs cannot be</p>	<p>Please see response to comments # 15, #17, #18, #19, #20 and #37</p>

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	<p>quantified at the leasing stage. See Fillmore EA at 57-58; see also High Country Conservation Advocates v. United States Forest Serv., 52 F. Supp. 3d 1174, 1196 (D. Colo. 2014) (decision to forgo calculating mine’s reasonably foreseeable GHG emissions was arbitrary “in light of the agencies’ apparent ability to perform such calculations”). While the Utah sale EA does not provide a complete analysis, it estimates that sale of the Fillmore parcels will result in GHG emissions of 7,074.54 metric tons of CO₂e per year, which includes emissions from the development of oil and gas. Id.</p> <p>Even if it were true that potential emissions cannot reasonably be estimated, it is possible for BLM to identify significant sources of greenhouse gas emissions, which would enable the identification of specific measures to reduce emissions and an understanding of the extent to which certain emissions are avoidable. As alluded to above, the extreme urgency of the climate crisis requires BLM to pursue all means available to limit the climate change effects of its actions. Any emissions source, no matter how small, is potentially significant, such that BLM should fully explore mitigation and avoidance options for all sources.</p> <p>Instead of performing this minimum level of analysis, the EA discusses in highly general terms the oil and gas industry’s relative contribution to statewide greenhouse emissions. This provides no practical understanding of the major sources of emissions from oil and gas development and whether they can be controlled. BLM’s discussion of mitigation measures is similarly unilluminating. It simply lists a random assortment of potential BMPs that may be applied to oil and gas projects. Without a breakdown of all potential sources, there can be no understanding of whether each source can be mitigated. For example, fugitive methane leaks from equipment and pipelines are an enormous source of emissions, but this source is ignored.</p> <p>To the extent the EA relies on the EIS for the 2015 Wyoming RMP Amendments for quantifying GHG emissions, that analysis is incomplete and inadequate. The EIS fails to quantify emissions from activities other than well development and production, such as end-use combustion, transportation, and refining and other processing of the extracted product. Both the EA and RMP Amendments’ EIS also fail to include a social cost of carbon analysis, although reliable tools exist to perform this analysis, as described in the previous section.</p>	
55	<u>Center for Biological Diversity:</u>	Resource management plans (RMP) make resource allocation decisions concerning the

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	<p>VI. Oil and Gas Development Harms Sensitive Species and Wildlife</p> <p>The expansion of oil and gas development activities will harm wildlife through habitat destruction and fragmentation, stress and displacement caused by development-related activities (e.g., construction and operation activities, truck traffic, noise and light pollution), surface water depletion leading to low stream flows, water and air contamination, introduction of invasive species, and climate change. These harms can result in negative health effects and population declines. Studies and reports of observed impacts to wildlife from unconventional oil and gas extraction activities are summarized in the Center’s “Review of Impacts of Oil and Gas Exploration and Development on Wildlife,” submitted herewith. Because the allowance of destructive oil and gas extraction runs contrary to BLM’s policy of managing resources in a manner that will “protect the quality of...ecological...values” and “provide...habitat for wildlife,” a no-fracking alternative minimizing industrial development and its harmful effects on wildlife must be considered.</p>	<p>availability of lands for oil and gas leasing. This EA addresses whether nominated parcels are available for leasing in conformance with the RMP, and applies appropriate RMP stipulations to the lease sale parcels.</p> <p>Absent a definitive development proposal it is not possible to conduct a more specific impact and/or cumulative effects analysis and as stated in Section 1.3 of the EA, BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be leased, or if leased, whether or not the lease would be explored or developed or at what intensity development may occur. As further stated in Section 1.3 of the EA, “additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted.</p>
56	<p><u>Center for Biological Diversity:</u></p> <p>A. Habitat Loss</p> <p>Oil and gas development creates a network of well pads, roads, pipelines, and other infrastructure that lead to direct habitat loss and fragmentation, as well as displacement of wildlife from these areas due to increased human disturbance. Habitat loss occurs as a result of a reduction in the total area of the habitat, the decrease of the interior-to-edge ratio, isolation of one habitat fragment from another, breaking up of one habitat into several smaller patches of habitat, and decreasing the average size of a habitat patch. New research has revealed the extent of this habitat loss. For example, in the western United States, the amount of high-quality habitat for the pronghorn has shrunk drastically due to oil and gas development.</p> <p>The indirect effects from unconventional oil and gas development can often be far greater than the direct disturbances to habitat. The impacts from the well site—including noise, light, and pollution—extend beyond the borders of the operation site and will consequently render even greater areas uninhabitable for some wildlife. Species dependent on having an “interior” habitat will lose their habitat as operation sites or other infrastructure fragment previously buffered and secluded areas. These and other</p>	<p>The November 2016 Competitive Oil and Gas Lease Sale is not a regulatory action, but rather an administrative action. There are no direct impacts to habitat through the administrative action of leasing. Should the parcels be sold and the leases proposed for development, impacts to habitat will be analyzed through additional site-specific NEPA analysis, and conformance with state and Federal requirements will be evaluated. As new information is gathered, it will be incorporated into BLM decisions and may require conditions of approval to mitigate adverse impacts to habitat.</p> <p>Further, all surface disturbing proposals must comply with WY BLM Instruction Memorandum 2012-032, WY BLM Reclamation Policy and the recently completed Greater Sage Grouse Approved Resource Management Plan Amendment (ARMPA) ROD (2015) for WY.</p> <p>Wildlife resources are discussed in Sections 3.2.2 and 4.2.2 of the EA. The BLM manages a variety of habitats that possess the</p>

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	<p>indirect effects can be far greater than the direct disturbances to land. In the Marcellus shale of Pennsylvania, for instance, research shows that 8.8 acres of forest on average are cleared for each drilling pad along with associated infrastructure, but after accounting for ecological edge effects, each drilling station actually affected 30 acres of forest.</p> <p>While individual well sites may cause some disturbance and destruction, the cumulative impacts of oil and gas production using unconventional methods must receive attention as well. While the actual well pads may only occupy a small proportion of a particular habitat, their impact can be much greater when their aggregate impact is considered. As discussed above, interior habitats will be destroyed by removing the buffer between the interior habitat and the operation site. For example, one study found that grassland bird species' habitat have been degraded by oil development in the Bakken shale region, as evidenced by their avoidance of these areas. Grassland birds avoided areas within 150 meters of roads, 267 meters of single-bore well pads, and 150 meters of multi-bore well pads. In areas of dense development, these habitat effects are greatly multiplied for sensitive species, such as the Sprague's pipit (<i>Anthus spragueii</i>), which avoided areas within 350 meters of single-bore well pads. The EIS must quantify the potential cumulative loss of habitat for sensitive species.</p>	<p>biological and physical attributes important in the life-cycles of many wildlife species. The diversity of habitats and landscapes provide important areas for breeding, birthing, foraging, wintering, and migration. Indirect effects from leasing may occur to the habitat if development were to occur. At the time of a site-specific application, such as an APD, fish and wildlife resources will be identified and conditions of approval to mitigate adverse impacts may be imposed at that time.</p> <p>The greater sage grouse RMP amendment and the base RMPs have analyzed the projected cumulative habitat loss from the reasonably foreseeable development scenario while considering other past present and future uses of the lands.</p>
57	<p><u>Center for Biological Diversity:</u></p> <p>B. <u>Water Depletion</u></p> <p>Water depletion also affects species whose habitats are far removed from the actual well site. Because of the high volume of water required for even a single well that uses unconventional extraction methods, the cumulative water depletion has a significant impact on species that rely on water sources that serve to supply oil and gas operations. In addition, water depletion adversely impacts water temperature and chemistry, as well as amplifies the effects of harmful pollutants on wildlife that would otherwise be diluted without the depletion.</p>	<p>Please see response to comments #25, #37 and #42.</p> <p>Section 3.3.9 of the EA discusses water resources and Section 3.3.2. discusses wildlife resources, including special status species. All parcels were reviewed and no RMP based stipulations protecting water resources were applicable to the lease sale parcels. Table 3-1, Affected Environment, identifies areas as containing special status species.</p>
58	<p><u>Center for Biological Diversity:</u></p> <p>C. <u>Water Contamination</u></p> <p>Accidental spills or intentional dumping of wastewater contaminate surface water and cause large-scale harm to wildlife. Numerous incidents of wastewater contamination from pipelines, equipment blowouts, and truck accidents have been reported, and have resulted in kills of fish, aquatic invertebrates, and trees and shrubs, as well as</p>	<p>Please see response to comments #25, #37 and #42.</p>

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	<p>negative health effects for wildlife and domestic animals. In 2013, a company admitted to dumping wastewater from fracking operations into the Acorn Fork Creek in Kentucky, causing a massive fish kill. Among the species harmed was the blackside dace, a threatened minnow species. An analysis of water quality of Acorn Creek and fish tissues taken shortly after the incident was exposed showed the fish displayed general signs of stress and had a higher rate of gill lesions, than fish in areas not affected by the dumping. The discharge of fracking wastewater into the Susquehanna River in Pennsylvania is suspected to be the cause of fish abnormalities, including high rates of spots, lesions, and intersex. In West Virginia, the permitted application of hydrofracturing fluid to an area of mixed hardwood forest caused extensive tree mortality and a 50-fold increase in surface soil concentrations of sodium and chloride.</p> <p>In addition, open air pits that store waste fluid pose risks for wildlife that may come into contact with the chemicals stored in the pits. Already, there have been several documented cases of animal mortality resulting from contact with pits. A field inspection of open pits in Wyoming found 269 bird carcasses, the likely cause of death being exposure to toxic chemicals stored in the open pits. Open pits can also serve as breeding grounds for mosquitoes, which serve as a vector for West Nile virus, a threat to humans and animals alike. In Wyoming, an increase of ponds led to an increase of West Nile virus among greater sage-grouse populations. Recently, new information has come to light that operators in California have been dumping wastewater into hundreds of unpermitted open pits. The EIS must take into account the impact of both unpermitted, illegal waste pits as well as those that are regulated.</p> <p>Contaminants from spills not only directly harm species exposed to these contaminants but can enter the food chain and harm predators. A recent study found that in watersheds where hydraulic fracturing occurs, a top predator, riparian songbird in headwater systems, the Louisiana Waterthrush (<i>Parkesia motacilla</i>), accumulated metals associated with the fracking process. "In both the Marcellus and Fayetteville shale regions, barium and strontium were found at significantly higher levels in feathers of birds in sites with fracking activity than at sites without fracking." While the study did not resolve the pathway for these metals entering the food chain, their findings suggested that "hydraulic fracturing may be contaminating surface waters and underscores the need for additional monitoring and study to further assess ecological and human health risks posed by the</p>	

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	increasingly widespread development of unconventional sources of natural gas around the world.”	
59	<p><u>Center for Biological Diversity:</u></p> <p>D. Invasive Species</p> <p>Invasive species may be introduced through a variety of pathways that would be increasingly common if oil and gas activity is allowed to expand. Machinery, equipment, and trucks moved from site to site can carry invasive plant species to new areas. In addition, materials such as crushed stone or gravel transported to the site from other locations may serve as a conduit for invasive species to migrate to the well site or other areas en route.</p> <p>Aquatic invasive species may also spread more easily given the large amounts of freshwater that must be transported to accommodate new drilling and extraction techniques. These species may be inadvertently introduced to new habitats when water is discharged at the surface. Alternatively, hoses, trucks, tanks, and other water use equipment may function as conduits for aquatic invasive species to access new habitats.</p>	<p>Additional mitigation, including adaptive management, could be developed during the site-specific NEPA analysis that would be required to address any specific post-lease exploration or development actions that are proposed.</p>
60	<p><u>Center for Biological Diversity:</u></p> <p>E. Climate Change</p> <p>Anthropogenic climate change poses a significant threat to biodiversity. Climate disruption is already causing changes in distribution, phenology, physiology, genetics, species interactions, ecosystem services, demographic rates, and population viability: many animals and plants are moving poleward and upward in elevation, shifting their timing of breeding and migration, and experiencing population declines and extinctions. Because climate change is occurring at an unprecedented pace with multiple synergistic impacts, climate change is predicted to significantly increase extinction risk for many species. The IPCC concludes that it is extremely likely that climate change at or above 4°C will result in substantial species extinction. Other studies have predicted similarly severe losses: 15-37 percent of the world’s plants and animals committed to extinction by 2050 under a mid-level emissions scenario; the extinction of 10 to 14 percent of species by 2100 if climate change continues unabated. Another recent study predicts the loss of more than half of the present climatic range for 58 percent of plants and 35 percent of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species. Because expansion of oil and gas production in the planning area will substantially increase the emissions of greenhouse gases, this activity will further contribute</p>	<p>Please see response to comments #15, #17, #18, #19, #20 and #37</p>

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	to the harms from climate change to wildlife and ecosystems.	
61	<p><u>Center for Biological Diversity:</u></p> <p>F. Population-level Impacts</p> <p>Oil and gas development has been linked to population-level impacts on wildlife, including lower reproductive success of sage grouse and declines in the abundance of songbirds and aquatic species. For example, young greater-sage grouse avoided mating near infrastructure of natural-gas fields, and those that were reared near infrastructure had lower annual survival rates and were less successful at establishing breeding territories compared to those reared away from infrastructure. In Wyoming, an increasing density of wells was associated with decreased numbers of Brewer’s sparrows, sage sparrows, and vesper sparrows. In the Fayetteville Shale of central Arkansas, the proportional abundance of sensitive aquatic taxa, including darters, was negatively correlated with gas well density. The EIS must consider the population-level impacts that oil and gas development may have on wildlife in the planning areas.</p>	<p>As stated in Section 1.1 of EA, pursuant to 40 CFR 1508.28 and 1502.21, the EA tiers to and incorporates by reference the information and analysis contained in the EIS and RMP RODs for the Rock Springs, Rawlins, Pinedale, and Kemmerer offices as amended (2015) and Bureau of Land Management September 21, 2015 Wyoming Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse (GRSG). Therefore, a new EIS for leasing is not necessary. These EIS documents analyzed the effects of oil and gas leasing and development, and the specific management goals, plans and monitoring actions are addressed in the RMPs.</p> <p>Absent a definitive development proposal it is not possible to conduct a more specific impact and/or cumulative effects analysis and as stated in Section 1.3 of the EA, BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be leased, or if leased, whether or not the lease would be explored or developed or at what intensity development may occur. As further stated in Section 1.3 of the EA, “additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted.</p>
62	<p><u>Center for Biological Diversity:</u></p> <p>G. Endangered, Threatened, and Sensitive Species</p> <p>BLM must use the existing readily available data to identify which sensitive species that are of critical concern with regards to the lands included in, or in immediate proximity to, the proposed sale parcels. BLM’s EIS must discuss any impacts to such species, including the four Colorado River endangered fish (humpback chub, Colorado pikeminnow, bonytail, and razorback sucker), whose critical habitat is downstream from some of the parcels.</p> <p>In addition, BLM must consult with the Service regarding the impacts of the lease sale on affected listed species, in</p>	Please see response to comment #61

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	<p>compliance with its section 7 obligations under the ESA. To the extent that BLM relies on its section 7 programmatic consultations for the several management plans governing the lease sale, that reliance is not proper for any of the listed species affected by BLM’s action. The potential for fracking and horizontal drilling and its associated impacts within the planning area constitutes “new information reveal[ing] effects of the [RMPs] that may affect listed species or critical habitat in a manner or to an extent not previously considered [in the prior section 7 programmatic consultations].” 50 CFR § 402.16(b). BLM must therefore reinitiate consultation on all of the planning documents for these areas. In any case, it must formally consult over the lease sale’s potential adverse effects on listed species and consider the full scope of fracking and other drilling activities that could affect these species.</p>	
63	<p><u>Center for Biological Diversity:</u></p> <p style="text-align: center;">H. The EA Fails to Properly Evaluate the Impacts of New Development on Wildlife</p> <p>The EA completely fails to analyze site-specific impacts of oil and gas development on important wildlife areas, including sage grouse habitat, the Chain Lakes Wildlife Habitat Management Area, and big game migratory corridors.</p>	<p>Please see response to comment #61</p>
64	<p><u>Center for Biological Diversity:</u></p> <p style="text-align: center;">1. Sage Grouse Habitat</p> <p>All of the parcels are located within the current range of Greater sage-grouse, including 6 parcels covering over 6,900 acres in priority habitat management areas, and over 23,000 acres in general habitat management areas. Many of these areas also fall within four miles of leks, which provide important breeding and nesting grounds to sage grouse.</p> <p>Despite that highly sensitive sage-grouse habitat would be threatened by new leasing, the EA fails in three major respects to disclose or analyze indirect and cumulative impacts of leasing on greater sage-grouse. It tiers to and relies on RMP decisions for management of Wyoming greater sage-grouse habitat that fail to follow the best available science regarding measures necessary to ensure the survival and recovery of the species. The proposed leasing action, moreover, violates FLPMA by failing to conform to a key management prescription of those plans – the obligation to “prioritize the leasing and development of fluid mineral resources outside GRSG habitat.” Furthermore, because the proposed leases are not in</p>	<p>Please see response to comment #26</p> <p>As stated in Section 1.1 of EA, pursuant to 40 CFR 1508.28 and 1502.21, the EA tiers to and incorporates by reference the information and analysis contained in the EIS and RMP RODs for the Rock Springs, Rawlins, Pinedale, and Kemmerer offices as amended (2015) and Bureau of Land Management September 21, 2015 Wyoming Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse (GRSG). Therefore, a new EIS for leasing is not necessary. These EIS documents analyzed the effects of oil and gas leasing and development, and the specific management goals, plans and monitoring actions are addressed in the RMPs.</p> <p>The adequacy of existing stipulations or development of additional stipulations are beyond the scope of this document. Oil and gas stipulations are developed at the RMP</p>

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	<p>conformance with the 2015 RMP amendments and undermine significant assumptions of their accompanying FEISs (i.e., that new oil and gas development will tend to occur outside of greater sage-grouse habitat), the EA cannot tier to or rely on those EISs.</p> <p>The 2015 Wyoming RMP Amendments, including those applicable to the areas of the Kemmerer, Rock Springs, Rawlins, and Pinedale Field Offices proposed for lease in this sale, do not conform to the best available science or the recommendations of BLM’s own experts regarding necessary measures to protect sage grouse habitats and prevent population declines. We hereby incorporate by reference the June 27, 2015 protest of the Wyoming FEISs submitted by WildEarth Guardians, Prairie Hills Audubon Society, Western Watersheds Project, the Center for Biological Diversity, and the Sierra Club.249 As set forth in detail in that document, the Wyoming RMP Amendments do not conform to the agency’s own expert determinations regarding management measures necessary to conserve greater sage-grouse populations in the face of oil and gas development.</p> <p>Even under the BLM’s own determinations, however, the proposed action is directly in conflict with a core provision of the 2015 sage-grouse RMP amendments. All the Rocky Mountain Region RMPs – significantly, including Wyoming – are subject to the following measure for both priority and general habitat management areas:</p> <p><i>Prioritization Objective</i>—In addition to allocations that limit disturbance in PHMAs and GHMAs, the ARMPs and ARMPAs prioritize oil and gas leasing and development outside of identified PHMAs and GHMAs. This is to further limit future surface disturbance and encourage new development in areas that would not conflict with GRSG. This objective is intended to guide development to lower conflict areas and as such protect important habitat and reduce the time and cost associated with oil and gas leasing development by avoiding sensitive areas, reducing the complexity of environmental review and analysis of potential impacts on sensitive species, and decreasing the need for compensatory mitigation.</p> <p>The EA explicitly acknowledges that its greater sage-grouse conservation plans and strategy “direct the BLM to prioritize oil and gas leasing and development in a manner that minimizes resource conflicts in order to protect important habitat and reduce development time and costs.” EA at 2. Indeed, the EA states, although without further explanation, that portions of 43 parcels containing</p>	<p>level. They cannot be changed unless done at that level. The decisions adopted in the Greater Sage Grouse RMP Amendment ROD have the support of both state and Federal agencies, including the US Fish and Wildlife Service. Offering lands for lease does not violate the assumption that new oil and gas development will tend to occur outside of greater sage grouse habitat because leasing is an administrative act in conformance with the base RMPs and the Federal Land Policy and Management Act (FLPMA).</p> <p>BLMs prioritization of leasing in sage grouse habitat for this lease sale EA has taken into account the proximity of the parcels to existing development, development potential, and conflicts with sage grouse leks. see page 44 of the Lease Sale EA which states: <i>Fifteen of the proposed sale parcels for the November 1, 2016 sale, are located in General Habitat Management Areas (GHMA), and six (6) are located in PHMA as identified in the ARMPA ROD. The parcels located in PHMA are proximate to existing production, do not exhibit GSG lek conflicts, are located in “checkerboard” land ownership areas, and are identified as having high or very high oil and gas reserves potential. These areas may provide nesting, wintering, and/or breeding habitat for Greater Sage-Grouse (see Table 3-1).</i></p>

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	<p>71,816.700 acres were deferred “through [State Director] discretion” pursuant to the Plans’ prioritization requirement. EA at 2.</p> <p>The BLM is subject to clear direction in the RMP amendments that its sage-grouse RMP plans and conservation strategy rely not only on stipulations within designated habitats (stipulations acknowledged as insufficient, in Wyoming, to result in a net conservation gain for general habitat, see 2015 RMPA ROD at 1-30 to 1-31), but also on a larger strategy of prioritizing development outside of all sage-grouse habitats. Despite its acknowledgement of the prioritization requirement by deferring over 71,800 acres, however, the BLM’s proposed action would lease 21 parcels which all contain general and priority habitat. It is simply impossible to understand how offering leases all within sage-grouse habitat is consistent with the RMP requirement to prioritize leasing outside such habitat, and the EA provides no rationale whatsoever for this decision. In particular, the EA fails to offer any explanation as to why approximately 71,800 acres are deferred as “consistent” with the prioritization requirement but the remaining parcels containing sage-grouse habitat are not.</p> <p>An apparent BLM policy of leasing parcels all within sage-grouse habitat is not only inconsistent with the RMPs and FLPMA’s consistency requirement, it also undermines a fundamental assumption of the RMP Amendment EISs – as well as the Fish and Wildlife Service’s “not warranted” determination for the greater sage-grouse. That assumption is that the measures adopted in the RMP Amendments will tend to result in oil and gas development tending to occur outside of greater sage-grouse habitat. Proposing a lease sale for 21 parcels containing sage-grouse habitat (including six parcels that contain Priority Habitat Management Area) shortly following the finalization of the sage-grouse RMPs strongly undermines that assumption. It further undermines the assumption in the Fish and Wildlife Service’s “Not Warranted” finding for the greater sage-grouse that federal and state implementation of the “Wyoming Plan” for fluid minerals will continue the 2012-15 of reduced drilling within core areas. If BLM is not actually going to give meaningful content to its plan direction to prioritize leasing outside of sage-grouse habitats, it cannot rely on FEISs, such as the Wyoming Sage Grouse RMP FEIS, that assume the effectiveness of that plan direction.</p> <p>Finally, because Wyoming contains the largest U.S. sage-grouse population and is an important source of sage-grouse in neighboring states, preservation of populations</p>	

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	<p>inhabiting the areas for lease is crucial to the sage-grouse's viability range-wide. A 2015 study modeling population trends shows that "most populations have continued to decline over the last 6 years reaching a low in 2013 below 50,000 males attending leks range-wide, an 8 fold decline from the late 1960s." Some of the largest declines occurred in the Wyoming Basin (including large parts of Wyoming) and the Great Plains Management Zone (including parts of northeastern Wyoming). "Overall persistence of the species into the far distant future is not assured or even likely without maintenance of the essential connectivity amongst populations and without substantial changes in the current trajectories of the populations occupying this broad region." The study confirms that existing management policies have not been effective in protecting sage grouse. The new policies established in the recent sage-grouse amendments also fall short.</p> <p>Stabilizing the Great Plains and Wyoming Basin populations could be a major step forward for preserving "essential connectivity amongst populations" and reversing declining trends. Great Plains Basin populations, which include populations in northeastern Wyoming, southern Montana, and the Dakotas are already at high risk of extinction, "unless recent patterns of decline change." On the other hand, Wyoming Basin populations perhaps have the best chance of recovery due to their larger size. These populations may also be more resilient against the threats of drought and wildfire, which will only increase with climate change. Recovering Wyoming Basin populations will maintain connectivity with Great Plains sage grouse, helping to restore Great Plains populations and others. Failing to protect these populations risks far-reaching repercussions on the sage-grouse's survival throughout the west.</p>	
65	<p><u>Center for Biological Diversity:</u></p> <p>2. Big Game Habitat</p> <p>Parcels 134, 135, and 136 overlap with mule deer and moose migration routes. Other parcels overlap with or are very near elk and antelope migration routes, and many parcels are within crucial winter range. Oil and gas development in these areas could interfere with these important migration corridors and reduce overall habitat available to these species. A recent study shows that oil and gas development causes significant habitat loss in the Piceance Basin of Colorado:</p> <p>Energy development drove considerable alterations to deer habitat selection patterns, with the most substantial impacts manifested as avoidance of well pads with</p>	<p>Absent a definitive development proposal it is not possible to conduct a more specific impact and/or cumulative effects analysis and as stated in Section 1.3 of the EA, BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be leased, or if leased, whether or not the lease would be explored or developed or at what intensity development may occur. As further stated in Section 1.3 of the EA, "additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted.</p> <p>Additional mitigation, including adaptive management, could be developed during the</p>

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	<p>active drilling to a distance of at least 800 m. Deer displayed more nuanced responses to other infrastructure, avoiding pads with active production and roads to a greater degree during the day than night. In aggregate, these responses equate to alteration of behavior by human development in over 50% of the critical winter range in our study area during the day and over 25% at night.</p> <p>While the EA acknowledges the potential for habitat loss, it erroneously concludes that stipulations provided in the governing RMPs would be sufficient to offset these impacts. Other than No Surface Occupancy stipulations for a few parcels, the only protections are timing limitation stipulations, which prohibit surface disturbance during the winter months [unclear]. But this measure does nothing to offset the impacts of the substantial habitat loss that may occur with increased oil and gas infrastructure throughout the region which the mere presence of new well pads and other infrastructure will inflict. BLM's proposed finding of "no significant impact" is baseless.</p>	<p>site-specific NEPA analysis that would be required to address any specific post-lease exploration or development actions that are proposed and could include additional measures to mitigate impacts to wintering big game from production related activities. With appropriate site-specific analysis, restrictions on production related activities could be imposed. G&F is encouraged to participate in the review of all APDs in identified big game crucial winter range and migration routes, and to submit "best practices" they feel are necessary to mitigate any potential negative impacts, at that time in accordance with our MOU.</p>
66	<p><u>Center for Biological Diversity:</u></p> <p>3. Chain Lakes Wildlife Habitat Management Area</p> <p>Parcels 15, 16, 17, and 18 fall within the Chain Lakes Wildlife Habitat Management Area ("Chain Lakes WHMA"), but other than mentioning this overlap, the EA provides no sense of the area's natural values and ecological functions and how wildlife dependent on this area would be affected by new drilling. According to the Wyoming Game and Fish Department, the Chain Lakes WHMA provides winter habitat for antelope and protects migration routes for pronghorn traveling between summer and winter ranges. Further:</p> <p>Sagebrush grassland communities dominate most of the area, while greasewood grows along the basins around the "Chain of Lakes." The area is treeless and the lakes are natural drainage depressions without outlets. Some artesian flows drain into the surrounding wetlands.</p> <p>If you like to hunt, pronghorns, rabbits and sage grouse are what you will find. If you enjoy photography, there are more than 100 species of birds, mammals, amphibians and reptiles in this area to capture on film. The "Chain of Lakes" is an important resting area for migrating waterfowl and shorebirds. April is an excellent time to observe many unique migrating shorebirds. Plovers, sandpipers and yellowlegs, which</p>	<p>Please see response to comment #65.</p>

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	<p>nest in the arctic, might be seen just passing through the area.</p> <p>A large population of feral (wild) horses lives on the Red Desert; these horses are a common sight at Chain Lakes. Two artesian wells provide a dependable and quality water source for pronghorn and horses as well as other wildlife...</p> <p>This management area is ideal for wildlife watching without much people pressure.</p> <p>The offered parcels cover substantial portions of this special management area, but the EA provides no sense of the potential for new development to fundamentally alter and degrade its important habitat values via habitat fragmentation, noise, light pollution, and contamination of wetlands and artesian wells from increased runoff, frack fluid migration, and toxic spills.</p>	
67	<p><u>Center for Biological Diversity:</u></p> <p>4. BLM Must Consult Over the Impacts of Fracking on the Endangered Fish</p> <p>Oil and gas activities within the parcels for sale may affect the endangered fish and its critical habitat, including habitat downstream of those areas for lease within the Colorado River Basin (parcels 3, 10, 11, 108, 115). The EIS must discuss the impacts of new leasing on the endangered fish, including greater water depletions and the increased risk of spills and water contamination that could result from horizontal drilling and hydraulic fracturing. As the lease sale is reasonably certain to result in new oil and gas development, BLM must also consult with the Service regarding these potential harms to the endangered fish, in compliance with section 7 of the ESA.</p> <p><i>a. Water depletions required by hydraulic fracturing and horizontal drilling will adversely affect the endangered fish.</i></p> <p>The Fish and Wildlife Service and the courts have repeatedly confirmed that any water depletions within the Colorado River system jeopardize the continued existence of the endangered fish. All four of these fish are critically endangered due chiefly to alterations in the historical flow regime of the Upper Colorado River and its tributaries.</p> <p>Given the reasonable certainty that new leasing will result in new drilling, BLM is required to consult over the depletion effects of developing parcels within the Colorado River drainage basin on the endangered fish. The</p>	<p>Please see response to comments #25, #37, #42 and #56.</p>

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	<p>agencies' consultation must consider the full scope of expected water use, including the depletion effects of horizontal drilling, which requires far higher water use than vertical drilling. For example, a recent water depletion log submitted by BLM's Colorado State Office to the Service shows that in FY2015, nine horizontal wells were drilled in the Grand Junction Field Office and consumed an average of 68.98 acre-feet of water per well, while vertical wells consumed an estimated average of 0.77 acre-feet per well.</p> <p><i>2. Climate Change Effects on Stream Flows</i></p> <p>A section 7 consultation must consider the impacts of climate change on stream flows, and how those changes will affect the endangered fish. The best available scientific data indicate that climate change is resulting in higher temperatures in the Colorado River Basin, reduced snowpack, reduced runoff, and increased drought, which have already reduced and will continue to reduce stream flows in the Basin. The Center's attached literature review provides more specific detail regarding these climate change effects on Colorado River stream flows⁴ BLM and the Service must take into account these climate change effects on the endangered fish, in connection with its evaluation of the water depletion effects of increased oil and gas development.</p> <p><i>3. Accidental Spills and Leaks Are Foreseeable and Will Increase with New Leasing and Increased Hydraulic Fracturing.</i></p> <p>Spills and leaks will certainly increase with the addition of new wells in the proposed areas for lease, many of which will be located within the Colorado River Basin. An analysis of self-reported spills within the Basin between January 1, 2008 and July 31, 2014 revealed 135 spills in the Basin that resulted in contamination of surface waters or groundwater. The number could actually be higher, as spills commonly go unreported. A substantial portion of reported spills have occurred upstream from the confluence of the Colorado River and the Green River, in the Green River Subbasin, where some of the most conducive habitat for endangered fish conservation and recovery exists, including the only known spawning bar for razorback sucker in the Upper Colorado River Basin.</p> <p>The potential for spills to move from tributaries into endangered fish critical habitat within main-stem rivers was shown by a 2014 spill into the Green River. On the night of May 20, 2014 an oil well operated by SW Energy on lands administered by BLM "blew out," leaking</p>	

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	<p>an estimated 100 barrels per hour of crude oil and production water into Salt Wash which leads to the Green River. SW Energy did not shut-in the well until 1:20 p.m. on May 22, at least 36 hours later. On May 24, flooding from a thunderstorm “overcame prevention measures” washing an unknown quantity of oil and produced water 1.5 miles from Salt Wash into the Green River and critical habitat for endangered fish. The U.S. Fish and Wildlife Service’s recent Biological Opinion for the Gasco Energy Inc. Field Development Project anticipates these events and the potential for more frequent spills given expanded drilling:</p> <p>There is a greater potential for impacts from pollutants, if a pipeline, well pit, or other source were to inadvertently release contaminated fluids into waterways at points near the Green and White Rivers. Through direct or indirect discharge, these pollutants could reach the Green River and negatively impact water quality to the point of affecting native fish populations. Direct impacts will result from a discharge from a pipeline or well pit reaching the Green River in its original form or within a single release event. Indirect effects occur when discharges are released to the ground and are later released to the river after being carried by an erosion event or carried by rain or snowmelt runoff. As more well and pipeline development occurs in the project area the chance of pollutants reaching the Green River increases, thus increasing the potential of harm to native fish populations.</p> <p>Like the above Green River incident, some spills or leaks are not detected until long after they have started. A number of spills in the Upper Colorado Basin were of “unknown” quantity and/or substance; these spills could have potentially been quite large, given their belated discovery.</p> <p>The Gasco Biological Opinion further explains that it is possible that large volumes of chemical substances escape undetected until reaching surface sediments or waters, due to “pinhole” leaks:</p> <p>The effects of smaller leaks that may cause chronic, sub-lethal effects to fish populations may be more prevalent. While the oil and gas industry has a wide variety of methods available to detect substantial leaks or integrity breaches, the technology for detection of small “pinhole” leaks is not as advanced. This creates a significant problem in that the current available methodology may allow small leaks to go undetected for extended periods of time often evading detection until</p>	

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	<p>they are manifested on the surface sediments or water.</p> <p>BLM's and the Service's analysis of the lease sale's effects on the endangered fish must also account for the unprecedented sheer volume of chemicals and wastewaters that will be generated by increased hydraulic fracturing. Thousands of pounds of fracking chemicals are likely to be transported to these areas, injected into the ground, and either reinjected underground or transported offsite for disposal. The amount of produced water also is likely to increase with increasing rates of hydraulic fracturing. Such wastewaters are highly corrosive, increasing the risk of pipelines and tanks releasing their contents. Corrosion of pipelines and tanks is a common cause of leaks and spills.</p> <p>The cumulative effects of this increased risk of spills on endangered fish in the region must also be accounted for in the Service's analysis of the lease sale's effects on the endangered fish. This includes the spill effects of the lease sale in connection with non-federal well development projects in the upper Basin. With increasing oil and gas development expected to occur throughout the entire upper Basin (and not just the areas for lease), it is entirely foreseeable that the risk of spills in this region will only increase.</p> <p><i>4 Spills and Leaks Are Likely to Adversely Affect the Endangered Fish.</i></p> <p>An increased risk of spills due to the lease sale would adversely affect the endangered fish. Fracking chemicals and fracking wastewaters can be highly toxic to fish. Produced waters that fracking operations force to the surface from deep underground can contain high levels of total dissolved solids, salts, metals, and naturally occurring radioactive materials. Flowback waters (i.e., fracturing fluids that return to the surface) may also contain similar constituents along with fracturing fluid additives such as surfactants and hydrocarbons. The identity and effects of many of these additives is unknown, due to operators' claims of confidential business information. Compounds in mixtures can have synergistic or antagonistic effects, but it is impossible to know these effects without full disclosure.</p> <p>Nonetheless, accidental spills and intentional dumping of fracking fluids and wastewaters can cause large-scale harm to aquatic life. Numerous incidents of fracking wastewater contamination from pipelines, equipment blowouts, and truck accidents have been reported, and have resulted in kills of fish. In 2013, a company admitted to dumping wastewater from fracking operations into the</p>	

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	<p>Acorn Fork Creek in Kentucky, causing a massive fish kill. Among the species harmed was the blackside dace, a threatened minnow species. The lead author (a scientist at USGS) noted that the “study is a precautionary tale of how entire populations could be put at risk even with small-scale fluid spills,” “especially...if the species is threatened or is only found in limited areas, like the Blackside dace is in the Cumberland.”</p> <p>Wastewaters can have high levels of salinity, which aquatic organisms are sensitive to (including plants and invertebrate species that fish may depend on); thus, accidental releases of produced and flowback waters may have harmful effects on fish and their habitat. Increased levels of total dissolved solids in surface waters are associated with higher rates of fish mortality. Further, produced waters can contain copper, iron, lead, manganese, arsenic, cadmium, nickel, zinc, chromium, selenium, and sodium bicarbonate at levels above thresholds that are harmful to aquatic organisms, including fish. Fracking fluids may also contain hydrocarbons, which can cause deterioration of body tissues of aquatic organisms and reduced growth. Drilling fluids may also cause impaired immune function in fish. Other contaminant effects may include “changes in heart and respiratory rates; gill hyperplasia; enlarged liver; reduced growth; fin erosion; impaired endocrine system; a variety of biochemical, blood, and cellular changes; and behavioral responses.” As Fish and Wildlife Service has previously noted, “[d]isruption of behavioral functions can result in population declines or changes in yearclass strength if enough individuals are affected.” Thus, chronic and persistent pollution from spills and leaks could result in harm to endangered fish at the population-scale.</p>	
68	<p><u>Center for Biological Diversity:</u></p> <p>5. Metrics</p> <p>BLM should conduct a full assessment of the direct and indirect impacts of unconventional oil and gas development activities on wildlife and ecosystems through a suite of comprehensive studies on all species and ecosystems that could be affected. The studies should be particularly detailed for federally and state listed species, federal and state candidates for listing, and state species of special concern. The studies should address the following impacts: (1) habitat loss, degradation, and fragmentation, including edge effects; (2) water depletion; (3) air and water contamination; (4) introduction of</p>	<p>Please see response to comments #12, #14, #28, and #70.</p> <p>For this lease sale, BLM specifically coordinated with the State of WY and the WY Game and Fish Department. During drafting of the GSG RMPA and base RMPS, BLM coordinated with multiple agencies including but not limited to, the WY DEQ, the WY G&FD, the US EPA, and the US FWS. BLM has adequately addressed the concerns raised by this comment.</p>

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	<p>invasive species; (5) climate change impacts; (6) health and behavioral effects such as increased stress and changes in life history behaviors; (7) changes in demographic rates such as reproductive success and survival; and (8) potential for population-level impacts such as declines and extirpations. These studies should consider these harms individually and cumulatively.</p>	
69	<p><u>Center for Biological Diversity:</u></p> <p>I. Unconventional Extraction Techniques and Underground Wastewater Disposal Pose Seismic Risks and Other Geological Hazards</p> <p>If oil and gas development is allowed to proliferate in the areas for lease, increased unconventional oil and gas extraction and underground waste injection will increase the risk of induced seismicity. Induced seismic events could damage or destroy property and cause injuries or even death, especially in a state where earthquakes are rare and communities are typically not prepared for them. A no-fracking alternative would minimize these risks, while continued leasing and unconventional well development would increase them.</p> <p>Research has shown that in regions of the central and eastern United States where unconventional oil and gas development has proliferated in recent years, earthquake activity has increased dramatically. More than 300 earthquakes with magnitude (M) ≥ 3 occurred between 2010 through 2012, compared with an average of 21 per year between 1967 and 2000. Moreover, although earthquakes with magnitude (M) ≥ 5.0 are very uncommon east of the Rocky Mountains, the number per year recorded in the midcontinent increased 11-fold between 2008 and 2011, compared to 1976 to 2007. Mid-continent states experiencing elevated levels of seismic activity include Arkansas, Colorado, New Mexico, Ohio, Oklahoma, Texas, and Virginia.</p> <p>Research has linked much of the increased earthquake activity and several of the largest earthquakes in the U.S. midcontinent in recent years to the disposal of wastewater into deep injection wells, which is well-established to pose a significant seismic risk. Much of the fracking wastewater is a byproduct of oil and gas production and is routinely disposed of by injection into wells specifically designed and approved for this purpose. The injected fluids push stable faults past their tipping points, and thereby induce earthquakes. In 2015, a study published in Science found that, the unprecedented increase in earthquakes in the U.S. midcontinent began in 2009 has been caused solely by the instability caused by fluid injection wells associated with</p>	<p>Beyond the scope of this document. The November 2016 Competitive Oil and Gas Lease Sale is not a regulatory action, but rather an administrative action. The act of leasing land for oil and gas development in itself does not cause seismic risks to occur. Please see Appendix D for a discussion of seismic risk associated with HF.</p> <p>Issuance of an oil and gas lease does not authorize operations on the lease. The possibility or nature of lease development operations cannot be reasonably determined at the leasing stage, nor can impacts realistically be analyzed in more detail at this time. If a lease is issued and development proposed, additional permits will be submitted to the BLM and analyzed in a site-specific NEPA document, which will address resource concerns.</p>

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	<p>fracking waste disposal. To put an exclamation point on this finding, a 4.7 magnitude earthquake struck northern Oklahoma that was felt in 7 additional states, leading the Oklahoma Geological Survey to reiterate the connection between disposal wells and earthquakes and to shut down the most high risk wells. Earthquakes at magnitudes (M) that are felt (M3 and M4) or destructive (M4 and M5) have been attributed to wastewater injection wells in at least five states - Arkansas, Colorado, Ohio, Oklahoma, and Texas. The largest of these was a M5.7 earthquake in Prague, Oklahoma, which was the biggest in the state's history, destroying 14 homes and injuring two people. Other large earthquakes attributed to wastewater injection include an M5.3 in Colorado M4.9 in Texas M4.7 in Arkansas, and M3.9 in Ohio.</p> <p>The proliferation of unconventional oil and gas development, including increases in extraction and injection, will increase earthquake risk in Wyoming. A number of injections wells in southwest Wyoming have been identified as associated with earthquake activity—wells within a 15 kilometer radius and active at the time of an earthquake.</p> <p>Accordingly, an EIS must fully assess the risk of induced seismicity cause by all unconventional oil and gas extraction and injection activities, including wastewater injection wells.</p> <p>The analysis should assess the following issues based on guidance from the scientific literature, the National Research Council, and the Department of Energy:</p> <ol style="list-style-type: none"> (1) whether existing oil and gas wells and wastewater injection wells in the areas for lease have induced seismic activity, using earthquake catalogs (which provide an inventory of earthquakes of differing magnitudes) and fluid extraction and injection data collected by industry; (2) the region's fault environment by identifying and characterizing all faults in these areas based on sources including but not limited to the USGS Quaternary Fault and Fold database. In its analysis, BLM should assess its ability to identify all faults in these areas, including strike-slip faults and deep faults that can be difficult to detect; (3) the background seismicity of oil- and gas-bearing lands including the history of earthquake size and frequency, fault structure (including orientation of faults), seismicity rates, failure mechanisms, and state of stress of faults; (4) the geology of oil- and gas-bearing lands including pore pressure, formation permeability, 	

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	<p>and hydrological connectivity to deeper faults; (5) the hazards to human communities and infrastructure from induced seismic activity; and (6) the current state of knowledge on important questions related to the risk and hazards of induced seismicity from oil and gas development activities, including:</p> <p>(a) how the distance from a well to a fault affects seismic risk (i.e., locating wells in close proximity to faults can increase the risk of inducing earthquakes); (b) how fluid injection and extraction volumes, rates, and pressures affect seismic risk; (c) how the density of wells affects seismic risk (i.e., a greater density of wells affects a greater volume of the subsurface and potentially contacts more areas of a single fault or a greater number of faults); (d) the time period following the initiation of injection or extraction activities over which earthquakes can be induced (i.e., studies indicate that induced seismicity often occurs within months of initiation of extraction or injection although there are cases demonstrating multi-year delays); (e) how stopping extraction or injection activities affects induced seismicity (i.e., can induced seismicity be turned off by stopping extraction and injection and over what period, since studies indicate that there are often delays—sometimes more than a year—between the termination of extraction and injection activities and the cessation of induced earthquake activity); (f) the largest earthquake that could be induced by unconventional oil and gas development activities in areas for lease, including earthquakes caused by wastewater injection; and (g) whether active and abandoned wells are safe from damage from earthquake activity over the short and long-term.</p>	
70	<p><u>Center for Biological Diversity:</u></p> <p>VII. Oil and Gas Development Poses Significant Human Health and Safety Risks.</p> <p>In addition to climate change effects, oil and gas leasing and fracking entail significant public health risks that should compel BLM to consider a ban on these practices in a programmatic review and in the current leasing proposal. The EA fails to study these public health risks, precluding meaningful review of the proposed action.</p> <p>Ample scientific evidence indicates that well development and well stimulation activities have been linked to an array</p>	<p>See page 4, Section 1.3 of the lease sale EA, for a general discussion of development in relations to leasing. Also see Sections 3.2.9 and 4.2.9 for a discussion of water resources. As well, incorporated by reference in to the lease sale EA is Appendix D which contains a white paper on Hydraulic Fracturing.</p> <p>In general, these comments are beyond the scope of this document. Competitive Oil and Gas Lease Sale is not a regulatory action, but rather an administrative action. The act of leasing land for oil and gas development in itself does not cause hydraulic fracturing</p>

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	<p>of adverse human health effects, including carcinogenic, developmental, reproductive, and endocrine disruption effects. This is all the more alarming when considering how close wells may be developed to schools, residences, and businesses under BLM's proposed leasing decision. Just as troubling, is how much is unknown about the chemicals used in well stimulation activities. The potential human health dangers and the precautionary principle should further compel BLM to consider not allowing further development of oil and gas minerals in the areas for lease. In comparing the no-leasing and nofracking alternatives to leasing and continued unconventional well development scenarios, BLM should include a health impact assessment, or equivalent, of the aggregate impact that unconventional extraction techniques, including fracking, will have on human health and nearby communities.</p> <p>Due to the heavy and frequent use of chemicals, proximity to fracked wells is associated with higher rates of cancer, birth defects, poor infant health, and acute health effects for nearby residents who must endure long-term exposure:</p> <p><input type="checkbox"/> In one study, residents living within one-half mile of a fracked well were significantly more likely to develop cancer than those who live more than one-half mile away, with exposure to benzene being the most significant risk.</p> <p><input type="checkbox"/> Another study found that pregnant women living within 10 miles of a fracked well were more likely to bear children with congenital heart defects and possibly neural tube defects. A separate study independently found the same pattern; infants born near fracked gas wells had more health problems than infants born near sites that had not yet conducted fracking.</p> <p><input type="checkbox"/> A study analyzed Pennsylvania birth records from 2004 to 2011 to assess the health of infants born within a 2.5-kilometer radius of natural-gas fracking sites. They found that proximity to fracking increased the likelihood of low birth weight by more than half, from about 5.6 percent to more than 9 percent. The chances of a low Apgar score, a summary measure of the health of newborn children, roughly doubled, to more than 5 percent. Another recent Pennsylvania study found a correlation between proximity to unconventional gas drilling and higher incidence of lower birth weight and small-for-gestational-age babies.</p> <p><input type="checkbox"/> A recent study found increased rates of cardiology-patient hospitalizations in zip codes with greater number of unconventional oil and gas wells and higher well density in Pennsylvania. The results suggested that if a zip code went from having zero wells to well density</p>	<p>and/or horizontal drilling to occur.</p> <p>Issuance of an oil and gas lease does not authorize operations on the lease. The possibility or nature of lease development operations cannot be reasonably determined at the leasing stage, nor can impacts realistically be analyzed in more detail at this time. If a lease is issued and development proposed, additional permits will be submitted to the BLM and analyzed in a site specific NEPA document, which will address resource concerns.</p>

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	<p>greater than 0.79 wells/km², the number of cardiology-patient hospitalizations per 100 people (or “cardiology inpatient prevalence rate”) in that zip code would increase by 27%. If a zip code went from having zero wells to a well density of 0.17 to 0.79 wells/km², a 14% increase in cardiology inpatient prevalence rates would be expected. Further, higher rates of neurology-patient hospitalizations were correlated with zip codes with higher well density.</p> <p><input type="checkbox"/> Recently published reports indicate that people living in proximity to fracked gas wells commonly report skin rashes and irritation, nausea or vomiting, headache, dizziness, eye irritation and throat irritation.</p> <p><input type="checkbox"/> A survey found agreement among experts that a minimum setback of a quarter mile from oil and gas development is necessary to protect public health. Half of the experts recommended a 1 to 1 ¼ mile setback. The panel also agreed that additional protections are necessary for vulnerable populations such as children and the elderly.</p> <p><input type="checkbox"/> In Texas, a jury awarded nearly \$3 million to a family who lived near a well that was hydraulically fractured. The family complained that they experienced migraines, rashes, dizziness, nausea and chronic nosebleeds. Medical tests showed one of the plaintiffs had more than 20 toxic chemicals in her bloodstream. Air samples around their home also showed the presence of BTEX — benzene, toluene, ethylbenzene and xylene — colorless but toxic chemicals typically found in petroleum products</p> <p>Chemicals used for fracking also put nearby residents at risk of endocrine disruption effects. A study that sampled water near active wells and known spill sites in Garfield County Colorado found alarming levels of estrogenic, antiestrogenic, androgenic, and antiandrogenic activities, indicating that endocrine system disrupting chemicals (EDC) threaten to contaminate surface and groundwater sources for nearby residents. The study concluded:</p> <p>[M]ost water samples from sites with known drilling-related incidents in a drilling-dense region of Colorado exhibited more estrogenic, antiestrogenic, and/or antiandrogenic activities than the water samples collected from reference sites[,] and 12 chemicals used in drilling operations exhibited similar activities. Taken together, the following support an association between natural gas drilling operations and EDC activity in surface and ground water: [1] hormonal activities in Garfield County spill sites and the Colorado River are higher than those in reference sites in Garfield County and in Missouri, [2] selected drilling chemicals</p>	

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	<p>displayed activities similar to those measured in water samples collected from a drilling-dense region, [3] several of these chemicals and similar compounds were detected by other researchers at our sample collection sites, and [4] known spills of natural gas fluids occurred at these spill sites.</p> <p>The study also noted a linkage between EDCs and “negative health outcomes in laboratory animals, wildlife, and humans”:</p> <p>Despite an understanding of adverse health outcomes associated with exposure to EDCs, research on the potential health implications of exposure to chemicals used in hydraulic fracturing is lacking. Bamberger and Oswald (26) analyzed the health consequences associated with exposure to chemicals used in natural gas operations and found respiratory, gastrointestinal, dermatologic, neurologic, immunologic, endocrine, reproductive, and other negative health outcomes in humans, pets, livestock, and wildlife species.</p> <p>Of note, site 4 in the current study was used as a small-scale ranch before the produced water spill in 2004. This use had to be discontinued because the animals no longer produced live offspring, perhaps because of the high antiestrogenic activity observed at this site. There is evidence that hydraulic fracturing fluids are associated with negative health outcomes, and there is a critical need to quickly and thoroughly evaluate the overall human and environmental health impact of this process. It should be noted that although this study focused on only estrogen and androgen receptors, there is a need for evaluation of other hormone receptor activities to provide a more complete endocrine-disrupting profile associated with natural gas drilling.</p> <p>Operational accidents also pose a significant threat to public health. For example in August 2008, Newsweek reported that an employee of an energy-services company got caught in a fracking fluid spill and was taken to the emergency room, complaining of nausea and headaches. The fracking fluid was so toxic that it ended up harming not only the worker, but also the emergency room nurse who treated him. Several days later, after she began vomiting and retaining fluid, her skin turned yellow and she was diagnosed with chemical poisoning.</p> <p>Harmful chemicals are also found in the flowback fluid after well stimulation events. Flowback fluid is a key component of oil-industry wastewater from stimulated wells. A survey of chemical analyses of flowback fluid</p>	

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	<p>dating back to April 2014 in California revealed that concentrations of benzene, a known carcinogen, were detected at levels over 1,500 times the federal limits for drinking water. Of the 329 available tests that measured for benzene, the chemical was detected at levels in excess of federal limits in 320 tests (97 percent). On average, benzene levels were around 700 times the federal limit for drinking water. Among other carcinogenic or otherwise dangerous chemicals found in flowback fluid from fracked wells are toluene and chromium-6. These hazardous substances were detected in excess of federal limits for drinking water in over one hundred tests. This dangerous fluid is commonly disposed of in injection wells, which often feed into aquifers, including some that could be used for drinking water and irrigation.</p> <p>Acidizing presents similarly alarming risks to public health and safety. In acidizing operations, large volumes of hydrochloric and hydrofluoric acid are transported to the site and injected underground. These chemicals are highly dangerous due to their corrosive properties and ability to trigger tissue corrosion and damage to sensory organs through contact.</p> <p>While many risks are known, much more is unknown about the hundreds of chemicals used in fracking. The identity and effects of many of these additives is unknown, due to operators' claims of confidential business information. But, as the EPA recognizes, chemical identities are "necessary to understand their chemical, physical, and toxicological properties, which determine how they might move through the environment to drinking water resources and any resulting effects." Compounds in mixtures can have synergistic or antagonistic effects, but again, it is impossible to know these effects without full disclosure. The lack of this information also precludes effective remediation: "Knowing their identities would also help inform what chemicals to test for in the event of suspected drinking water impacts and, in the case of wastewater, may help predict whether current treatment systems are effective at removing them."</p> <p>Even where chemical identities are known, chemical safety data may be limited. In EPA's study of the hazards of fracking chemicals to drinking water, EPA found that "[o]ral reference values and oral slope factors meeting the criteria used in this assessment were not available for the majority of chemicals used in hydraulic fracturing fluids [87%], representing a significant data gap for hazard identification." Without this data, EPA could not adequately assess potential impacts on drinking water resources and human health. Further, of 1,076 hydraulic</p>	

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	<p>fracturing fluid chemicals identified by the EPA, 623 did not have estimated physiochemical properties reported in EPA's toxics database, although this information is "essential to predicting how and where it will travel in the environment." The data gaps are actually much larger, because EPA excluded 35% of fracking chemicals reported to FracFocus from its analysis because it could not assign them standardized chemical names.</p> <p>The EA fails to incorporate a literature review of the harmful effects of each of the chemicals known to be used in fracking and other unconventional oil and gas extraction methods. Without knowing the effects of each chemical, the EA cannot accurately project the true impact of unconventional oil and gas extraction.</p> <p>The EA also fails to study the human health and safety impacts of noise pollution, light pollution, and traffic accidents resulting from oil and gas development. A recent study found that automobile and truck accident rates in counties in Pennsylvania with heavy unconventional oil and gas extraction activity were between 15 and 65 percent higher than accident rates in counties without unconventional oil and gas extraction activities. Rates of traffic fatalities and major injuries may be higher in areas with heavy drilling activity than areas without.</p>	
71	<p>Center for Biological Diversity:</p> <p style="text-align: center;">VIII. Fossil Fuel Development Will Impact Land Use</p> <p>Increased oil and gas extraction and production have the potential to dramatically and permanently change the landscape of the areas for lease and their surroundings. Countless acres of land will likely be leveled to allow for the construction and operation of well pads and related facilities such as wastewater pits. Roads may have to be constructed or expanded to accommodate trucks transporting chemicals and the large quantities of water needed for some recovery methods. Transmission lines and other utilities may also be required. The need for new distribution, refining, or waste treatment facilities will expand industrial land use. With new roads and other industrial infrastructure, certain areas could open up to new industrial or extractive activities, permanently changing the character and use of the land.</p> <p>Such changes would result in a significant cumulative losses of agricultural and conservation lands. Vegetation removal by oil and gas development across central North America between 2000 and 2012 is estimated to be 4.5 tetragrams of carbon or 10 tetragrams of dry biomass. This</p>	<p>As stated in Section 1.1 of EA, pursuant to 40 CFR 1508.28 and 1502.21, the EA tiers to and incorporates by reference the information and analysis contained in the EIS and RMP RODs for the Rock Springs, Rawlins, Pinedale, and Kemmerer offices as amended (2015) and Bureau of Land Management September 21, 2015 Wyoming Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse (GRSG). Therefore, a new EIS for leasing is not necessary. These EIS documents analyzed the effects of oil and gas leasing and development, and the specific management goals, plans and monitoring actions are addressed in the RMPs.</p> <p>Further, all surface disturbing proposals must comply with WY BLM Instruction Memorandum 2012-032, WY BLM Reclamation Policy and the recently completed Greater Sage Grouse Approved Resource Management Plan Amendment (ARMPA) ROD (2015) for WY.</p>

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	<p>is equivalent to more than half of annual available grazing on public lands managed by BLM or 6% of the wheat produced in 2013 within the region (120.2 million bushels of wheat). This loss of “net primary production” (amount of carbon fixed by plants and accumulated as biomass) is “likely long-lasting and potentially permanent, as recovery or reclamation of previously drilled land has not kept pace with accelerated drilling.” The total surface disturbance by oil and gas development within this time period is 3 million hectares, the equivalent of three Yellowstone National Parks. As noted above, the fragmented nature of this surface disturbance negatively impacts wildlife by severing migratory pathways, altering wildlife behavior and mortality, and increasing susceptibility to ecologically disruptive species.</p> <p>The conversion of substantial acreages from rural or natural landscapes to industrial sites will also mar scenic views throughout the planning area. Given BLM’s failure to ensure full reclamation of idle wells and the difficulty of restoring sites to their original condition, scenic resources may be permanently impaired.</p>	
72	<p><u>Center for Biological Diversity:</u></p> <p>IX. BLM Must Prepare an Environmental Impact Statement</p> <p>NEPA demands that a federal agency prepare an EIS before taking a “major [f]ederal action[] significantly affecting the quality’ of the environment.” Kern v. U.S. Bureau of Land Mgmt., 284 F.3d 1062, 1067 (9th Cir. 2002). In order to determine whether a project’s impacts may be “significant,” an agency may first prepare an Environmental Assessment (“EA”). 40 C.F.R. §§ 1501.4, 1508.9. If the EA reveals that “the agency’s action may have a significant effect upon the . . . environment, an EIS must be prepared.” Nat’l Parks & Conservation Ass’n v. Babbitt, 241 F.3d 722, 730 (9th Cir. 2001) (internal quotations omitted). If the agency determines that no significant impacts are possible, it must still adequately explain its decision by supplying a “convincing statement of reasons” why the action’s effects are insignificant. Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1212 (9th Cir. 1998). Further, an agency must prepare all environmental analyses required by NEPA at “the earliest possible time.” 40 C.F.R. § 1501.2. “NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment,” but is designed to require such analysis as soon as it can reasonably be done.” Kern, 284 F.3d at 1072.</p> <p>BLM is therefore required under NEPA to prepare an EIS</p>	<p>As stated in Section 1.1 of EA, pursuant to 40 CFR 1508.28 and 1502.21, the EA tiers to and incorporates by reference the information and analysis contained in the EIS and RMP RODs for the Rock Springs, Rawlins, Pinedale, and Kemmerer offices as amended (2015) and Bureau of Land Management September 21, 2015 Wyoming Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse (GRSG). Therefore, a new EIS for leasing is not necessary. These EIS documents analyzed the effects of oil and gas leasing and development, and the specific management goals, plans and monitoring actions are addressed in the RMPs.</p> <p>All parcels for the November 2016 Competitive Oil and Gas Lease Sale are in compliance with the existing land use plans as required by 43 CFR 1610.5. Site-specific NEPA analysis will occur at the development stage that will analyze resource conflicts and identify mitigation for specific impacts.</p> <p>BLM has appropriately considered impacts from Hydraulic Fracturing with information available. The specific information the</p>

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	<p>to support this proposed project. This is especially true in light of the likelihood that fracking would occur on the leases. CBD, 937 F. Supp. 2d at 1155-59 (holding that oil and gas leases were issued in violation of NEPA where BLM failed to prepare an EIS and failed to properly address the significance factors for context and intensity in 40 C.F.R. § 1508.27).</p> <p>In considering whether the lease sale would have significant effects on the environment, NEPA’s regulations require BLM to evaluate ten factors regarding the “intensity” of the impacts. 40 C.F.R. § 1508.27(b). The Ninth Circuit has held that the existence of any “one of these factors may be sufficient to require preparation of an EIS.” Ocean Advocates, 402 F.3d at 865; Nat’l Parks & Conservation Ass’n, 241 F.3d at 731. Several of these “significance factors” are implicated in the lease sale and clearly warrant the preparation of an EIS:</p> <p>The degree to which the effects on the quality of the human environment are likely to be highly controversial.</p> <p>The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.</p> <p>The degree to which the proposed action affects public health or safety.</p> <p>The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.</p> <p>40 C.F.R. § 1508.27(b)(4), (5), (2) & (9). See CBD, 937 F. Supp. 2d at 1158-59 (holding that BLM failed to properly address the significance factors regarding controversy and uncertainty that may have been resolved by further data collection (citing Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1240 (9th Cir. 2005)). Here, individually and considered as a whole, there is no doubt that significant effects may result from the lease sale; thus, NEPA requires that BLM should have prepared an EIS for the action.</p> <p>i. The effects on the human environment will be highly controversial</p> <p>A proposal is highly controversial when “substantial questions are raised as to whether a project . . . may cause significant degradation” of a resource, Nw. Env’tl. Def. Ctr. v. Bonneville Power Admin., 117 F.3d 1520, 1536</p>	<p>commentor is requesting cannot be ascertained without specific reservoir and well installation information that can be compared to known geologic and hydrologic conditions.</p> <p>The lease sale, and the act of offering parcels for lease, is not unique or unusual. Oil and gas leasing and post-lease development have been ongoing in the United States, including portions of the High Desert District for more than a century. The BLM has experience implementing similar actions in similar areas. The environmental effects to the human environment are considered in the corresponding RMPs/FEISs/RODs, as amended (2015). Gas exploration and drilling operations are regulated for health and safety through other agencies of local, State and Federal government. Should there be discovered risks, these agencies would act accordingly. There are no predicted effects on the human environment that are considered to be highly uncertain or involve unique or unknown risks.</p> <p>One area of particular interest is the use of hydraulic fracturing (HF) in the oil and/or gas well completion process. The BLM recognizes there is a concern regarding HF operations, specifically the potential to impact drinking water supplies either from downhole migration, from spills on the surface, or the perceived potential for induced seismic activity. Everyone agrees that significant impacts to useable water resources must be avoided. This EA, through incorporation of an attached HF White Paper, has disclosed that there are adequate water supplies available in Wyoming to meet the reasonably foreseeable development scenarios described in each of the subject RMPs. There is still doubt whether HF results in induced seismic activity. Seismic activity in oil and gas development areas has repeatedly been shown to be associated with the reinjection of waste waters in disposal wells and/or through heavy pumping of</p>

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	<p>(9th Cir. 1997), or when there is a “substantial dispute [about] the size, nature, or effect of the” action. Blue Mtns. Biodiversity, 161 F.3d at 1212. A “substantial dispute exists when evidence, raised prior to the preparation of [a] . . . FONSI, casts serious doubt upon the reasonableness of an agency’s conclusions.” Nat’l Parks & Conserv. Ass’n, 241 F.3d at 736. When such a doubt is raised, “NEPA then places the burden on the agency to come forward with a ‘well-reasoned explanation’ demonstrating why those responses disputing the EA’s conclusions ‘do not . . . create a public controversy.’” Id. See also CBD, 937 F. Supp. 2d at 1158 .</p> <p>Here, the controversy regarding the lease sale is fully evident. This comment letter provides abundant evidence that oil and gas operations can cause significant impacts to human health, water resources, air quality, imperiled species, and seismicity. The potential for these significant impacts to occur is particularly clear in light of the potential for fracking to result from the lease sale.</p> <p>Fracking is among the top, if not the most controversial energy issue facing America today. The controversy spans the public arena, scientific discourse, local governments, and the halls of Congress. At the request of Congress, EPA is conducting a study into the effects of fracking on drinking and ground water. Similarly, the New York DEC concluded that the health and environmental risks from fracking supports its ban in New York State. However, in addition to the presence of controversy, it is already evident, as discussed above, that fracking is harmful. Clearly, the level of controversy associated with fracking and its expansion in Wyoming in association with the lease sale is sufficient to trigger the need for an EIS. 40 C.F.R. § 1508.27(b)(4).</p> <p style="text-align: center;">ii. The lease sale presents highly uncertain or unknown risks</p> <p>An EIS must also be prepared when an action’s effects are “highly uncertain or involve unique or unknown risks.” 40 C.F.R. § 1508.27(b)(5). As the Ninth Circuit has held, “[p]reparation of an EIS is mandated where uncertainty may be resolved by further collection of data, or where the collection of such data may prevent speculation on potential . . . effects.” Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1240 (9th Cir. 2005) (internal citations omitted); Blue Mtns. Biodiversity, 161 F.3d at 1213-1214 (finding “EA’s cursory and inconsistent treatment of sedimentation issues . . . raises substantial questions about . . . the unknown risks to” fish populations). As one court recently explained regarding oil</p>	<p>groundwater combined with drought effects, and not related to HF. There is also uncertainty whether a HF operation is capable of inducing the formation of a fracture network capable of intersecting unknown faults or extending into a formation containing usable water supplies. To date, this has not been proven after decades of oil and gas development in Wyoming and recent studies by the EPA indicate that the possibility of fault reactivation creating a pathway to shallow groundwater resources is remote (EPA, Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources: Progress Report Dec 2012, pg 74).</p> <p>Also, the Wyoming Oil and Gas Conservation Commission recently passed rules requiring both pre- and post-development groundwater sampling to document baseline groundwater conditions and to assess any subsequent changes in water quality post development. The BLM, at all times, with or without any applicable lease stipulations, has retained full authority to deny an APD whose proposed drilling/completion program would adversely impact usable water zones. This authority can be found at 43 CFR 3165-2(d), Onshore Order #2, and applicable laws and regulations.</p>

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	<p>and gas leasing that may facilitate fracking, “BLM erroneously discounted the uncertainty from fracking that may be resolved by further data collection. ‘Preparation [of an EIS] is mandated where uncertainty may be resolved by further collection of data, or where collection of such data may prevent speculation on potential effects.’” CBD, 937 F. Supp. 2d at 1159 (quoting Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 1233, 1240 (9th Cir. 2005)).</p> <p>While it is clear that oil and gas activities can cause great harm, there remains much to be learned about the specific pathways through which harm may occur and the potential degree of harm that may result. Additional information is needed, for example, about possible rates of natural gas leakage, the potential for fluids to migrate through the ground in and around the parcels, the safety of various fracking chemicals, and the potential for drilling to affect local faults. NEPA clearly dictates that the way to address such uncertainties is through the preparation of an EIS.</p> <p style="text-align: center;">iii. The lease sale poses threats to public health and safety</p> <p>As discussed in great detail above, the oil and gas activities that may occur as a result of the lease sale could cause significant impacts to public health and safety. 40 C.F.R. § 1508.27(b)(2). Fracking would pose a grave threat to the region’s water resources, harm air quality, pose seismic risks, negatively affect wildlife, and fuel climate change.</p> <p>As a congressional report noted, oil and gas companies have used fracking products containing at least 29 products that are known as possible carcinogens, regulated for their human health risk, or listed as hazardous air pollutants. The public’s exposure to these harmful pollutants alone would plainly constitute a significant impact. So do the many other public health risks associated with unconventional drilling as described above in section VII. Furthermore, and as previously discussed, information continues to emerge on the risk of earthquakes induced by wastewater injected into areas near faults. It is undeniable that these earthquakes pose risks to the residents of the area and points beyond.</p> <p>The use of fracking fluid, which is likely to occur as a result of the lease sale, and other risks associated with unconventional drilling, pose a major threat to public health and safety and therefore constitute a significant impact. BLM therefore must evaluate such impacts in an EIS.</p>	

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	<p>iv. The Lease Sale Action Will Adversely Affect Candidate and Agency Sensitive Species and Their Habitat</p> <p>An EIS may also be required when an action “may adversely affect an endangered or threatened species or its habitat.” 40 C.F.R. § 1508.27(b)(9). Although a finding that a project has “some negative effects does not mandate a finding of significant impact,” an agency must nonetheless fully and closely evaluate the effects on listed species and issue an EIS if those impacts are significant. <i>Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv.</i>, 373 F. Supp. 2d 1069, 1081 (E.D. Cal. 2004) (finding agency’s conclusion that action “may affect, is likely to adversely affect” species due to “disturbance and disruption of breeding” and “degradation” of habitat is “[a]t a minimum, . . . an important factor supporting the need for an EIS”).</p> <p>Impacts to BLM sensitive and other rare species threatened by the proposed lease have been highlighted in section “VI” subsection “G” and “H” of these comments.</p>	
73	<p>Center for Biological Diversity:</p> <p>X. The EA Fails to Properly Apply BLM’s Instruction Memorandum 2010-117 Criteria to Its Leasing Decision.</p> <p>The EA improperly applies criteria in BLM’s Instruction Memorandum 2010-117 to its analysis of whether leasing of the proposed parcels is appropriate. Pursuant to IM 2010-117 BLM must take into account “other considerations . . . when determining the availability of parcels for lease,” on top of ensuring that leasing is consistent with RMP standards and other program guidance. The EA’s analysis of these factors, however, is wholly deficient.</p> <p>As an initial matter, <u>rather than applying these criteria to each parcel on an individual basis</u>, BLM applies the criteria to the parcels offered for sale collectively. In doing so, BLM suggests that because “most” or “the majority” of parcels meet a certain factor, leasing of all of the parcels is appropriate. See, e.g., EA at 78-79 (factors A, D, F). For example, with respect to factor F--whether “[c]onstruction and use of new access roads or upgrading existing access roads to an isolated parcel would have unacceptable impacts to important resource values”—<u>BLM concludes that “[t]he majority of the parcels are located within areas of existing oil and gas development, with existing roads and infrastructure and would not have impacts beyond what has already been identified in the</u></p>	<p>Please see response to comment #72.</p> <p>The BLM properly applies BLM’s Instruction Memorandum 2010-117 Criteria to Its Leasing Decision. Out of 140 preliminary parcels, the BLM throughout the HDD is proposing to offer only 21 parcels containing approximately 30,197 acres, which is 11% of the nominated acreage.</p> <p>Resource management plans (RMP) make resource allocation decisions concerning the availability of lands for oil and gas leasing, including cumulative impacts to surface resources from expected development. The cumulative impacts and RMP decisions appropriately balance the concerns raised by the Comment, through application of areas where development is allowed against areas which are not allowed. This EA and its leasing recommendations are in compliance with FLPMA’s mandate to provide for both conservation and resource use, and FOGRMA’s requirements for quarterly lease sales where lands area available..</p> <p>This EA has specifically considered the items identified in WO IM 2010-117 Leasing</p>

Comment [mg1]: Phil

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	<p>subject RMP FEIS'." EA at 79 (emphasis added). This irrational approach completely undermines the intent of the BLM policy, which is to identify specific, individual parcels which should not be made available for leasing. By analyzing parcels in the aggregate, individual parcels escape meaningful review.</p> <p>With respect to factor F, also, BLM reasons that because it does not have specific proposals for development, "BLM cannot determine whether or not road development to or within given parcels would or would not have unacceptable impacts." Id. But the very purpose of the IM 2010-117 guidance is to ensure that parcels on which development is inappropriate are identified before parcels are offered for leasing, and before an operator has an exclusive right to pursue site-specific development plans. BLM cannot, on the hand, purport to follow internal guidance and criteria to justify its leasing decisions, and on the other, completely blow off those criteria when their application would be inconvenient or not serve its proposed leasing decision.</p> <p>With respect to factor B--"[i]n undeveloped areas, are non-mineral resource values greater than potential mineral development values?"—BLM also declines to apply this criterion on irrational grounds. It essentially reasons that making this call would be too "subjective," and that because the RMP already makes these lands available for leasing it need not make this call:</p> <p>All of parcels addressed in this EA have multiple surface resource values.... Whether the surface resource values for a given parcel are greater or less than the potential oil and gas development potential is subjective. Persons interested in preserving the surface resources would very likely say those values are greater than the potential mineral development value; whereas somebody interested in securing and developing one of the leases would likely say that the mineral value is greater. The Kemmerer, Pinedale, Rawlins, and Green River RMPs, as amended (2015) have addressed values of the lands containing the parcels in this EA and have made resource allocations. All parcels fall within areas that are available for oil and gas leasing as determined by the RMPs. All of the parcels have stipulations attached in conformance with the subject RMP, and are intended to mitigate impacts to the surface resource values. have stipulations attached in conformance with the subject RMP, and are intended to mitigate impacts to the surface resource values.</p> <p>EA at 78. But the fact that the lands are already available</p>	<p>Reform. Please see pages 78-80 of the subject EA. These lands remain available under the Greater Sage Grouse RMP amendment and the base RMP RODs.</p>

Comment [mg2]: BLM is mandated by both FOGRMA and Leasing Reform to have regular lease sales. It would be contrary to NEPA to piecemeal such an analysis. BLM has appropriately complied.

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	<p>for leasing is not a reason to pass on weighing this factor. IM 2010-117 makes clear that this factor must be considered in addition to whether leasing conforms with the RMP.</p> <p>BLM commits the same error with respect to factor H—whether “[l]easing would result in unacceptable impacts to specially designated areas (whether Federal or non-Federal) and would be incompatible with the purpose of the designation.” See EA at 79-80. Again, the fact that the area is available for leasing does not automatically mean it should be leased.</p> <p>Finally, BLM’s application of factor E—whether “[t]he topographic, soils, and hydrologic properties of the surface will not allow successful final landform restoration and revegetation in conformance with the standards found in Chapter 6 of the Gold Book, as revised—ignores recent studies showing that sagebrush communities are nearly impossible to restore. Drilling sites have not been restored to pre-drilling conditions even after having 20 or 50 years to recover.³⁵⁸ A recent study found that 50 years or more would be required to recover sagebrush on disturbed sites, and that restoring heterogeneous soil conditions with patchy nutrient conditions, was necessary for recovery of large sagebrush and ecosystem resiliency. There is no evidence, however, that any standards provide for attainment of these conditions.</p> <p>BLM’s application of IM 2010-117 is arbitrary and capricious.</p>	
74	<p><u>Center for Biological Diversity:</u></p> <p>XI. BLM Must Ensure That the Federal Land Policy and Management Act and the Mineral Leasing Act Are Not Violated</p> <p>The Mineral Leasing Act (“MLA”) requires BLM to demand lessees take all reasonable measures to prevent the waste of natural gas. The MLA states:</p> <p style="padding-left: 40px;">All leases of lands containing oil or gas, made or issued under the provisions of this chapter, shall be subject to the condition that the lessee will, in conducting his explorations and mining operations, use all reasonable precautions to prevent waste of oil or gas developed in the land, or the entrance of water through wells drilled by him to the oil sands or oil-bearing strata, to the destruction or injury of the oil deposits.</p> <p>30 U.S.C. § 225; see also id. § 187 (stating that for the assignment or subletting of leases that “[e]ach lease shall</p>	<p>The Mineral Leasing Act of 1920, as amended [30 U.S.C. § 181 et seq.], and the Mineral Leasing Act for Acquired Lands of 1947, as amended [30 U.S.C. § 351 et seq.], give the BLM responsibility for oil and gas leasing on about 564 million acres of BLM, national forest, and other federal lands, as well as State and private surface lands where mineral rights have been retained by the federal government. The BLM works to ensure that mineral resources are developed in an environmentally responsible manner.</p> <p>Absent a definitive development proposal it is not possible to conduct a more specific impact and/or cumulative effects analysis and as stated in Section 1.3 of the EA, BLM cannot determine at the leasing stage whether or not a nominated parcel will actually be</p>

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	<p>contain . . . a provision . . . for the prevention of undue waste”). This statutory mandate is unambiguous and must be enforced. <i>Tenn. Valley Auth. v. Hill</i>, 437 U.S. 153, 184 n.29 (1978) (stating that “[w]hen confronted with a statute which is plain and unambiguous on its face,” “it is not necessary to look beyond the words of the statute.”). As already discussed in previous sections, oil and gas operations emit significant amounts of natural gases, including methane and carbon dioxide, which can be easily prevented.</p> <p>Pursuant to the Federal Land Policy and Management Act (“FLPMA”), BLM must “take any action necessary to prevent unnecessary or undue degradation of the [public] lands.” 43 U.S.C. § 1732(b). Written in the disjunctive, BLM must prevent degradation that is “unnecessary” and degradation that is “undue.” <i>Mineral Policy Ctr. v. Norton</i>, 292 F.Supp.2d 30, 41-43 (D. D.C. 2003). The protective mandate applies to BLM’s leasing decisions. See <i>Utah Shared Access Alliance v. Carpenter</i>, 463 F.3d 1125, 1136 (10th Cir. 2006) (finding that BLM’s authority to prevent degradation is not limited to the RMP planning process). Greenhouse gas pollution for example causes “undue” degradation. Even if the activity causing the degradation may be “necessary,” where greenhouse gas pollution is avoidable, it is still “unnecessary” degradation. 43 U.S.C. § 1732(b).</p> <p>In addition to being harmful to human health and the environment, the emissions from oil and gas operations are also an undue and unnecessary waste and degradation of public lands. Consequently, BLM’s proposed gas and oil lease sale violates FLPMA. See 43 U.S.C. § 1732(b).</p>	<p>leased, or if leased, whether or not the lease would be explored or developed or at what intensity development may occur. As further stated in Section 1.3 of the EA, “additional NEPA documentation would be prepared at the time an APD(s) or field development proposal is submitted. This EA however, has disclosed the expected impacts based on the information at hand, in compliance with policy, regulation, and law.</p> <p>“Unnecessary or undue degradation” is defined in 43 CFR 3802.0-5 and again in 43 CFR 3809. 5, both of which focus on operations under the General Mining Laws, not the Mineral Leasing Act. 43 CFR 3715.0-5 defines unnecessary or undue degradation as it pertain to unauthorized uses associated with operations under the mining laws. The regulations in 43 CFR 3162.5-1 (b) require an oil and gas operator to, “exercise due care and diligence to assure that leasehold operations do not result in undue damage to surface or subsurface resources or surface improvements. (emphasis added) The oil and gas operator is required to comply with all Federal regulation, such as this, at such time as actual operations begin.</p> <p>FLPMA requires that the Bureau, in managing public lands, “take any action necessary to prevent unnecessary or undue degradation of the lands.” 43 U.S.C. § 1732(b). The Department of the Interior’s Board of Land Appeals has interpreted “unnecessary or undue degradation” to mean the occurrence of “something more than the usual effects anticipated” from appropriately mitigated development. <i>Biodiversity Conservation Alliance</i>, 174 I.B.L.A. 1, 5-6 (March 3, 2008).</p> <p>At the time of development, the proposal will be reviewed to ensure that it is in compliance with all regulatory controls, including preventing the waste of product; BMPs and technical controls appropriate to the exact specifications of the proposal will be applied</p>

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		for the protection of the environment, and safe operations, consistent with Federal law, regulation, policy and the controlling RMP decisions
75	<p><u>Center for Biological Diversity:</u></p> <p><u>Conclusion</u></p> <p>Oil and gas leasing is an irrevocable commitment to convey rights to use of federal land – a commitment with readily predictable environmental consequences that BLM is required to address. These include the specific geological formations, surface and ground water resources, seismic potential, or human, animal, and plant health and safety concerns present in the area to be leased. Unconventional oil and gas development not only fuel the climate crisis but entail significant public health risks and harms to the environment. Accordingly, BLM should end all new leasing on BLM lands. Should BLM proceed with the lease sale it must thoroughly analyze the alternatives of no new leasing (or no action), and no fracking or other unconventional well stimulation methods in an EIS.</p> <p>Thank you for your consideration of these comments. The Center, Friends of the Earth, Great Old Broads for Wilderness, and Sierra Club look forward to reviewing a legally adequate EIS for this proposed oil and gas leasing action.</p>	Thank you for your comments.
76	<p><u>Center for Biological Diversity:</u></p> <p>A couple of references were inadvertently left out of our comment letter on the EA for the High Desert District Nov. 2016 lease sale. Please find the references attached. Also, please note the correct citations, which were omitted:</p> <p>On pp. 5-6 of our comment on the EA, a report commissioned by the Center for Biological Diversity and Friends of the Earth is cited. The citation for the report is EcoShift Consulting et al., The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels (Aug. 2015), available at http://www.ecoshiftconsulting.com/wp-content/uploads/Potential-Greenhouse-Gas-Emissions-U-S-Federal-Fossil-Fuels.pdf.</p> <p>On p. 37 of our comment on the EA, we cite to the</p>	<p>These comments were received by email on June 1, 2016.</p> <p>The 30-day public comment period for Version 1 of the High Plains District portion of the November 2016 Competitive Oil and Gas Lease Sale EA (DOI-BLM-WY-D040-2016-0138-EA) began April 19, 2016, and closed May 19, 2016. The 30-day public comment period is established in Washington Office IM 2010-117 Oil and Gas Leasing Reform – Land Use Planning and Lease Parcel Reviews. Comments received after the close of the public comment period will be handled in accordance with BLM’s NEPA Handbook (H-1790-1), which states that the Authorized Officer “is not required to</p>

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	<p>"Fillmore EA." The complete citation is BLM, Environmental Assessment for West Desert District, Fillmore Field Office, August 2015 Oil and Gas Lease Sale, pp. 57-58 (Dec. 2015), available at https://eplanning.blm.gov/epl-front-office/projects/nepa/55342/72905/80038/Fillmore_FO_Final_EA_4-19.pdf; BLM, Greenhouse Gases Emissions Estimate (West Desert District Nov. 2015 lease Sale), available at http://www.blm.gov/style/medialib/blm/ut/natural_resources/airQuality.Par.38065.File.dat/GreenhouseGasEmissionsNov2015.xlsx.</p> <p>Thank you for considering these additional references.</p>	<p>respond to comments that are not substantive or comments that are received after the close of the comment period, but you may choose to reply."</p> <p>Thank you for your comments.</p>