Because life is good.



May 12, 2014

Bureau of Land Management – Nevada State office Attn: Ms. Amy Leuders 1340 Financial Blvd. Reno, NV 89502-7147

Re: Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

Dear Ms. Leuders:

The Center for Biological Diversity (the "Center") hereby files this Protest of the Bureau of Land Management ("BLM")'s planned July 17, 2014, oil and gas lease sale and Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA pursuant to 43 C.F.R. § 3120.1-3. The Center formally protests the inclusion of each of the 102 parcels, covering 174,021.36 acres outlined in the list attached to your "Notice of Competitive Oil and Gas Lease Sale" dated April 14, 2014.

SUMMARY

BLM proposes to lease 174,021.36 acres of land in the Battle Mountain District in Nevada. On March 12, 2014, the Center submitted extensive comments to BLM raising numerous problems with the agency's planned action that the agency still has not addressed. Our March 12, 2014 comment letter and its attachments are appended to this Protest as Exhibit A and are hereby incorporated by reference.

In recent years, developments in hydraulic fracturing ("fracking") technology have opened up shale oil deposits to exploitation around the country, resulting in explosions in industry activity that are leaving communities and natural resources in ruin. Evidence of heightened industry interest and activity in indicates that fracking is now imminent in the state, and that the expansion of the practice will profoundly affect wildlife, communities, and the environment.

This rise of fracking across the country provides important context for the lease sale that BLM cannot ignore. Oil and gas operations are known to poison the air and water, to harm human health, to kill threatened and endangered species, and even to cause earthquakes. However, as can be seen at the locations of shale booms in places like Pennsylvania, North Dakota, and Texas, fracking specifically threatens even greater danger than conventional operations. It involves highly dangerous substances, including carcinogens and pollutants that damage, for example, the human nervous system and circulatory system. Also, fracking results in the contamination of water and the air, can trigger earthquakes, and can harm sensitive species.

Here, fracking multiplies the threats of the lease sale because it is likely to occur on the leases that are home to rare species such as the greater sage grouse, Big Smokey Valley tui chub and speckled dace, pale and dark kangaroo mouse, Tonopah and Toquima milkvetch, and Bentley buckwheat. Further, the leases could cause additional degradation of regional air quality standards intended to protect human health.

BLM cannot close its eyes to these realities in the EA. BLM must make its leasing decisions based on current information and circumstances. It must take account of increased interest in Nevada's unconventional shale oil, and the fact that new fracking techniques have enabled exploitation of formations that could not previously be economically developed. The BLM must fully analyze and disclose all of the environmental impacts of the proposed lease sale. In addition, the BLM must also recognize the waste of natural gas occurring as a result of oil and gas activities, and use its authority under the MLA and Federal Land Policy and Management Act ("FLPMA") to make substantial reductions in this waste. Anything less would represent a violation of BLM's duties under NEPA, the MLA, the FLPMA, and the Endangered Species Act ("ESA").

Disturbingly, however, BLM has repeatedly fallen far short of satisfying these requirements. In 2011, BLM issued roughly 2,700 acres of oil and gas leases in Monterey and Fresno counties of California. That lease sale and accompanying environmental analysis had many of the same problems apparent in the current action, including the failure to consider increased interest and use of fracking. Because of BLM's refusal to consider sufficiently these and other issues, the Center and the Sierra Club ("Club") challenged the lease sale in federal district court.¹ In addition to challenging BLM's failure to consider the full extent of potential drilling and harms of fracking, the Center and Club challenge BLM's failure to analyze other environmental impacts fully under NEPA; failure to consider reasonable mitigation measures and alternatives under NEPA that would reduce natural gas waste; failure to prepare an Environmental Impact Statement ("EIS") under NEPA; and violation of the MLA by failing to require lessee take all reasonable precautions to conserve natural gas.

On March 7, 2013, BLM repeated these errors by dismissing the Center and the Club's protest of BLM's December 12, 2012, auction of nearly 18,000 acres of federal mineral estate in Monterey, San Benito, and Fresno counties for oil and gas activities.² Again, BLM in issuing the leases and the agency's accompanying environmental analysis failed to consider, *inter alia*, the full extent of reasonably foreseeable drilling and harms of fracking, and failed to consider reasonable mitigation measures and alternatives under NEPA that would reduce methane emissions and other air pollution. BLM also unlawfully failed to prepare an EIS, violated the MLA by refusing to include in the leases a requirement that lessees take all reasonable precautions to conserve natural gas, and violated the Federal Land Policy and Management Act

¹ Center for Biological Diversity v. Bureau of Land Management, Case No. CV-11-06174-PSG (filed Dec. 8, 2012). ² U.S. Bureau of Land Management, Decision, Protest Dismissed, Center for Biological Diversity and Sierra Club Protest of BLM's December 12, 2012 Competitive Oil and Gas Lease Sale (Mar. 7, 2013).

² Center for Biological Diversity **Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-**2014-0001-EA

("FLPMA") by failing to take actions to prevent the unnecessary and undue degradation of the public lands.

Here, it appears that BLM intends to make the same mistakes yet again. This Protest explains the numerous errors BLM has made in issuing a final EA, final FONSI, and Decision Record. Specifically, this Protest:

- 1. Details the growth of fracking around the country, describes how it has changed the oil and gas industries, and how it endangers the health of humans and ecosystems;
- 2. Sets forth how BLM has violated the National Environmental Policy Act by basing its analysis on the assumption that only minimal development will occur, failing to consider the additional impacts that will result from the oil and gas lease sale, including hydraulic fracturing, and in other ways;
- 3. Establishes that BLM violated the National Environmental Policy Act by failing to consider mitigation measures or alternatives that would reduce natural gas emissions;
- 4. Describes how BLM has violated the National Environmental Policy Act by failing to prepare an Environmental Impact Statement, rather than an Environmental Assessment;
- 5. Demonstrates that BLM has violated the Mineral Leasing Act by failing to require that lessees take all reasonable precautions to prevent the waste of natural gas;
- 6. Shows that BLM's failure to take actions needed to prevent unnecessary or undue degradation of the public lands violates the Federal Land Policy and Management Act;
- 7. The BLM fails to adequately portray the impacts of the lease sale on greater sage grouse and pre-empts a pending decision on a proposed Resource Management Plan amendment for sage grouse in Northeastern California and Nevada.

RELIEF REQUESTED

For these reasons and for those more fully discussed below in the Statement of Reasons, we respectfully request that BLM cancel – not simply defer – this lease sale pending completion of an EIS which considers alternatives to reduce GHG pollution and the impacts from fracking and revisits its decision-making process to address methane waste, water quality, air quality, sage grouse and other biological resources, and climate change impacts. We also hereby request that BLM advise prospective lessees that this lease sale is under protest and could be subject to litigation. In the event BLM proceeds with the lease sale, we hereby request that BLM stay issuance of the leases pending resolution of any litigation. In the event that BLM rejects this request and issues the leases, we hereby request that BLM suspend all activities and operations pertaining to those leases, including lessee unitization and other drilling agreements, pending resolution of any litigation.

INTEREST OF THE PROTESTING PARTY

The Center is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center also works to reduce greenhouse gas emissions and other air pollution to protect biological diversity,

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our environment, and public health. The Center has over 40,000 members and 775,000 on-line activists, including those living in Nevada and neighboring states, who visit the public lands in the Battle Mountain District for recreational, scientific, educational, and other pursuits and intend to continue to do so in the future. Center members are particularly interested in protecting the many native, imperiled, and sensitive species and their habitats that the oil and gas lease sale may affect.

STATEMENT OF REASONS

I. Background and History of Fracking

The proposed leasing action represents a dramatic increase in oil and gas leasing in the areas at issue and reflects increased industry interest in developing Nevada's fossil fuel resources. The EA states that, "Well Stimulation may be used to enhance oil recovery", and further explains that hydraulic fracturing ("fracking") is one of the stimulation methods and is reasonably foreseeable for use if the proposed leases are developed.³

The "Reasonably Foreseeable Development Scenario for the proposed leased parcels envisions:

- The use of new drilling techniques such as directional drilling and hydraulic fracking with pressurized fluids;
- 139 parcels totaling 230,989 acres would be offered for sale;
- There is "a very low development potential for oil and gas disturbance" as a result of this lease sale and it is estimated that over the next ten years, around 710 acres of direct and indirect disturbance will occur on the Tonopah Filed office area. No estimate is provided for the Mount Lewis Field Office area, but the likelihood for exploration and production can be considered very low.⁴

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. Fracking 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.

Historically, the first oil discovery in Nevada occurred in 1954 in the Railroad Valley, currently the location of Nevada's only oil refinery. Since 1986, over 270 wells have been drilled

³ EA, page 11.

⁴ EA, pages 9-10.

⁴ Center for Biological Diversity **Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-**2014-0001-EA

in Nevada of which 50 were commercially productive.⁵ On the BMD there are currently 32 oil producing wells, and the EA characterizes oil and gas development as "speculative".⁶

Currently, there are no fracked wells in Nevada.⁷ In the 2013 Legislative Session, the legislature directed the Departments of Minerals and Environmental Protection to develop regulations to guide fracking in Nevada.⁸ These regulations are still in development, and hence the responsibility for the protection of the environment and human health and safety rests largely with the BLM.

The earliest oil and gas deposits discovered and exploited consisted of porous reservoirs in geologic formations capped by impervious traps that would contain migrating fluids, such as oil, natural gas, and water.⁹ Within these reservoirs, the fluids would arrange by density, so that natural gas would be on top, with oil under it, and water on the bottom.¹⁰ This layered arrangement of natural gas, oil, and water within a reservoir contained by a trap is called a conventional deposit and has historically provided most of the produced oil and natural gas.¹¹ The permeability of these formations permits the easy flow of oil or gas toward a well when the extraction of the resource drops pressure around the well.¹² This allows a single simple wellbore to easily extract resources from a relatively large area, making the extraction economically attractive.¹³

However, much of the world's store of fossil fuel is not contained in these conventional deposits, but rather is inside the pores and cracks of relatively impermeable sedimentary rock, and distributed over a larger area.¹⁴ Shale is one such impermeable formation, and shale deposits can hold huge amounts of shale oil—called "tight oil" to avoid confusion with oil shale—and shale gas.¹⁵ The geologic processes of sedimentation and compaction that create shale make both

⁵ Bureau of Land Management. 2013. Preliminary EA – December 2013 Competitive Oil and Gas Lease Sale, NEPA #: DOI-BLM-NV-2013-004-EA, at 18.

⁶ EA, page 51.

⁷ Per conversation with Mr. Lowell Price, Oil, Gas & Geothermal Program Manager for the Nevada Department of Minerals.

⁸ NV Senate Bill 390.

⁹ Behrens, Carl E. et al., U.S. Fossil Fuel Resources: Terminology, Reporting, and Summary, Congressional Research Service at 6 (Dec. 28, 2011) ("Behrens"); Mathias, Simon, Hydraulic fracturing of shale gas reservoirs – implications for the surrounding environment at 3 (Sep. 2010) ("Mathias"); McDonald, Robert, California's Silent Oil Rush, New Times at 3 ("McDonald New Times"); Paleontological Research Institution, Understanding Drilling Technology, Marcellus Shale at 1 (Jan. 2012).

¹⁰ Behrens at 6.

¹¹ *Id*.

¹² Crain, E.R., *Permeability Basics*, Crain's Petrophysical Handbook at 1.

¹³ See Behrens at 6; Mathias at 3; McDonald New Times at 3.

¹⁴ Id.

¹⁵ National Petroleum Council, *Prudent Development* at 13 (Sep. 2011) ("NPC"); United States Energy Information Administration, *Annual Energy Outlook 2012* at 58 (Jun. 2012) ("USEIA 2012a"); United States Energy Information Administration, *Review of Emerging Resources: U.S. Shale Gas and Shale Oil Plays* at 75-77 (Jul. 2011) ("USEIA 2011").

⁵ Center for Biological Diversity **Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-**2014-0001-EA

horizontal and vertical migration of oil and gas through the shale especially difficult.¹⁶ Thus, while shale can contain huge amounts of oil and/or gas, its low permeability means that typically these resources cannot be economically recovered through conventional drilling methods.¹⁷

Recently, industry has overcome this low permeability by combining multi-stage slickwater hydraulic fracturing with horizontal drilling, which makes possible the profitable production of shale gas and shale oil.¹⁸ 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, engineered process in which production companies strive to design a hydraulic fracturing treatment to emplace fracture networks in specific areas."¹⁹

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.²⁰ To fracture the rock, the well operator injects hydraulic fracturing fluid at tremendous pressure.²¹ The composition of fracturing fluid has changed over time. Halliburton developed the practice of injecting fluids into wells under

¹⁸ CITI, *Resurging North American Oil Production and the Death of the Peak Oil Hypothesis* at 9 (Feb. 15, 2012) ("CITI"); USEIA 2011 at 4; Orszag, Peter, *Fracking Boom Could Finally Cap Myth of Peak Oil* (Jan. 31, 2011) ("Orszag"). The New York Department of Environmental Quality provides the following overview of Technological Milestones for hydraulic fracturing:

Hydraulic Fracturing Technological Milestones				
Early 1900s	Natural gas extracted from shale wells. Vertical wells fractured with foam.			
1983	First gas well drilled in Barnett Shale in Texas			
1980-1990s	Cross-linked gel fracturing fluids developed and used in vertical wells			
1991	First horizontal well drilled in Barnett Shale			
1991	Orientation of induced fractures identified			
1996	Slickwater fracturing fluids introduced			
1996	Microseismic post-fracturing mapping developed			
1998	Slickwater refracturing of originally gel-fractured wells			
2002	Multi-stage slickwater fracturing of horizontal wells			
2003	First hydraulic fracturing of Marcellus Shale			
2005	Increased emphasis on improving the recovery factor			
2007	Use of multi-well pads and cluster drilling			

New York State Department of Environmental Conservation, *Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing to Develop the Marcellus Shale and Other Low-Permeability Gas Reservoirs* at 5-5 (Sep. 7, 2011) ("NYDEC SGEIS").

¹⁹ Arthur at 9.

²⁰ Mathias at 5-9.

²¹ *Id*.

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¹⁶ Arthur, J. Daniel *et al.*, *Hydraulic Fracturing Considerations for Natural Gas Wells of the Marcellus Shale* at 2 (Sep. 2008) ("Arthur").

¹⁷ Mathias at 3-4.

high pressure in the late 1940s;²² however, companies now use permutations of "slick-water" fracturing fluid developed in the mid-1990s.²³ 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.²⁴ 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.²⁵ 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.²⁶

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.²⁷ A congressional report sampling incomplete industry self-reports found that "[t]he oil and gas service companies 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."²⁸ 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.²⁹ 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.³⁰ Another study reviewed exposures to fracking chemicals 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.³¹

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

²² Tompkins, How will High-Volume (Slick-water) Hydraulic Fracturing of the Marcellus (or Utica) Shale Differ from Traditional Hydraulic Fracturing? Marcellus Accountability Project at 1 (Feb. 2011).

²³ NYDEC SGEIS at 5-5.

²⁴ *Id.*; Arthur at 10; United States House of Representatives, Committee on Energy and Commerce, Minority Staff, Chemicals Used in Hydraulic Fracturing (Apr. 2011) ("Waxman 2011b").

 $^{^{25}}$ Arthur at 10. 26 Arthur at 10.

²⁷ Waxman 2011b; see also Colborn, Theo et al., Natural Gas Operations for a Public Health Perspective, 17 Human and Ecological Risk Assessment 1039 (2011) ("Colborn 2011"); McKenzie, Lisa et al., Human Health Risk Assessment of Air Emissions form Development of Unconventional Natural Gas Resources, Sci Total Environ (2012), doi:10.1016/j.scitotenv.2012.02.018 ("McKenzie 2012").

²⁸ Waxman 2011b at 8.

²⁹ Colborn 2011 at 1.

³⁰ Colborn 2011 at 1.

³¹ McKenzie 2012 at 5.

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the layer is high.³² 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.³³ Although hydraulic fracturing increases the radius of this cylinder of shale, this effect is often itself insufficient to allow profitable extraction of shale resources.³⁴ Horizontal drilling 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.³⁵ The practice of combining horizontal drilling with hydraulic fracturing was developed in the early 1990s.³⁶

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.³⁷ 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.³⁸ 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.³⁹

This new combination of multi-stage slickwater hydraulic fracturing and horizontal drilling (hereinafter "fracking") 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.⁴⁰ 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.

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."⁴¹ 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."⁴² Another

³² See CITI at 9; USEIA 2011 at 4; Orszag.
³³ See CITI at 9; USEIA 2011 at 4; Orszag.

³⁴ See CITI at 9; USEIA 2011 at 4; Orszag; Arthur at 8 (Figure 4).

³⁵ Venoco, Inc., Monterey Shale Focused Analyst Day Slide Show at 23 (May 26, 2010) ("Venoco Slide Show"), USEIA 2012a at 63.

³⁶ Venoco, Inc., Monterey Shale Focused Analyst Day Slide Show at 23 (May 26, 2010) ("Venoco Slide Show").

³⁷ NYDEC SGEIS at 5-93.

³⁸ Id.

³⁹ Id.

⁴⁰ CITI at 9; USEIA 2011 at 4; Orszag.

⁴¹ Waxman 2011b at 1.

⁴² USEIA 2011 at 4.

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recent report highlights how recent advances in technology have driven, and will continue to drive this change:

From 2007 to 2009, the average lateral length of horizontal drilling for shale rock resources increased by a factor of five, allowing for a tripling of the initial production rate in some shale formations. This technological advance substantially lowered costs and allowed for greater technical access to the shale gas resource in-place. Currently in North America, break-even prices for some of the more prolific shales are estimated to be as low as \$3 per thousand cubic feet (mcf), with a large majority of the resource accessibility at below \$6/mcf. Ten years ago, costs were three to four times higher. As firms continue to make cost reducing innovations, it is likely that the recoverable resource base is larger than presently estimated.⁴³

"And as the Texas Supreme Court . . . explained, the unprecedented success of fracing in the Barnett Shale in north central Texas has prodded exploration elsewhere, and spurred efforts to produce gas in many other areas and geological formations that were previously considered unrecoverable or uneconomic."⁴⁴

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:

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 of offshore resources in the Gulf of Mexico, pushes domestic crude oil production higher.⁴⁵

Thus, it is evident that 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.

Thus, it is clear 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.

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

⁴³ Jaffe, Amy Myers *et al.*, *The Status of World Oil Reserves: Conventional and Unconventional Resources in the Future Supply Mix* at 12-13 (Oct. 2011) ("Jaffe").

⁴⁴ Wiserman, Hannah, Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation, 20 Fordham Envtl. Law Rev. 115, 122 (2009) ("Wiserman").

⁴⁵ USEIA 2012a at 2

 ⁹ Center for Biological Diversity
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comply with its own duties to review, analyze, disclose, and avoid and mitigate the impacts of its oil and gas leasing decisions.

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.⁴⁶ 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."⁴⁷ New York has halted the practice while it researches the issue, and Governor Andrew Cuomo is considering allowing fracking only in communities with ordinances allowing it.⁴⁸ Also, New Jersey's legislature recently passed a bill that would prevent fracking waste, like toxic wastewater and drill cuttings, from entering its borders,⁴⁹ and Pennsylvania, ground zero for the fracking debate, has banned "natural-gas exploration across a swath of suburban Philadelphia"⁵⁰ Numerous cities and communities, like Buffalo, Pittsburgh, Raleigh, Woodstock, and Morgantown have banned fracking.⁵¹

A recent report from the Council of Canadian Academies concluded that:

"Well-targeted science is required to ensure a better understanding of the environmental impacts of shale gas development...Currently, authoritative data about potential environmental impacts are neither sufficient nor conclusive."⁵²

II. BLM Has Violated the National Environmental Policy Act

BLM has violated National Environmental Policy Act ("NEPA") because its analysis of environmental impacts is arbitrary and because it has failed to prepare an environmental impact statement ("EIS") to analyze potentially significant impacts. A central reason for this is that the agency has arbitrarily limited the amount of activity that could result from the lease sale.

Fracking (Feb. 9, 2011); The Raleigh Telegram, *Raleigh City Council Bans Fracking Within City Limits* (Jul. 11, 2012); Kemble, William, *Woodstock bans activities tied to fracking*, Daily Freeman (Jul. 19, 2012);

MetroNews.com, Morgantown Bans Fracking (June 22, 2011),

⁴⁶ Castelvecchi, Davide, *France becomes first country to ban extraction of natural gas by fracking*, Scientific American (Jun. 30, 2011).

⁴⁷ CNN Staff Writer, Vermont first state to ban fracking, CNN U.S. (May 17, 2012).

⁴⁸ Esch, Mary, *New York Fracking Moratorium Causes Drilling Company to Shut off Gas in Avon, NY*, Huffington Post (Jul. 9, 2012).

⁴⁹ Tittel, Jeff, Opinion: Stop fracking waste from entering New Jersey's borders (Jul 14, 2012).

⁵⁰ Philly.com, *Fracking ban is about our water*, The Inquirer (Jul. 11, 2012).

⁵¹ CBS, Pittsburgh Bans Natural Gas Drilling, CBS/AP (Dec 8, 2010); Wooten, Michael City of Buffalo Bans

http://www.wvmetronews.com/news.cfm?func=displayfullstory&storyid=46214.

⁵² Council of Canadian Academies, 2014. *Environmental Impacts of Shale Gas Extraction in Canada*. Ottawa (ON): The Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction, Council of Canadian Academies.

¹⁰ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

I. **Overview**

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 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.

II.BLM Unlawfully Restricted Its Analysis

BLM has unlawfully restricted its NEPA analysis by arbitrarily limiting the scope of its analysis of the oil and gas activity and related that may result from the lease sale and by failing to analyze sufficiently site-specific impacts.

BLM has arbitrarily limited the amount of activity that it assumed would result from the lease sale. BLM has not even attempted to quantify and map the reasonably foreseeable oil and gas wells, drilling sites, and associated infrastructure that will result from the proposed lease sale.⁵³ The agency instead offers conclusory assertions that the application of productive new drilling and recovery technologies in Nevada will have no effect and continue the area's past trend of low levels of drilling activity, asserting, without any explanation or discussion off reasonably foreseeable locations, that "710 acres of disturbance could be expected to occur in the [Tonopah Field Office]," and declining even to attempt analysis of foreseeable sites within the Mount Lewis Field Office area.⁵⁴ The agency does not even consider the reasonably likely scenario of a fracking-driven boom in new, concentrating on what types of activities have occurred in Nevada in the past, or were contemplated in the 17-year-old Tonopah Resource Management Plan.⁵⁵ The EA's cumulative effects analysis is even more circumscribed, relying solely on past trends to deal only with a projected 15 wells within the area of the two field offices, and ignoring entirely the possibility that successful fracking of a Battle Mountain well could spark greatly increased exploration and drilling interest.⁵⁶ Instead, BLM completely ignores the fact that, across the country, "[t]he shale oil revolution is a new, new thing" and that

 ⁵³ BLM June 2014 Lease Sale EA at 9-10.
 ⁵⁴ *Id.* at 10.

⁵⁵ Id.

⁵⁶ *Id.* at 55-56.

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"[i]t has come out of nowhere in the last year and a half."⁵⁷ Industry interest in advanced recovery technologies in Nevada is even more recent – industry is just beginning to learn how to use new fracking techniques in the state – and BLM's information from past years does not capture the growing intensity of the shale oil revolution. Just within the past two months, "Noble Energy for the first time in Nevada history employed the practice of hydraulic fracturing at an exploration well east of Elko in March."⁵⁸ "What's unique about Nevada is it really is a frontier area."⁵⁹ As such, neither the State of Nevada, which has not yet adopted regulations to address hydraulic fracturing, nor the BLM, which is operating based on decades-old resource management plans and reasonably foreseeable developments scenarios, has plans in place to forecast and assess the consequences of applying advanced drilling and recovery techniques to Nevada reservoirs. BLM analysis must recognize this.

Also, even if BLM wrongly ignores the shale oil boom, the agency has still acted unlawfully because the drilling of wells resulting in more than 710 acres of disturbance is not so "remote and speculative" as to escape NEPA review. NEPA regulations and caselaw require that BLM evaluate all "reasonably foreseeable" direct, indirect and cumulative effects of its leasing. 40 C.F.R. § 1508.8; *Davis v. Coleman*, 521 F.2d 661, 676 (9th Cir. 1975). BLM cannot consider only the drilling scenario that it believes is most likely to occur; instead, it must analyze the effects of all reasonably possible scenarios, and can eliminate possibilities from its analysis only when they are highly "remote and speculative." *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n*, 449 F.3d 1016, 1031 (9th Cir. 2006); *see also New York v. NRC*, 681 F.3d 471, 481-82 (D.C. Cir. 2012). The EA acknowledges that "development of hydraulic fracturing methods and the drilling technology in which it is applied (in particular, long wells drilled horizontally within zones of interest) have enabled production of oil and gas from tight formations formerly not economically feasible."⁶⁰ Thus, even ignoring the shale oil boom, it is far from "remote and speculative" that drilling and related disturbance on more than 710 acres of the vast 193,056-acre area currently proposed for sale could result.

BLM's EA is also arbitrary because the agency has failed to consider sufficiently sitespecific impacts.⁶¹ BLM indicates it does not have to consider some, or perhaps all, site-specific impacts because it has authority to prevent oil and gas activities later.⁶² That belief is incorrect. The lease sale could result in impacts that BLM will not be able to avoid once the lease sale is finalized because the agency's ability to prevent lessees from engaging in lawful activities on issued leases will be limited. BLM regulations provide that lessees "have the right to use so

⁵⁷ E&E News, U.S. oil gains in 2012 eclipse first American oil rush (Dec. 20, 2012); see also Loder, Asjylyn, American Oil Growing Most Since First Well Signals Independence (Dec. 18, 2012); Taylor, Phil, BLM leasing acreage up, protests down in 2012 (Dec. 18, 2012).

⁵⁸ Ross Anderson, *Oil industry starts fracking in Nevada*, Elko Daily Free Press (April 27, 2014).

⁵⁹ Id.

⁶⁰ BLM June 2014 Lease Sale EA at 11.

⁶¹ See, e.g., *id.* at 24 ("Direct and indirect effects on specific wildlife species cannot be determined until site specific project proposals are analyzed at the APD stage of development").

⁶² *Id* at 78 (including stipulation on certain parcels that "BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat.")

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much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to" limited conditions, including lease stipulations, "specific, nondiscretionary statutes," and limited "reasonable measures" that do not precluding all development activities. 43 C.F.R. § 3101.1-2. Indeed, BLM acknowledges that "if a lease is sold, the lessee retains irrevocable rights"⁶³

The BLM states in the EA that, "An assessment of potential environmental impacts, based on a Reasonably Foreseeable Development (RFD) scenario, was conducted by resource specialists who relied on historical data and personal knowledge of the areas involved, conducted field inspections and/or reviewed existing databases and file information to determine the appropriate stipulations to attach to specific parcels."⁶⁴

The EA further states that, "Detailed site-specific NEPA analysis would occur when an Application for Permit to Drill (APD) is submitted,⁶⁵ and that, "There would be no direct impacts (i.e., impacts that would occur during the implementation of the Proposed Action) from issuing new oil and gas leases because leasing does not directly authorize oil exploration and development activities. However, if a lease is sold, the lessee retains irrevocable rights. For example, according to 43 CFR § 3101.1-2, once a lease is issued to its owner, that owner has the "right to use as much of the lease lands as is necessary to explore for, drill for, mine, extract, remove and dispose of the leased resource in the leasehold" subject to specific nondiscretionary statutes and lease stipulations. If an Application of a Permit to Drill (APD) is received for a purchased parcel, a separate, site-specific NEPA analysis would be required to disclose environmental impacts to resources on public lands."⁶⁶

BLM also argues, in its response to comments, that site-specific analysis could be undertaken, and conditions of approval potentially operated despite the lack of lease stipulations, at the post-leasing Application for Permit to Drill stage."⁶⁷ However, NEPA requires that an agency conduct all environmental analyses at "the earliest possible time." 40 C.F.R. § 1501.2; *see also N. Alaska Envtl. Ctr. v. Kempthorne*, 457 F.3d 969, 973, 977-78 (9th Cir. 2006); *N.M. ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 718 (10th Cir. 2009). In *Richardson*, the Tenth Circuit specifically found "issuing an oil and gas lease with a [No Surface Occupancy] stipulation constitutes" an irrevocable commitment of resources. 565 F.3d at 718. Under this decision, and the terms of the BLM's own NEPA Handbook, the consequences of conveying the right to surface disturbance must be analyzed now, when the BLM still has the right to prohibit or regulate comprehensively the scope of surface activity. ⁶⁸ Here, this means that BLM must make reasonable effort to anticipate and analyze all reasonably foreseeable impacts now, before it has leased the land and is unable to prevent environmental impacts.

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⁶³ *Id.* at 16.

⁶⁴ *Id.* at 4.

⁶⁵ *Id.* at 6.

⁶⁶ *Id.* at 16.

⁶⁷ *Id.* at 132.

⁶⁸ *Richardson*, 565 F.3d 718 & n.44 (citing BLM Handbook H-1624-1 ("By law, these impacts must be analyzed before the agency makes an irreversible commitment. In the fluid minerals program, this commitment occurs at the point of lease issuance.")).

III. BLM's EA Fails to Take a Hard Look at Potential Impacts from the Lease Sale, Oil and Gas Development, and the Use of Hydraulic Fracking Technologies

BLM's EA fails to take the requisite hard look at environmental impacts. Two major problems are present throughout the EA: the agency's generic discussion of potential problems that could result from fracking and its failure to analyze the actual impacts of the lease sale, ;and the agency's reliance on its arbitrary development scenario.

i. BLM Failed to Adequately Disclose or Analyze the Project's Impacts to Water Resources

Oil and gas activities pose great danger to water resources. This includes harms that are common to oil and gas operations in general, and damages fracking in particular can cause.

a. All Oil and Gas Operations Pose Risks to Water

Oil and gas operations are significant threats to water. Onshore oil and gas operations in the United States create about 56 million barrels of produced water *per day*.⁶⁹ California wells produced roughly 3 billion barrels of waste water in 2011, which is about 15 times the amount of oil the state produced.⁷⁰ This waste can reach fresh water aquifers and drinking water.⁷¹ Surface pits are a major source of pollution. In California, pollution from an unlined surface pit killed numerous almond trees.⁷² Also, New Mexico data shows 743 instances of groundwater contamination, almost entirely over the last three decades.⁷³ Underground waste injection wells are another major threat. This is of particular concern because U.S. EPA has found that

⁶⁹ U.S. Government Accountability Office, Energy-Water Nexus: Information on the Quantity, Quality, and Management of Water Produced during Oil and Gas Production, Report to the Ranking Member, Committee on Science, Space and Technology, House of Representatives at 13 (January 2012).

⁷⁰ California Division of Oil, Gas, and Geothermal Resources, 2011 Preliminary Report of California Oil and Gas Production Statistics at 3 (Apr. 2012); California Department of Conservation Division of Oil, Gas, and Geothermal Resouces, Producing Wells and Production of Oil, Gas, and Water by County - 2011, Excerpted from Final Report of 2011 California Oil and Gas Production Statistics (2012).

⁷¹ Natural Resources Defense Council, Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy at 17 (Sep. 8, 2010) ("NRDC Petition for Rulemaking").

⁷² See/Speak No Fracking at 6; *see also* Miller, Jeremy, Oil and Water Don't Mix with California Agriculture, High Country News (2012);

⁷³ New Mexico Oil and Conservation Division, OGAP Analysis of data provided in New Mexico Energy, Minerals and Natural Resources Dep't, Oil and Conservation Div., Cases Where Pit Substances Contaminated New Mexico's Ground Water (2008); *see generally* NRDC Petition for Rulemaking; Nicholas, Kusnetz, *A Fracking First in Pennsylvania: Cattle Quarantine*, ProPublica (July 2, 2010).

¹⁴ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

DOGGR's Class II underground injection well program to be insufficiently protective of groundwater resources.⁷⁴ Also, many other extremely harmful spills and releases occur before those wastes reach storage or disposal sites, including spills from equipment failures, accidents, negligence, or intentional dumping.⁷⁵ Construction of oil and gas infrastructure, such as well pads and roads, can also harm water quality by increasing sediment levels.⁷⁶

b. Fracking Multiplies the Risks to Water Resources

While much remains to be learned about fracking,⁷⁷ it is clear that the practice poses major dangers to water resources. Despite this danger, fracking remains essentially unregulated in Nevada,⁷⁸ and around the country, federal and state laws have not kept pace with the dramatic growth in drilling and impacts.⁷⁹

Fracking requires an enormous amount of water – typically between 2 and 5.6 million gallons – to frack each well.⁸⁰ The extraction of water for fracking can lower the water table, affect biodiversity, harm local ecosystems, and reduce water available to communities.⁸¹ Nevada is the driest state in the Union, and water is often in short supply, hence this is a major concern. A bare mention is made in the EA to the fact that the White River Valley has inner-connected ground water to areas intended to be mined for over 25 billion gallons of water a year by the Southern Nevada Water Authority, posing great risk to both local communities and natural ecosystems alike. The additional demands of dozens, if not hundreds of oil wells will greatly exacerbate the impacts and threats.

The fluids associated with fracking can also contaminate the environment. The spilling or leaking of fracking fluids, flowback, or produced water is a huge problem. Harmful chemicals present in these fluids can include volatile organic compounds ("VOCs"), such as benzene,

⁷⁴ NRDC Petition for Rulemaking at 20; Walker, James, California Class II UIC Program Review, Report submitted to Ground Water Office USEPA Region 9 at 119 (Jun. 2011); U.S. Environmental Protection Agency Region IX, Letter from David Albright, Manager Ground Water, to Elena Miller, State Oil and Gas Supervisor Dept of Conservation re California Class II Underground Injection Control (UIC) Program Review final report (July 18, 2011); Miller, Elena, Letter from Elena M. Miller, State Oil and Gas Supervisor, California Division of Oil, Gas, & Geothermal Resources to The Honorable Fran Pavley, California State Senate re hydraulic fracturing in California (February 16, 2011).

 ⁷⁵ California Dept. of Fish and Game, Environmental Incident Report: Vintage Production California LLC Tar Creek Crude Oil and Produced Water Spills, January 30, 2007 and February 6, 2007.
 ⁷⁶ Entrekin, Sally, *et al.*, Rapid Expansion of Natural Gas Development Poses a Threat to Surface Waters, 9 Front

 ⁷⁶ Entrekin, Sally, *et al.*, Rapid Expansion of Natural Gas Development Poses a Threat to Surface Waters, 9 Front Ecol Environ 503, 507 (2011) ("Entrekin").
 ⁷⁷ United States Government Accountability Office, Unconventional Oil and Gas Development – Key

⁷⁷ United States Government Accountability Office, Unconventional Oil and Gas Development – Key Environmental and Public Health Requirements (2012); United States Government Accountability Office, Oil and Gas – Information on Shale Resources, Development, and Environmental and Public Health Risks (2012).

 $^{^{78}}$ Efforts to authorize fracking regulations in 2013 Nevada Legislative Session were largely unsuccessful.

⁷⁹ NRDC, In Fracking's Wake: New Rules are Needed to Protect Our Health and Environment from Contaminated Wastewater (2012).

⁸⁰ U.S. Government Accountability Office 2012 at 17.

⁸¹ International Energy Agency, Golden Rules for the Golden Age of Gas at 31-32 (2012).

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toluene, xylenes, and acetone.⁸² As much as 25 percent of fracking chemicals are carcinogens,⁸³ and flowback can even be radioactive.⁸⁴ Spills can occur at the surface, and underground. At the surface, pits or tanks can leak fracking fluid or waste.⁸⁵ Also, many fluids must be transported to and/or from the well, and this presents an opportunity for spills.⁸⁶ Indeed, there are multiple reports of truckers dumping waste uncontained into the environment.⁸⁷ 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.⁸⁸

Underground, fracking can contaminate groundwater in a number of ways. First, faulty well construction, cementing, or casing,⁸⁹ as well as the injection of fracking waste underground, can all lead to leaks.⁹⁰ Also, fluids may contaminate groundwater by migrating through newly created or natural fractures.⁹¹ 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.⁹² Also, the Draft EPA Investigation of Ground Water Contamination near Pavillion, Wyoming, found that chemicals found in samples of groundwater were from fracked wells.⁹³ These results have been confirmed with follow-up analyses.⁹⁴ Moreover, another study based on modeling found that active transport of fracking fluid from a fracked well to an aquifer could occur in less than

⁹⁰ Kusnetz, North Dakota; Lustgarten, Abraham, Polluted Water Fuels a Battle for Answers, ProPublica (2012); Lustgarten, Abraham, Injection Wells: The Poison Beneath Us, ProPublica at 2 (2012); Lustgarten, Abraham, Whiff of Phenol Spells Trouble, ProPublica (2012).

⁹³ EPA Draft Pavillion Investigation.

⁹⁴ Drajem, Mark, Wyoming Water Tests in Line with EPA Finding on Fracking, Bloomberg (Oct. 11, 2012); U.S. Environmental Protection Agency, Investigation of Ground Water Contamination near Pavillion, Wyoming Phase V Sampling Event - Summary of Methods and Results (September 2012); Myers, Tom, Review of DRAFT: Investigation of Ground Water Contamination near Pavillion Wyoming Prepared by the Environmental Protection Agency, Ada OK (Apr. 30, 2012).

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⁸² U.S. Environmental Protection Agency, Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources (Nov. 2011) ("EPA Plan to Study Fracking Impacts").

⁸³ Colborn 2011.

⁸⁴ EPA Plan to Study Fracking Impacts; White, Ivan E., Consideration of radiation in hazardous waste produced from horizontal hydrofracking, National Council on Radiation Protection (2012).

⁸⁵ See, e.g., E&E Staff Writer, Fracking Fluid leaks from wellhead in Colo., E&E News (Feb 14, 2013). ("At least 84,000 gallons of water contaminated from hydraulic fracturing seeped from a broken wellhead and into a field"); Michaels, Craig, et al., Fractured Communities: Case Studies of the Environmental Impacts of Industrial Gas Drilling, Riverkeeper (2010).at 12; NRDC Petition for Rulemaking at 20.

⁸⁶ Warco, Kathy, *Fracking truck runs off road; contents spill*, Observer Reporter (Oct 21, 2010).

⁸⁷ Kusnetz, Nicholas, North Dakota's Oil Boom Brings Damage Along with Prosperity at 4, ProPublica (June 7,

^{2012) (&}quot;Kusnetz North Dakota"); E&E News, Ohio man pleads not guilty to brine dumping (Feb. 15, 2013). ⁸⁸ Natural Resources Defense Council, Water Facts: Hydraulic Fracturing can potentially Contaminate Drinking Water Sources at 2 (2012) ("NRDC, Water Facts"); Food & Water Watch, The Case for a Ban on Fracking (2012) ("Food & Water Watch 2012") at 5. ⁸⁹ NRDC, Water Facts at 2; Food & Water Watch 2012 at 7.

⁹¹ U.S. Environmental Protection Agency, Draft Investigation of Ground Water Contamination near Pavillion, Wyoming (2011) ("EPA Draft Pavillion Investigation."); Warner, Nathaniel R., et al., Geochemical Evidence for Possible Natural Migration of Marcellus Formation Brine to Shallow Aquifers in Pennsylvania, PNAS Early Edition

^{(2012).} ⁹² Ingraffea, Anthony R., Some Scientific Failings within High Volume Hydraulic Fracturing Proposed Regulations ⁹³ Ingraffea, Anthony R., Some Scientific Failings within High Volume Hydraulic Fracturing Proposed Regulations Conservation (Jan 8, 2013).

10 years.⁹⁵ Finally, nearby active and abandoned wells provided additional pathways for contamination. 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.⁹⁶ 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.⁹⁷

c. BLM's Analysis of Impacts to Water is Inadequate

BLM's analysis of potential impacts to water is woefully inadequate. The agency gives faint recognition to the impacts to water resources and dismisses them by stating:

Water Resources...(is) not an issue for lease sales since no ground disturbing activities are associated with the sales. Any concerns that arise during development of parcels subsequent to lease sales would be handled through design features, mitigation measures, and/or project stipulations.⁹⁸

There is little assurance that BLM can protect local water resources. BLM indicates it does not have to consider some, or perhaps all, site-specific impacts because it has authority to prevent oil and gas activities later. That belief is incorrect. The lease sale could result in impacts that BLM will not be able to avoid once the lease sale is finalized because the agency's ability to prevent lessees from engaging in lawful activities on issued leases will be limited. BLM regulations provide that lessees "have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to" limited conditions, including lease stipulations, "specific, nondiscretionary statutes," and limited "reasonable measures" that do not precluding all development activities. 43 C.F.R. § 3101.1-2. Indeed, BLM acknowledges that "[a] lease for oil and gas gives a lessee (holder of the lease) the right to drill and produce"

The chance that the sale will result in fracking raises several issues BLM must address:

- Where will the water come from and what are the impacts of extracting it?
- What chemicals will be used in the drilling and fracking process?
- How will BLM ensure the collection and disclosure of that information?
- What limitations will BLM place on the chemicals used in order to protect public health and the environment?
- What measures will BLM require to ensure adequate monitoring of water impacts, both during and after drilling?

 ⁹⁵ Myers, Tom, Potential Contaminant Pathways from Hydraulically Fractured Shale to Aquifers (Feb. 2012).
 ⁹⁶ Kusnetz, Nicholas, *Deteriorating Oil and Gas Wells Threaten Drinking Water, Homes Across the Country*, ProPublica (April 4, 2011).

 ⁹⁷ BC Oil & Gas Commission, Safety Advisory 2010-03, Communication During Fracture Stimulation (2010).
 ⁹⁸ EA at 29.

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- 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?
- Much of the fracking fluid return to the surface as toxic waste. Where will the discharge go?
- 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?
- What kinds of treatment will be required?
- What is the potential footprint and impact of the necessary treatment facilities?

The EA's discussion of water quality impacts does not address any of these issues, violating the requirements of NEPA.

ii. BLM has Failed to Adequately Analyze Air Pollution Impacts

Oil and gas operations emit numerous air pollutants, including volatile organic compounds (VOCs), NO_x, particulate matter, hydrogen sulfide, and methane. Fracking operations are particularly bad, emitting especially large amounts of pollution, including toxics. However, BLM's EA fails to take a hard look at air pollution impacts.

Oil and gas operations emit large amounts of VOCs and NO_X .⁹⁹ VOCs make up about 3.5 percent of the gases emitted by oil or gas operations.¹⁰⁰ The VOCs emitted include the BTEX compounds – benzene, toluene, ethyl benzene, and xylene – which Congress listed as Hazardous Air Pollutants.¹⁰¹ There is substantial evidence of the harm from these pollutants.¹⁰² With regard to NO_X, its primary sources are compressor engines, turbines, other engines used in drilling, and flaring.¹⁰³ Further, both VOCs and NO_X are ozone precursors, and thus, due to emissions of these pollutants, many regions around the country with substantial oil and gas operations are now suffering from extreme ozone levels.¹⁰⁴ 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

⁹⁹ Sierra Club et al. comments on New Source Performance Standards: Oil and Natural Gas Sector; Review and Proposed Rule for Subpart OOOO (Nov. 30, 2011) ("Sierra Club Comments") at 13.

¹⁰⁰ Brown, Heather, Memorandum to Bruce Moore, U.S.EPA/OAQPS/SPPD re Composition of Natural Gas for use in the Oil and Natural Gas Sector Rulemaking, July 28, 2011 ("Brown Memo").at 3.

¹⁰¹ 42 U.S.C. § 7412(b).

¹⁰² Colborn 2011; McKenzie 2012; Food & Water Watch 2012.

¹⁰³ See, e.g., U.S. Environmental Protection Agency, Oil and Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution: Background Technical Support Document for Proposed Standards at 3-6 (July 2011); Armendariz, Al, Emissions for Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements (2009) ("Armendariz") at 24.

¹⁰⁴ Armendariz at 1, 3, 25-26; Wendy Koch, *Wyoming's Smog Exceeds Los Angeles' Due to Gas Drilling*, USA Today (May 9, 2011); Craft, Elena, Environmental Defense Fund, Do Shale Gas Activities Play a Role in Rising Ozone Levels? (2012); Colorado Dept. of Public Health and Environment, Conservation Commission, Colorado Weekly and Monthly Oil and Gas Statistics (July 6, 2012) at 12.

¹⁸ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

percent of NO_X emitted from sources within the Basin considered in the study's inventory.¹⁰⁵ Ozone can result in serious health conditions, including heart and lung disease and mortality.¹⁰⁶

The oil and gas industry is also a major source of particulate matter. The heavy equipment regularly used burns diesel fuel, generating fine particulate matter.¹⁰⁷ The particulate matter emitted by diesel engines is a particularly harmful.¹⁰⁸ Vehicles also kick up fugitive dust, which is particulate matter, by traveling on unpaved roads.¹⁰⁹ Further, both NO_X and VOCs, which are heavily emitted by the oil and gas industry, are particulate matter precursors.¹¹⁰ Some of the health effects associated with particulate matter exposure are "premature mortality, increased hospital admissions and development of chronic respiratory disease."¹¹¹

Oil and gas operations can also emit hydrogen sulfide. The hydrogen sulfide is contained in the natural gas and makes that gas "sour."¹¹² 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.¹¹³

Further, oil and gas operations emit significant amounts of methane. 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.¹¹⁴ 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"¹¹⁵

¹⁰⁵ Lyman, Seth and Howard Shorthill, Final Report: 2012 Uintah Basin Winter Ozone & Air Quality Study, Utah Department of Environmental Quality (2013); *see also* Gilman, Jessica et al., Source signature of colatile organic compounds from oil and natural gas operations in northeastern Colorado, Envtl Sci and Technology (Jan 14, 2013), DOI: 10.1021/es304119a.

¹⁰⁶ U.S. Environmental Protection Agency, Integrated Science Assessment (ISA) for Ozone (O3) and Related Photochemical Oxidants (2013).

¹⁰⁷ Earthworks, Sources of Oil and Gas Pollution (2011).

¹⁰⁸ Bay Area Air Quality Management District, Particulate Matter Overview, Particulate Matter and Human Health (2012).

¹⁰⁹ U.S. Environmental Protection Agency, Regulatory Impact Analysis for the Proposed Revisions to the National Ambient Air Quality Standards for Particulate Matter (June 2012),

http://www.epa.gov/ttnecas1/regdata/RIAs/PMRIACombinedFile_Bookmarked.pdfat 2-2, ("EPA RIA") ¹¹⁰ EPA RIA at 2-2.

¹¹¹ U.S. Environmental Protection Agency, National Ambient Air Quality Standards for Particulate Matter Proposed Rule, 77 Fed. Reg. 38,890, 38,893 (June 29, 2012).

¹¹² Sierra Club Comments.

¹¹³ USEPA, Office of Air Quality Planning and Standards, Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas (EPA-453/R-93-045) at i (Oct. 1993) ("USEPA 1993").

¹¹⁴ U.S. Environmental Protection Agency, Oil and Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews Proposed Rule, 76 Fed. Reg 52,738 (Aug 23, 2011).

¹¹⁵ Fiore, Arlene et al., Linking ozone pollution and climate change: The case for controlling methane, 29 Geophys. Res Letters 19 (2002); *see also* Martin, Randal et al., Final Report: Uinta Basin Winter Ozone and Air Quality Study Dec 2010 - March 2011 (2011) at 7.

¹⁹ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

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.¹¹⁶ Also, the South Coast Air Quality Management District ("SCAQMD") has identified three areas of dangerous and unregulated air emissions from fracking: the mixing of the fracking chemicals, the use of the silica, or sand, as a proppant, which causes the deadly disease silicosis, and the storage of fracking fluid once it comes back to the surface.¹¹⁷ 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.¹¹⁸ Further, these proppants often include silica sand, which increases the risk of lung disease and silicosis when inhaled.¹¹⁹ 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.¹²⁰

BLM has failed to perform a sufficient analysis of the effects the lease sale could have on air quality. In fact, the agency determined in the EA that air quality was not an issue, stating:

Air Quality is not an issue for lease sales since no ground disturbing activities are associated with the sales. Air Quality concerns during development of parcels subsequent to lease sales would be handled through design features, mitigation measures, and/or project stipulations.¹²¹

BLM indicates it does not have to consider some, or perhaps all, site-specific impacts because it has authority to prevent oil and gas activities later. That belief is incorrect. The lease sale could result in impacts that BLM will not be able to avoid once the lease sale is finalized because the agency's ability to prevent lessees from engaging in lawful activities on issued leases will be limited. BLM regulations provide that lessees "have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to" limited conditions, including lease stipulations, "specific, nondiscretionary statutes," and limited "reasonable measures" that do not precluding all development activities. 43 C.F.R. § 3101.1-2. Indeed, BLM acknowledges that "[a] lease for oil and gas gives a lessee (holder of the lease) the right to drill and produce"

Further, BLM's analysis is lacking because the agency failed to identify numerous available methods for controlling air pollution emissions. This total failure violates NEPA's

¹¹⁶ Colborn 2011 at 8.

¹¹⁷ South Coast Air Quality Management District, Draft Staff Report on Proposed Rule 1148.2 - Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers (January 2013).at 15 ("SCAQMD Revised Draft Staff Report PR1148-2").

 $[\]overline{^{118}}$ Id.

¹¹⁹ South Coast Air Quality Management District, Response to Questions re air quality risks of hydraulic fracturing in California, Submission to Joint Senate Hearing (2013) at 3.

¹²⁰ SCAQMD Revised Draft Staff Report PR1148-2 at 15.

¹²¹ EA at page 29.

²⁰ Center for Biological Diversity **Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-**2014-0001-EA

requirement that the agency identify mitigation measures, 40 C.F.R. § 1508.25, and consider all reasonable alternatives. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. Cal. 2008) (citing 40 C.F.R. § 1502.14(a)).

iii. BLM has Failed to Analyze Adequately the Project's Climate Change Impacts

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.

Natural gas emissions are generally about 84 percent methane.¹²² Methane is a potent greenhouse gas that contributes substantially to global climate change. Its global warming potential is approximately 33 times that of carbon dioxide over a 100 year time frame and 105 times that of carbon dioxide over a 20 year time frame.¹²³

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 or 3.8 percent of the total greenhouse gas emissions in the United States." ¹²⁴ For natural gas operations, production generates the largest amount; however, these emissions occur in all sectors of the natural gas industry, from drilling and production, to processing, transmission, and distribution. ¹²⁵ 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. ¹²⁶ 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. ¹²⁷

¹²² Brown Memo to EPA at 3; Power, Thomas, The Local Impacts of Natural Gas Development in Valle Vidal, New Mexico, University of Montana (2005) ("Power").

¹²³ Howarth, Robert, et al., Methane and the greenhouse-gas footprint of natural gas from shale formations, Climactic Change (Mar. 31, 2011) ("Howarth 2011"); Shindell, Drew, Improved Attribution of Climate Forcing to Emissions, 326 Science 716 (2009).

¹²⁴ U.S. Environmental Protection Agency, Natural Gas STAR Program, Basic Information, Major Methane Emission Sources and Opportunities to Reduce Methane Emissions ("USEPA, Basic Information"); *see also* Petron, Gabrielle, et al., Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study, 117 Journal of Geophysical Research (2012).

¹²⁵ USEPA, Basic Information.

¹²⁶ Howarth 2011; Brune, Michael, Statement of Sierra Club Executive Director Michael Brune Before the Committee on Oversight & Government Reform (May 31, 2012); Wang, Jinsheng, et al., Reducing the Greenhouse Gas Footprint of Shale (2011); Alvarez, Ramon et al., Greater focus needed on methane leakage from natural gas infrastructure, Proc of Nat'l Acad. Science Early Edition (Feb 13, 2012) at 3; *see also* Howarth, Robert, et al., Venting and Leaking of Methane from Shale Gas Development: Response to Cathles et al., (2012); Hou, Deyi, et al., Shale gas can be a double-edged sword for climate change, Nature Climate Change at 386 (2012) ¹²⁷ Tollefson, Jeff, Methane leaks erode green credentials of natural gas, Nature News (Jan 2, 2013).

²¹ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

For the oil industry, emissions result "primarily from field production operations . . . , oil storage tanks, and production-related equipment"¹²⁸ Emissions are released as planned, during normal operations and unexpectedly due to leaks and system upsets.¹²⁹ Significant sources of emissions include well venting and flaring, pneumatic devices, dehydrators and pumps, and compressors.¹³⁰

The EA completely ignores the potential impacts the lease sale will have on the climate. Nowhere in the document is the phrase "climate change" even mentioned. This violates NEPA. In performing a full analysis of climate impacts, BLM must consider all potential sources of greenhouse gases. For example, BLM should assess the greenhouse gas emissions generated by transporting large amounts of water for fracking.

iv. BLM has Failed to Adequately Disclose or Analyze the Impacts to Sensitive Species of Plants and Wildlife

The EA fails to provide a sufficient analysis of impacts to sensitive and ESA candidate species. Although the EA very briefly mentions some potential impacts to imperiled species, it does not fully evaluate the likelihood of the impacts or the ultimate effects on populations.¹³¹ BLM must provide an analysis of the nature, intensity, and extent of potential impacts, along with supporting science and data, and further, it must consider the many effects that fracking may have on species.

Further, the BLM neglects to provide any analysis of impacts to sensitive species known top inhabit the proposed lease area, aside from eagles, pygmy rabbit and greater sage grouse. Even for these species, the discussions are merely a few sentences providing nothing more than an overview of biology and no analysis of potential impacts from the project.¹³²

In addressing other sensitive species, the BLM simply attaches a laundry list of all such species found on the BMD, for the most part with no effort made to identify the likely species to be impacted, outside.¹³³ Appendix B does mention parcels that include sage grouse Preliminary General and Priority habits as well as a list of parcels potentially impacting Big Smokey Valley tui chub and speckled dace populations, but the EA is barren of pertinent analysis, disclosure of impacts and possible avoidance, minimization and mitigation. The Center examined the Nevada

Environmental Consequences

Indirect effects on wildlife species could include direct habitat loss, habitat fragmentation, displacement, and mortality. These effects of lease operations are not likely to be intensive because the potential for oil and gas exploration and development within the lease area is very low and would probably be of short duration.

¹³² EA, page 22.

¹³³ EA, Appendix D.

¹²⁸ Williams, Megan & Cindy Copeland, Earthjustice, Methane Controls for the Oil and Gas Production Sector (2010).

¹²⁹ Id.

¹³⁰ USEPA, Basic Information.

¹³¹ For example, on page 23 the ES simply states:

²² Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

Natural Heritage Program lists and databases¹³⁴ and using the existing readily available date to narrow the sensitive species list down to a handful of species and the proposed lease parcels that are of primary concern with respect to their impacts on these species. While we are appreciative that the BLM did drop 15 parcels highlighted in our March 12, 2014 comments letter, we still have species-specific concerns regarding the parcels listed in the table below:

Sensitive Species	Parcel Number*
Big Smokey Valley tui chub	79, 95, 97, 98, 130
Big Smokey Valley speckled dace	72, 83, 94, 95, 96, 128, 129, 133, 133,
	134
Tonopah milkvetch	10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22
Toquima milkvetch	44
Pale kangaroo mouse	161, 162, 163, 164, 165, 166
Dark kangaroo mouse	161, 162, 163, 164, 165, 166

* - *bold italicized* parcels are ones omitted in the EA.

The EA's laundry list of sensitive species is in Appendix B is incomplete, and fails to mention the known presence of the Big Smokey Valley wood nymph (*Cercyonis oetus alkalorum*)¹³⁵ and the pallid wood nymph (*Cercyonis oetus pallescens*)¹³⁶.

v. BLM has Failed to Adequately Disclose or Analyze the Impacts to Sage Grouse

Because of the nature of sagebrush ecosystems, and the species' reliance on sagebrush habitat for not only lekking but also foraging, brood-rearing, and winter habitat, it is critical to address irrevocable impacts to sage-grouse habitat at the pre-leasing stage. As BLM acknowledges, it lacks effective techniques for mitigating, restoring, or compensating for loss of sagebrush habitat through restoration or offsite mitigation. Therefore, in order to avoid further habitat degradation for this candidate species, and to avoid foreclosing its own options under its ongoing Resource Management Plan revision process designed to establish adequate regulatory mechanisms, BLM should defer non-NSO leasing on not only the previously-deferred parcels but <u>all</u> sage-grouse habitat. BLM's own Draft Resource Management Plan Environmental Impact Statement for the Nevada and Northeastern California Greater Sage-Grouse acknowledges:

¹³⁴ See: <u>http://heritage.nv.gov/node/214</u>

¹³⁵ Our cursory analysis of the NV Heritage database suggests at least parcels 97, 99 and 139 are of concern.

¹³⁶ Our cursory analysis of the NV Heritage database suggests at least parcels 103 and 104 are of concern.

²³ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

Mineral extraction of all types, including locatable, leasable, and salable extraction in GRSG habitat results in habitat loss caused by construction of infrastructure, the footprint of the surface or subsurface operation, and other associated facilities. Sagebrush communities that are lost or modified in locations where reclamation is not compromised by the presence or introduction of invasive grasses may not regain sagebrush cover suitable for GRSG use for 20 or 30 years or longer following interim or final reclamation. Population re-establishment may take upwards of 30 years (Braun 1998). Where compromised, reclamation may only be minimally effective. Necessary infrastructure causes additional direct and indirect impacts on GRSG from location, construction, and use of ancillary facilities, staging areas, roads, railroad tracks, and structures such as buildings and power lines.¹³⁷

The BLM notes in the EA that no oil and gas parcel sales would occur in any areas determined to be located in Preliminary Priority Habitat (PPH) or within certain areas of high-value Preliminary General Habitat (PGH).¹³⁸

What it does not say is that many of the proposed lease parcels are adjacent to leks and PPH and would have serious impacts on the quality of the PPH and survival of the grouse. Utilizing mapping of PPH and PGH from the Nevada Department of Wildlife, it appears that direct and indirect impacts to the sage grouse are likely in parcels located in the Antelope Range, Dutch Flat and Smith Creek Valley areas. These areas either border PPH and PGH or have moderate or better value to the grouse.

The EA fails to discuss the need for "lease timing stipulations" for parcels near leks, nesting areas and winder range, nor the need for adequate buffers around active leks. More disturbing is the complete omission of any specific stipulations for sage grouse protection in the Lease Notice.

In the spring, during the breeding season, sage-grouse males seek out courtship areas, known as "leks" that are open areas of bare soil, short grass steppe, windswept ridges, or exposed knolls in which to gather and perform their ritualized mating displays and breed with females.¹³⁹ An important factor affecting lek location appears to be proximity to as well as configuration and abundance of nesting habitat.¹⁴⁰

¹³⁷ US Department of the Interior Bureau of Land Management and US Department of Agriculture Forest Service, Nevada and Northeastern California Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement 4-17 (October 2013).

¹³⁸ EA at 23.

¹³⁹ Manier et al. 2013.

¹⁴⁰ Connelly, J.W., C.A. Hagen, and M.A. Schroeder. 2011c. Characteristics and dynamics of greater sage-grouse populations. Pages 53-67 *in* S. T. Knick and J. W. Connelly (eds). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biol. Series, vol. 38, Univ. Calif. Press. Berkeley, CA.

²⁴ Center for Biological Diversity **Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-**2014-0001-EA

Leks are normally "traditional", and occur in the same location each year. Some leks studied by early investigators have persisted for 28–67 years since first counted. The presence of broken bird-point arrowheads on some leks suggests that sage-grouse had used those sites for at least 85 years. Leks and the number of attending males are regularly used to monitor the long-term status of populations because of their traditional locations.¹⁴¹

In a recent study looking at greater sage grouse across six western states, it was reported that 90% of the active leks were surrounded by areas having greater than 40% sagebrush cover. Further, 99% of the active leks were in landscapes with less than 3 % of the area in human development.¹⁴² Successful leks occurred in areas with low road densities – less than 1 km/km² of secondary roads, less than .05km/km² of highways, and less than .01 km/km² of interstate highways. Another pertinent finding was that habitat suitability was highest when power line densities were less than .06 km/km²; leks were absent where power line densities exceeded .2 km/km². With respect to communication/cellular towers, leks were absent when tower densities exceeded .08 km/km².¹⁴³

Wisdom et al. reported that areas extirpated of sage grouse had 27 times the human density, 3 times more area in agriculture, were 60% closer to highways, and had 25% higher density of roads than what was found in occupied habitat. Also, it was found that power lines and cellular towers had significant impacts on whether or not a habitat was occupied.¹⁴⁴

Studies published by Braun in 1977 and Connelly in 2000 initially set the standard that leks should be buffered by a 3.2 km or 3.1 mile radius, both to provide security for the grouse and to acknowledge the fact that many, but by no means all, female grouse will nest in the immediate area of the lek.¹⁴⁵

However, more recent studies have suggested that the 3.2 km is questionable as to whether or not it adequately provides for the conditions needed for successful breeding and nesting.

It was found in one study that a 3 km buffer encompassed only 45% of the nesting females associated with that lek, while a 5 km buffer accommodated 64% of the nests. It was also reported that nests located within 1 km of another nest tended to have lower nesting success likely due to enhanced prey detection by predators.¹⁴⁶ The same study further suggests that to protect and maintain sage grouse populations residing in relatively contiguous sagebrush habitats, managers should minimize or halt actions that reduce the suitability of nesting habitats

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¹⁴¹ Ibid.

¹⁴² Knick et al. 2013.

¹⁴³ Ibid.

¹⁴⁴ Wisdon et al. 2011.

¹⁴⁵ Connelly, J. W., M. A. Schroeder, A. R. Sands, C. E. Braun. 2000. Guidelines to manage sagegrouse populations and their habitats. Wildl. Soc'y Bull. 28(4): 967-985.

¹⁴⁶ Holloram, Matthew J. and Stanley H. Anderson. 2005. Spatial distribution of greater sage-grouse nests in relatively contiguous sagebrush habitats. The Condor 107:742-752.

within 5 km of a lek until detailed site specific monitoring suggested otherwise. It also noted that a substantial number of females nested distances greater than 5 km from a lek and that this additional increment of individual recruitment could be important for population viability.¹⁴⁷

Johnsgard indicated that there was no obvious relationship between lek location and nest site. In 5 different studies involving more than 300 nests the average distance between lek and Sage-grouse nest where the females was first seen or captured was 3.5 mi (5.6 km).¹⁴⁸

A majority (~90%) of nesting and brood-rearing habitat was within 10 km (6.2 miles) of active leks in Alberta (Aldridge and Boyce 2007); 97 percent of nests were found within 6.2 miles of leks where females were marked in the Powder River Basin in Montana and Wyoming.¹⁴⁹

Walker et al. in another study found that the impacts from energy development on lek persistence and nesting were still apparent at a distance of 6.4 km from the disturbance.¹⁵⁰

Connelly et al. reported in their assessment for the Western Governors' Association that road traffic within 7.6 km had adverse impacts on male grouse attendance at leks.¹⁵¹

Placing a heavy focus on habitat protection around leks is not suitable for ensuring the viability of sage grouse populations. Studies have shown that both nest and brood rearing habitats are on average 6 km from leks, and it is not until 10 km from leks that one reaches the threshold where 90% of the habitat occurs.¹⁵²

Brood occurrence is greater in more heterogeneous sagebrush stands, where patchy cover reduces predator efficiency but still affords necessary forb resources. Sage grouse are more abundant in patchy habitats containing a mix of mesic, forb-rich foraging areas interspersed within suitable sagebrush escape cover.¹⁵³

Broods are typically found in areas near nest sites for the first 2–3 weeks after hatching. Such habitat needs to provide adequate cover and areas with sufficient forbs and insects to ensure chick survival in this life stage.¹⁵⁴

¹⁴⁷ Ibid.

 ¹⁴⁸ Johnsgard, P.A. 2002. Grassland grouse and their conservation. Smithsonian Institution Press, Washington and London, cited in Manville, A.M., II. 2004, page 11.
 ¹⁴⁹ Doherty, K. E., D. E. Naugle, B. L. Walker. 2010. Greater Sage-grouse nesting habitat: the importance of

¹⁴⁹ Doherty, K. E., D. E. Naugle, B. L. Walker. 2010. Greater Sage-grouse nesting habitat: the importance of managing at multiple scales. J. Wildl. Manage. 74(7): 1544-1553.

¹⁵⁰ Walker et al. cited in Naugle et al. 2011.

¹⁵¹ Connelly et al. 2004.

¹⁵² Aldridge, Cameron L. and Mark S. Boyce. 2007. Linking Occurrence and Fitness to Persistence: Habitat-Based Approach for Endangered Greater Sage-Grouse. Ecological Applications 17(2):508-526.

¹⁵³ Manier et al. 2013. Page 21.

¹⁵⁴ Ibid.

²⁶ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

As previous mentioned, although leks are important focal points for breeding and subsequent nesting in the surrounding region, other seasonal use areas and habitat requirements may be equally limiting to sage-grouse populations.¹⁵⁵

Suitable and diverse winter habitats are critical to the long-term persistence of grouse populations.¹⁵⁶ As summer ends, the diet of sage grouse shifts from a diet of insects, forbs and sagebrush to one comprised almost entirely of sagebrush.¹⁵⁷ In winter, the grouse depends heavily on sagebrush for cover, habitat selection being driven by snow depth, the availability of sagebrush above the snow, and topographic patterns that favorable mitigate the weather.¹⁵⁸

Abundance of sagebrush at the landscape scale greatly influences the choice of wintering habitat. One study found that the grouse selected for landscapes where sagebrush dominate over 75% of the landscape with little tolerance for other cover types.¹⁵⁹ Because appropriate wintering habitat occurs on a limited basis and because yearly weather conditions influence its availability, impacts to wintering habitat can have large disproportional effects on regional populations. One study in Colorado found that 80% of the wintering use occurred on only 7% of the area of sagebrush available.¹⁶⁰ Additionally, some degree of site fidelity to winter areas is suspected to exist, and wintering areas not utilized in typical years may become critical in severe winters.¹⁶¹

Due to sagebrush losses in Nevada, the NDOW considers winter habitat to be at a premium and in some cases essential and irreplaceable.¹⁶²

Lower elevation sagebrush winter habitat used by sage grouse may also constitute important winter areas for big game and early spring forage areas for domestic livestock. Due to differing vegetative condition requirements, land treatments on lower elevation sagebrush areas to increase big game or livestock forage at the expense of sagebrush cover and density could have long-term negative consequences for the grouse.¹⁶³

Sage grouse in the Powder River Basin were 1.3 times less likely to use otherwise suitable winter habitats that have been developed for energy (12 wells/4 km2), and avoidance was most pronounced in high-quality winter habitat with abundant sagebrush.¹⁶⁴

¹⁵⁵ Knick et al. 2013.

¹⁵⁶ NDOW 2012.

¹⁵⁷ Doherty, Kevin E., David E. Naugle, Brett L. Walker, and Jon M. Graham. 2008. Greater Sage-Grouse Winter habitat Selection and Energy Development. J. of Wildlife Management 72(1):187/195.

¹⁵⁸ Manier et al. 2013. Page 21.

¹⁵⁹ Doherty et al. 2008.

¹⁶⁰ Ibid.

¹⁶¹ Caudill, Danny, Terry A. Messmer, Brent Bibles, and Michael R. Guttery. 2013. Winter habitat use by juvenile greater sage-grouse on Parker Mountain, Utah: implications for sagebrush management. Human-Wildlife Interactions 7(2):250-259, Fall 2013.

¹⁶² NDOW 2012.

¹⁶³ Caudill et al. 2013.

¹⁶⁴ Doherty et al. 2008.

²⁷ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

Unfortunately, these stipulations provide little positive benefits to the sage grouse due to both the limited radius set (two miles of a lek)¹⁶⁵ and by the fact that many parcels are not included as mentioned above.

The BLM gives passing coverage of the impacts of noise on sage grouse, and the Center now raises the prominence of this cross-cutting issue. We base our comments on newly published research and recommendations from Patricelli et al. regarding sound impacts on sage grouse.¹⁶⁶

The authors state that acoustic communication is very important in the reproductive behaviors of sage grouse and that effective management of the natural soundscape is critical to the conservation and protection of sage grouse. While the paper specifically studies oil and gas production noise, the authors state that,

> "Other types of anthropogenic noise sources (e.g., infrastructure from oil, geothermal, and mining, as well as wind development, off-road vehicles, highway traffic, and urbanization) are similar in acoustic frequency, amplitude, and timing to the noise played in this experiment, and response by sage-grouse to these other noise sources may be similar."¹⁶⁷

Noise impacts sage grouse in several ways:

- Female sage grouse use male vocalizations to find males on the lek, and females use male vocalizations and displays to find a mate. Reduced female visitation of leks would decrease mating leading to reduced recruitment into the population. Studies show that industrial and other human-induced noises mask sage grouse communications.
- Noise has been shown to increase grouse corticosterone levels indicating increased physiological stress.
- Juvenile males were shown to avoid leks near natural gas drilling sites, and this effect was more pronounced when the leks were downwind of the drill site, and hence noisier.¹⁶⁸
- Human induced noise can mask the sound of predators and increase grouse mortality, particularly in chicks since vocalizations between hens and chicks are generally soft and quiet.

¹⁶⁵ EA – Lease Timing Stipulation, NV-040-002-002.

¹⁶⁶ Patricelli, Gail L., Jessica L. Blickley, and Stacie L. Hooper. 2013. Recommended management strategies to limit anthropogenic noise impacts on greater sage-grouse in Wyoming. Human-Wildlife Interactions 7(2):230-249, Fall 2013.¹⁶⁷ Ibid.

¹⁶⁸ Holloran, M. J., R. C. Kaiser, and W. A. Hubert. 2010. Yearling greater sage-grouse response to energy development in Wyoming. J. of Wildlife Management 74:65-72.

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Blickley found in a treatment-control paired study that there was an immediate and sustained decline in male grouse attendance on leks subjected to human noise associated with well sites (29% decline on study drilling noise leks and 73% decline on study traffic noise leks relative to paired non-noise leks) and evidence of similar declines in female attendance.¹⁶⁹

Another study found that even light vehicular traffic of fewer than 12 vehicles/day substantially reduced nest initiation rates and increased the distance of nests from lek sites.¹⁷⁰

Many critical breeding and brood-raising activities occur off-leks and often at significant distances from the lek. Hence, the impact of human induced noise should not be limited to that on leks, and in fact quite often extends several kilometers from the lek.

To address these short comings, the Center requests that the following avoidance, minimization and mitigation measures be made part of any leases.

- Apply a 10 km non-surface occupancy around active leks and limit permitted disturbance to 1 per section and no more than 3% surface disturbance per section.
- Apply best management practices to minimize surface disturbing activities.
- All travel must be on designated open roads and trails, subject to seasonal restrictions.
- Whenever possible, bury existing transmission lines within 10 km from active leks.
- Implement raptor and raven discouraging designs for transmission and cellular infrastructure.
- Implement courtship, nesting, early-brood rearing and winter seasonal and timing restrictions for all human activities, including exploration.
- Avoid the surface disposal of produced water unless it can be proven to be beneficial to sage grouse and includes measures to preclude the spread of West Nile virus.

vi. The BLM Failed to Adequately Disclose or Analyze the Project's Impacts to Wetlands and Riparian Zones

Many of the proposed lease parcels, notable those in the Big Smokey Valley, are located in wet, marshy meadows, highlighted by water tables that are at or near the surface. These areas have springs and running surface water through out. As demonstrated by previous comments, the

¹⁷⁰ Lyon, A. G., and S. H. Anderson. 2003. Potential gas development impacts on sage-grouse nest initiation and movement. Wildlife Society Bulletin 31:486–491.

¹⁶⁹ Blickley, J. L., D. Blackwood, and G. L. Patricelli. 2012. Experimental evidence for the effects of chronic anthropogenic noise on abundance of greater sage-grouse at leks. Conservation Biology 26:461–471.

²⁹ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

threat to water resources from oil and gas development and particularly the practice of fracking are immense. It is totally inconceivable that fracking could be done in these valley bottoms without disastrous impacts to the water resources and the native plants and animals that depend on these ecosystems.

Yet, once again, the BLM wrongly defers any kind of analysis or disclosure, instead relying on the familiar – and illegal avoidance approach, stating:

"There would be no direct impacts to surface waters due to oil and gas leasing because no authorization for surface disturbance would be granted. Impacts from development activities would be analyzed under a separate site-specific environmental analysis."¹⁷¹

vi. The BLM Failed to Adequately Disclose or Analyze the Project's to the Geologic Stability of the Project Area

Located entirely in the Basin and Range Province, Nevada is a region of high average elevation, relatively thin continental crust, high levels of heat flowing out of the Earth, and a distinct mountain and valley topography. The crust in Nevada is both extending and shearing, largely in response to the motion between the Pacific and North American Plates. The extension is resulting in normal-slip faults that bound down-dropped blocks (basins), uplifted blocks (mountains), and tilted blocks (combination mountain and basin). Strike-slip faults also occur in this extending region but are fewer in number than the normal-slip faults.¹⁷² Thousands of Quaternary faults, hundreds of which are considered major (capable of producing earthquakes of magnitude 7+) exist in Nevada. Although faults are most common along range fronts, they also occur within valleys and mountain ranges.¹⁷³

Over the last 150 years, Nevada has been the third most active state in the Union in the number of large earthquakes. Since the 1850s, 63 earthquakes with potentially destructive magnitudes of 5.5 or greater have occurred in the state. Given the many "earthquake-generating" faults there are in Nevada, the geodetic deformation measured between the mountains, and the many historical earthquakes, it is clear that earthquakes will continue to occur in the state.¹⁷⁴

When hydraulic fracking is done, a process commonly used by operators to dispose of waste fluids—underground injection—has been associated with earthquakes in some locations. For example, a 2011 Oklahoma Geological Survey study reported that underground injection can induce seismicity. In March 2012, the Ohio Department of Natural Resources reported that "there is a compelling argument" that the injection of produced water into underground injection

¹⁷¹ EA page 26.

¹⁷² Nevada Bureau of Mines and Geology. Nevada Bureau of Mines and Geology, Special Publication 27, Third Edition, 2010, at 22.

¹⁷³ dePolo, Craig M. Quaternary Faults in Nevada. Available at: <u>http://www.seismo.unr.edu/Links</u> . 2008.
¹⁷⁴ Nevada Bureau of Mines and Geology. 2010 at 1.

³⁰ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

wells was the cause of the 2011 earthquakes near Youngstown, Ohio. In addition, the National Academy of Sciences released a study in June 2012 that concluded that underground injection of wastes poses some risk for induced seismicity, but that very few events have been documented over the past several decades relative to the large number of disposal wells in operation.¹⁷⁵

Other scientists have also found that at some locations the increase in seismicity coincides with the injection of wastewater in deep disposal wells. Much of this 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. It appears that the injected fluids are sending stable faults past their tipping points and inducing earthquakes.¹⁷⁶

Despite the known risk from fracking-induced earthquakes in Nevada and the potential damage from them to human health and safety and infrastructure, the ES does not even mention this threat, resulting in a violation of NEPA.

D. BLM Must Prepare an Environmental Impact Statement

BLM has violated NEPA by failing to produce an EIS because the oil and gas operations that may result from the lease sale clearly could result in significant impacts. This is especially true in light of the potential for fracking to occur on the leases. *Center for Biological Diversity, et al. v. Bureau of Land Management, et al.*, 2013 U.S. Dist. LEXIS 52432; 43 ELR 20076 (N.D. Cal. March 31, 2013) (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).

If an "EA establishes that the agency's action may have a significant effect upon the . . . environment," an EIS must be prepared. *Nat'l Parks & Conservation Ass'n*, 241 F.3d at 730 (emphasis in original; internal quotations omitted); *see also Hells Canyon Preservation Council v. Jacoby*, 9 F. Supp. 2d 1216, 1232 (D. Or. 1998) (a "plaintiff need not show that significant effects will in fact occur, but if the plaintiff raises substantial questions whether a project may have a significant effect, an EIS must be prepared"). If an agency decides not to prepare an EIS, it must supply a convincing statement of reasons to explain why a project's impacts are insignificant. *Blue Mountains Biodiversity Project*, 161 F.3d at 1211. Moreover, the Ninth Circuit has found that when an agency gives a "cursory and inconsistent treatment" of an issue,

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¹⁷⁵ U.S. Government Accountability Office. Oil and Gas: Information on Shale Resources, Development, and Environmental and Public Health Risks. GAO 12-732, September 2012.

¹⁷⁶ Lamont-Doherty Earth Observatory, Columbia University. Distant Quakes Trigger Tremors at U.S. Waste-Injection Sites, Says Study. July 11, 2013. Available at: <u>https://www.ldeo.columbia.edu/news-events/distant-quakes-</u> trigger-tremors-us-waste-injection-sites-says-study.

or no references or defense of a statement is given, "substantial questions" are raised, and an EIS is required. *Id.* at 1213-14.

In considering the potential for the lease sale to result in significant effects, 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:

The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The degree to which the proposed action affects public health or safety.

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.

40 C.F.R. § 1508.27(b)(4), (5), (2) & (9). See Center for Biological Diversity, et al. v. Bureau of Land Management, et al., 2013 U.S. Dist. LEXIS 52432; 43 ELR 20076 (N.D. Cal. March 31, 2013) (holding that BLM failed 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.

i. The effects on the human environment will be highly controversial

A proposal is highly controversial when "substantial questions are raised as to whether a project . . . may cause significant degradation" of a resource, *Nw. Envtl. Def. Ctr. v. Bonneville Power Admin.*, 117 F.3d 1520, 1536 (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 *Center for Biological Diversity, et al. v. Bureau of Land Management, et al.*, 2013 U.S. Dist. LEXIS 52432, 839; 43 ELR 20076 (N.D. Cal. March 31, 2013).

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Here, the controversy regarding the lease sale is fully evident. The stark contrast between BLM's dismissal of harms and the information this letter provides is plain evidence of controversy. Even though BLM has found that no significant impacts will result, 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.

Fracking is among the top, if not the single 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.¹⁷⁷ Similarly, the New York Draft DEC is conducting its own study of the impacts of fracking.¹⁷⁸ In Nevada, several anti-fracking grassroots groups have emerged along with petitions to ban the practice in Nevada, which to date have garnered more than 3200 signatures.¹⁷⁹ 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 Nevada in association with the lease sale is sufficient to trigger the need for an EIS. 40 C.F.R. § 1508.27(b)(4).

ii. The lease sale presents highly uncertain or unknown risks

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 and gas leasing that may facilitate fracking, "BLM erroneously discounted the uncertainty from fracking that may be resolved by further collection of data, or where collection of such data may prevent speculation on potential effects." *Center for Biological Diversity, et al. v. Bureau of Land Management, et al.*, 2013 U.S. Dist. LEXIS 52432, *42; 43 ELR 20076 (N.D. Cal. March 31, 2013) quoting *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233, 1240 (9th Cir. 2005)).

¹⁷⁷ U.S. Environmental Protection Agency, Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources (November 2011).

¹⁷⁸ NYDEC SGEIS

¹⁷⁹ <u>http://petitions.moveon.org/sign/nevadas-public-health.fb28?source=c.fb&r_by=5006637</u> <u>http://org.credoaction.com/petitions/nevada-s-public-health-is-at-risk-we-want-a-moratorium-on-hydraulic-fracturing</u>

http://petitions.moveon.org/sign/prevent-fracking-in-nevada/?source=search http://org.credoaction.com/petitions/ban-fracing-in-nevada?source=facebook-share-button&time=1374605460

³³ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

A recent report from the Council of Canadian Academies concluded that:

"Well-targeted science is required to ensure a better understanding of the environmental impacts of shale gas development...Currently, authoritative data about potential environmental impacts are neither sufficient nor conclusive."¹⁸⁰

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, 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.

iii. The lease sale poses threats to public health and safety

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). For instance, the lease sale included parcels that are situated in close proximity to the Duckwater Indian Reservation, and the towns of Lund, Preston and McGill. Fracking would pose a grave threat to the region's water quality. As a congressional report noted, oil and gas companies have used fracking products containing at least 29 products that are known or possible carcinogens, regulated for their human health risk, or listed as hazardous air pollutants.¹⁸¹ The exposure of the public to these harmful pollutants would plainly constitute a significant impact, and thus, the threats to public health dictate preparation of an EIS.

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.¹⁸² 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, and her skin turned yellow, and she was diagnosed with chemical poisoning.¹⁸³ Thus, exposure to fracking fluid would constitute a significant impact and BLM should evaluate such impacts in an EIS.

¹⁸⁰ Council of Canadian Academies, 2014. Environmental Impacts of Shale Gas Extraction in Canada. Ottawa (ON): The Expert Panel on Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction, Council of Canadian Academies.

 ¹⁸¹ Waxman, Henry et al., United States House of Representatives, Committee on Energy and Commerce, Minority Staff, Chemicals Used in Hydraulic Fracturing (Apr. 2011) ("Waxman 2011")
 ¹⁸² Wiserman at 138-39.

¹⁸³ *Id*.

³⁴ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

As previously discussed, there is emerging information on the risk of earthquakes induced by wastewater injected into areas near faults, posing risks to the residents of the Duckwater Indian Reservation, McGill, Ely and points beyond.

iv. The Lease Sale Action Will Adversely Affect Candidate and Agency Sensitive Species and Their Habitat

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. *Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv.*, 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").

Here, the lease sale could result in significant impacts to petitioned species, in particular, the greater sage grouse, a candidate species.

There are other rare species threatened by the proposed lease, highlighted in section "iv" of these comments.

D. BLM's Proposed Lease Sale Violates the Mineral Leasing Act Because it does not Require that Lessees take all Reasonable Precautions to Prevent the Waste of Natural Gas

In addition to failing to comply with NEPA, BLM has also violated the substantive provisions of the Mineral Leasing Act ("MLA") by not requiring as binding lease terms that lessees take reasonable actions to prevent the waste of natural gas. BLM must include in any leases it issues, provisions ensuring that lessees take all reasonable precautions to prevent the waste of gas. BLM cannot reasonably dispute that it was required to ascribe conditions at the time of the lease sale to prevent waste of natural gas from any oil and gas operations occurring on the leases, yet the EA simply states that the proposed action would be in conformance with the MLA as amended and supplemented.¹⁸⁴

As discussed above, oil and gas operations typically result in significant avoidable emissions, meaning waste, of natural gas. Both oil and gas operations produce large amounts of natural gas waste. Fracking is particularly wasteful, as it emits more natural gas than conventional operations. This waste is largely composed of methane, but also contains significant amounts of dangerous VOCs. Numerous available technologies can reduce emissions economically, often providing operators another stream of income by capturing salable gas.

¹⁸⁴ EA page7.

³⁵ Center for Biological Diversity Protest of BLM's July 17, 2014 Oil and Gas Competitive Lease Sale and Environmental Assessment Environmental Assessment DOI-BLM-NV-B000-2014-0001-EA

Failure to employ available technology to reduce these emissions is wasteful, in that it represents a massive waste of a valuable resource, a loss of federal revenue in the form of royalty payments, and unnecessary air pollution. However, barriers often exist to companies implementing these technologies, including the fact that many lessees are unaware of the economic advantages of the technologies, often because they do not have the time or expertise to undertake a proper analysis.

As discussed above, preventing the waste of natural gas has many important benefits. In addition to constituting a wasted resource and lost revenue for the federal government, methane emissions are harmful to human health and the environment. Methane is an ozone precursor, meaning that it reacts in the atmosphere to form ozone, which has significant negative effects on human health, including exacerbating asthma and causing premature death. Methane is also a powerful driver of climate change. A co-benefit of preventing methane emissions would be a reduction in VOC emissions. VOC air pollution also forms ozone, and many of the VOCs that form ozone are also air toxics, such as benzene and 1,3-butadiene, and some can react in the atmosphere to form hazard air pollutants such as formaldehyde. 76 Fed. Reg. 52,737 (EPA's proposed NSPS for oil and gas operations); 64 Fed. Reg. 38,706, 38,727 (EPA notice regarding toxic air pollutants). These air toxics and hazardous air pollutants can be very harmful to human health, with many being linked to cancer. See, e.g., 71 Fed. Reg. 15,804, 15,810 (EPA proposal regarding hazardous air pollutants). Benzene in particular raises this risk; an EPA assessment noted that benzene was the largest contributor to cancer risk of all the pollutants quantitatively assessed. Id. Air toxics can also result in noncancerous injuries, such as irritation to the eyes, nose, and throat tissue. Id. at 15,818. Thus, controlling VOCs can lead to a reduction in these harmful air pollutants and associated injuries as well.

The MLA requires the prevention of the waste by requiring that BLM demand lessees take all reasonable measures to prevent the waste of natural gas. The MLA states:

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.

30 U.S.C. § 225; *see also id.* § 187 (stating that for the assignment or subletting of leases that "[e]ach lease shall contain . . . a provision . . . for the prevention of undue waste"). This statutory mandate is unambiguous and must be enforced. *Tenn. Valley Auth. v. Hill*, 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.").

Although this mandate is plain and applicable on its face, the legislative history and BLM's own regulations further indicate that the purposes of this provision apply here. These sources demonstrate concern with conservation of publicly owned minerals, collection of governmental revenue, and protection of the environment. The legislative history, for example,

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demonstrates that Congress was deeply concerned with the issue of waste and expected the agency to require operational controls to prevent the waste of oil or gas. Congress enacted the law in large part as a response to a perceived waste of petroleum resources that the nation might need in the future. *Boesche v. Udall*, 373 U.S. 472, 481 (1963). Indeed, Congress was so concerned with this issue that "[c]onservation through control was the dominant theme of the debates." *Id.* (citing H.R. Rep. No. 398, 66th Cong., 1st Sess. 12-13; H.R. Rep. No. 1138, 65th Cong., 3d Sess. 19.). Further, the history states that "[t]he legislation provided for herein . . . will [help] prevent monopoly and waste and other lax methods that have grown up in the administration of our public-land laws." *Boesche*, 373 U.S. at 481 (quoting H.R. Rep. No. 1138, 65th Cong., 3d Sess. 19) (internal quotation marks omitted). BLM regulations interpret the statute to require that operations "protect[] other natural resources and the environmental quality, protect[] life and property and result[] in the maximum ultimate recovery of oil and gas with minimum waste and with minimum adverse effect on the ultimate recovery of other mineral resources." 43 C.F.R. § 3161.2.

Given the plain language of the MLA, BLM cannot reasonably dispute that it was required to ascribe conditions at the time of the lease sale to prevent waste of natural gas from any oil and gas operations occurring on the leases.

However, BLM has failed to require as lease terms that lessees use "all reasonable precautions to prevent waste" of natural gas when drilling on the leases. 30 U.S.C. § 225. The leases should require, at a minimum, the cost effective controls this letter discusses above. Yet, the record provides no evidence that BLM even considered that such measures might be required by BLM's obligations under the MLA.

BLM's failure to ensure at the lease sale stage that lessees will implement all reasonable precautions violates the MLA.

Insofar as BLM believes that it will be able to require measures to reduce waste at the drilling permit stage, this ignores both the MLA's explicit command to require these measures in leases and the fact that BLM enjoys more limited authority at the permitting stage. *See, e.g.*, 43 C.F.R. § 3101.1-2 (BLM regulations providing that lessees "have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to" limited conditions, including lease stipulations, "specific, nondiscretionary statutes," and limited "reasonable measures" that do not preclude development). Finally, even if BLM's treatment of methane and waste in the EA could somehow be deemed to be a finding that it would not be reasonable to impose measures beyond those already required by other entities, such a conclusion is plainly arbitrary. The MLA clearly demands that BLM require lessees use not some, but "all reasonable precautions" to prevent waste of natural gas. 30 U.S.C. § 225. Any rational reading of this provision would require that an agency consider insisting on the use of available technological controls.

In sum, BLM's proposed action violates the MLA by failing to ensure via lease terms that lessees take all reasonable precautions to prevent emissions of natural gas.

E. BLM has Violated the Federal Land Policy and Management Act by Failing to Require the Conservation of Natural Gas

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." *Mineral Policy Ctr. v. Norton*, 292 F.Supp.2d 30, 41-43 (D. D.C. 2003). The protective mandate applies to BLM's planning and management decisions. *See Utah Shared Access Alliance v. Carpenter*, 463 F.3d 1125, 1136 (10th Cir. 2006) (finding that BLM's authority to prevent degradation is not limited to the RMP planning process). GHG pollution may cause "undue" degradation, even if the activity causing the degradation is "necessary." Where GHG pollution is avoidable, it is "unnecessary" degradation. 43 U.S.C. § 1732(b).

As explained above, natural gas emissions from oil and gas activities are wasteful because they waste a valuable resource and can be prevented easily. Also, those emissions are harmful to human health and the environment. Consequently, the waste of natural gas is both "undue" and "unnecessary," and BLM's proposed action violates FLPMA because the agency has not take the steps necessary "to prevent unnecessary or undue degradation of the [public] lands." *See* 43 U.S.C. § 1732(b).

In conclusion, the Center finds the NEPA analysis and basis to support this lease sale woefully inadequate and requests that this lease sale be canceled or at the minimum deferred until the deficiencies can be addressed and until the agency makes a decision on the proposed plan amendment for greater sage grouse in Northeast California and Nevada.

Sincerely yours in conservation,

VA Moske

Senior Scientist

Cc: Ted Koch, U.S. Fish and Wildlife Service Jeff Scott, U.S. EPA Region 9, Communities and Ecosystems Division

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Attachments: References used are on the enclosed DVD.

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