AMERICAN BIRD CONSERVANCY

Shaping the future for birds

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Via email blm_co_nw_sage_grouse@blm.gov

Northwest Colorado Greater Sage-Grouse Environmental Impact Statement Comments from American Bird Conservancy

Dear Ms. Jones:

American Bird Conservancy (ABC) is pleased that BLM is leading the effort to conserve the Greater Sage-Grouse, one of the most iconic and imperiled bird species of the American West and appreciate this opportunity comment on the Northwest Colorado Greater Sage Grouse Environmental Impact Statement.

ABC is concerned that BLM's preferred alternative does not comply with the best available science or with standards necessary to stabilize and recover grouse populations. I encourage BLM to adopt the conservation measures in Alternative C to ensure sustainable management and to conserve the species. These include recommendations to limit future development and to create protected areas.

A report by the U.S. Geological Survey and other peer-reviewed research indicate that conserving the Greater Sage-Grouse will require both protecting large areas of habitat and making significant changes in land management to reverse population declines of this wide-ranging species. The Survey found that most priority sage-grouse habitat is already heavily degraded and that grouse are only persisting in large, relatively undisturbed blocks of habitat. The species' survival requires a plan that will effectively reduce the rate of its decline and stabilize its population.

For years, fossil fuels production and other commercial uses have dominated public land management across sagebrush habitats, resulting in significant impacts to wildlife, public recreation, and air and water quality. Protecting large expanses of important sage-grouse habitat—as outlined in Alternative C—will help stem the decline of many species of wildlife

across the American West. This alternative will also begin restoring balance to an over-utilized and degraded landscape, while at the same time identifying areas most appropriate for development and those that need to be avoided.

Only the Conservation Alternative C Follows the Best Available Science

The agency is tasked with developing adequate regulatory mechanisms range-wide to conserve Greater Sage-Grouse to avoid the need to list the species under the Endangered Species Act. To accomplish this, the agency will need to demonstrate it is utilizing the best available science and conservation standards.

While we have concerns about the grazing section, the National Technical Team report has provided a good baseline summary of the threats and appropriate conservation measures based on the best available science. Similarly, the USGS baseline study offers an important assessment of current habitat conditions and exposes the problem of overlapping cummative direct and indirect impacts on grouse.

We urge the agency to consider these studies closely, and to exceed them in regards to grazing and to designate protected areas to preserve and maintain high-quality habitat necessary to reverse population declines.

A review of Table 2.4 raises concern that the preferred alternative is not following the best available science. In some cases the draft preferred goes beyond the NTT report and applies conservation recommendations to all grouse habitat, not just priority habitat.

But, in more than half of the program areas (45 of 84) where it could be determined, the preferred alternative chose a standard below what is recommended by the NTT report. Similarly, the findings of the USGS baseline report indicate that the proposed Area of Critical Environmental Concern is necessary to conserve the species, but it was not included in the draft preferred alternative.

The draft points out significant threats and impacts from past, current, and planned cumulative actions taken by the BLM and Forest Service. For example, the draft notes beginning on page 947:

Across Management Zones II and VII, livestock grazing ranks just below energy development and urbanization as a threat in eastern portions of the range of GRSG (Stiver et al. 2006). Additionally, a large portion of central regions of Management Zones II and VII (close to 5 million acres) is federally managed wild horse and burro range, resulting in potential for effects on GRSG from livestock grazing and the compounding effects of feral grazers (Manier et al. 2013).

There are currently 6 authorized fluid mineral leasing projects covering 640,500 acres in the planning area and 12 additional proposed projects covering 2,328,000 acres (not all projects listed in **Table 5.1**, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario, include acreages). For solid minerals, 12 coal projects covering 172,800 acres have been authorized; 2 additional coal mines covering 58,500 acres are proposed.

Currently, a 95-mile pipeline within the planning area has been authorized for natural gas transport. Five transmission lines have been proposed crossing northwest Colorado and southern Wyoming. Six wind farms have been proposed, which would impact a total of approximately 86,100 acres, and 4 wind farms have been authorized on 305,500 acres.

Energy development is considered the greatest threat to GRSG in Management Zones II and VII (Manier et al. 2013). Development can result in direct habitat loss; fragmentation of important habitats by roads, pipelines, and power lines; noise; and direct human disturbance. There are currently approximately 5,500 acres of wells on federal mineral estate within the planning area. The effects of energy development often add to the impacts from other human development and result in GRSG population declines. Population declines associated with energy development result from the abandonment of leks, decreased attendance at leks that persist, lower nest initiation, poorer nest success, decreased yearling survival, and avoidance of energy infrastructure in important wintering habitat areas (Holloran 2005; Aldridge and Boyce 2007).

Nonrenewable (oil and gas) energy development impacts GRSG and sagebrush habitats through direct disturbance and habitat loss from well pads, access construction, seismic surveys, roads, power lines, and pipeline corridors; indirectly from noise, gaseous emissions, changes in water availability and quality, and human presence. The interaction and intensity of effects could cumulatively or individually lead to habitat fragmentation in the long term (Connelly et al. 2004; Holloran 2005). Renewable energy facilities, including solar and wind power, typically require many of the same features for construction and operation as do nonrenewable energy resources. Therefore, impacts from direct habitat losses, habitat fragmentation through roads and power lines, noise, and increased human presence will generally be similar to those for nonrenewable energy development (USFWS 2010).

Across Management Zones II and VII, energy development – primarily oil and gas development – and supporting infrastructure are the major threat to GRSG habitats and populations (USFWS 2013). Approximately 7.8 million acres (21 percent) of GRSG habitats in these management zones are currently leased for development of federal natural gas or oil reserves. The Management Zones also have leases for the research of oil shale extraction in the southern populations (Manier et al. 2013). Less than 1 percent of PPH and PGH are directly influenced by a natural gas or oil well, but 99 percent are within the likely effects buffer (11.8 miles) of these wells. The potential for coal mining, geothermal energy development, oil shale development, and wind energy development are widespread throughout the Management Zones (Manier et al. 2013).

The North Park area has potential for natural gas, coal-bed methane, and oil extraction, and energy development leases now cover 29 percent of the public land (USFWS 2013). Energy companies also own much of the conservation lands in Parachute-Piceance Basin, and advances in drilling technology and natural gas demand have led to a major increase in drilling activity (USFWS 2013).

Table 5.1, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario, shows that substantial new well development is anticipated in the planning area, with more than 3,800 new wells and pads projected on BLM-administered and National Forest System land alone. It is unclear to what extent these numbers would be reduced under the action alternatives. Under Alternatives B and C, the BLM/USFS would close GRSG habitat to fluid mineral leasing, which would limit the amount of future development. Restrictions on future leasing in Alternatives B and C are intended to reduce well construction in GRSG habitat compared to Alternative A, and closing areas to mineral leasing would eliminate new disturbances in these areas. Thus, management under Alternatives B or C would be more protective of GRSG habitat areas than Alternatives A or D. On non-BLM-administered and non-National Forest System lands, state regulators and oil and gas leaseholders would try to avoid and establish buffers around leks and breeding areas, and reduce disturbance from existing energy development sites in Colorado and Wyoming. Given the high numbers of projected new wells and coal mines, wind farms, transmission lines and ROWs, energy development will likely remain a threat to GRSG under any of the alternatives throughout the Management Zones.

Due to the extreme degree on ongoing and planned energy development, creating protected areas is necessary to ensure that the agency can address the problem of cumulative impacts

and ensure sufficient grouse habitat will remain. Under Alternative C, 912,000 acres of priority habitat would become the Sage-Grouse Habitat ACEC – ABC urges BLM to designate this ACEC.

The draft concludes this section by stating:

Under any alternative, despite BLM, USFS, and state and local actions, overall trends toward habitat loss are likely to continue in the smaller and higher-risk population areas of the Colorado Plateau due to effects from energy, urbanization, habitat conversion, and infrastructure development pressures in GRSG habitat. The larger, less fragmented populations of Northwest Colorado and North Park are more resilient and may buffer the regional GRSG population against continuing decline.

This passage raises concern that the draft has not chosen an alternative that will change the "overall trends toward habitat loss." It does however recognize the importance of the Northwest Colorado population. Preserving existing habitat strongholds is an essential strategy to demonstrate that viable populations will persist.

In conclusion, the agency finds on page 956 that: "Under Alternative C, management actions would provide more protection to GRSG on BLM-administered and National Forest System land in Management Zone II and VII than any other alternative." ABC concurs and urges that a strengthened Alternative C be adopted on the final decision.

The Greater Sage-Grouse Conservation Alternative

American Bird Conservancy and other groups have publicly expressed support for the National Greater Sage-Grouse Planning Strategy and have offered recommendations to ensure its success most recently in a letter sent to U.S. Department of the Interior Secretary Jewell in July 2013 (www.abcbirds.org/pdfs/Conservation_Organizations_Letter_Secretary_Jewell_Sage-Grouse.pdf).

During scoping, conservation groups submitted to the Bureau of Land Management (BLM) a comprehensive conservation alternative to support and inform the planning process attached to this comment and available at http://bit.ly/KdDwD8. In our view, this conservation alternative represents what is necessary to conserve Greater Sage-Grouse in perpetuity, and to provide the agency with an appropriate regulatory framework to manage the land moving forward. We urge that its recommendations, some of which are reiterated in the text of this comment letter, be included in the final EIS and RMP.

Our alternative, the "Sage-Grouse Recovery Alternative" (recovery alternative), is reasonable and scientifically sound. It seeks to maintain and increase current sage-grouse abundance and distribution by conserving, enhancing and restoring sagebrush steppe. It is an evidence-based alternative that takes a precautionary approach to resource management. It will likely differ from other alternatives developed in the planning process in at least two key ways:

1. *The Sage-Grouse Recovery Alternative prescribes additional, and more restrictive, conservation measures than the Report on National Greater Sage-grouse Conservation Measures.* The BLM convened a Sage-Grouse National Technical Team (NTT) in 2011 to review information on sage-grouse and sagebrush steppe and produce "A Report on National Greater Sage-grouse Conservation Measures" (SGNTT 2011). The BLM will primarily consider management recommendations in that report in the planning process (BLM Memo 2012-044). However, the NTT's assessment and recommendations for some planning issues, such as livestock grazing and associated infrastructure, vegetation management, invasive plants, and wind energy development, are insufficient to robustly conserve sage-grouse across its range. The Sage-Grouse Recovery Alternative incorporates information from other agency and peer-reviewed references to make additional and stronger management prescriptions for these land uses and related effects.

2. *The Sage-Grouse Recovery Alternative recommends that the BLM designate a system of Areas of Critical Environmental Concern (ACECs) to conserve sage-grouse and other sagebrush-dependent species.* The planning notices invite the public to propose ACECs in scoping comments (76 Fed. Reg. 77011). The Sage-Grouse Recovery Alternative recommends criteria for identifying a system of ACECs (BLM) and Sagebrush Conservation Areas (USFS) rangewide to serve as refugia for sage-grouse and other species.

Recommended Guidelines for Designating Sagebrush Reserves

1. Protect Large Expanses of Sagebrush Steppe

Greater Sage-grouse are a landscape species (Connelly et al. 2011a). Migratory populations have large annual ranges that can encompass >2,700 km^2 (1,042 mi^2/667,184 ac) (Knick and Connelly 2011a, *citing* Dalke et al. 1963; Schroeder et al. 1999; Leonard et al. 2000) (the species may use up to 2,500 mi^2 per population (Rich and Altman 2001)). Large-bodied birds are generally more strongly affected by habitat loss and fragmentation (Winter et al. 2006). Although conclusive data on minimum patch size is unavailable (Connelly et al. 2011a), conserving large expanses of sagebrush steppe is the highest priority to conserve sage-grouse (Aldridge et al. 2008; Connelly et al. 2011b). Knick and Hanser (2011) identified ten lek complexes that were >5,000 km^2 (1,930 mi^2/1,235,526 ac) (range 5,395–100,288 km^2) and 8 of them contained >100 leks (range 143–1,139). Some sagebrush-dependent species use different habitat composition, structure or succession than sage-grouse prefer. Protecting large blocks of habitat will also help preserve a mosaic of different habitats of varying successional stages used by sage-grouse and other sagebrush-dependent species.

2. Protect Small Areas and Connectivity in Sagebrush Steppe

Protecting small habitat patches can help connect larger areas. Conservation strategies for sage-grouse should preserve networks of populations and/or habitat patches, including

connecting smaller lek complexes within 18 km that could serve as intermediary islands of habitat for dispersing sage-grouse (Knick and Hanser 2011). Protecting small habitat patches is also important to conserve smaller birds and maintain avifaunal diversity (Winter et al. 2006).

Sage-grouse may move long distances between seasonal habitats (Connelly et al. 1988). Annual movements of 40-160 km (24.8-99.4 mi) by sage-grouse along established routes have been reported (Dalke et al. 1963; Connelly 1982; Leonard et al. 2000). Although much is still unknown about the distribution, configuration, and characteristics of sage-grouse migration corridors (Connelly et al. 2011a), Beck et al. (2006) recommended conserving habitat corridors to facilitate easier movement for migratory sage-grouse.

3. Protect Sage-Grouse Leks, and Nesting and Brood-rearing Habitats

The loss and degradation of nesting and brood-rearing habitats, which leads to reduced nesting success and increased chick mortality, appears to be a primary cause of declining Greater Sage-grouse populations rangewide (Aldridge and Boyce 2007; Holloran et al. 2005). Most sage-grouse nesting and brood-rearing habitat is found near sage-grouse leks. Sage-grouse conservation strategies should focus on protecting leks and associated habitat.

- Conservation of sagebrush within 5 km (3.1 miles) of sage-grouse leks was recommended to maintain most nesting and early brood-rearing habitat used by nonmigratory populations, whereas 18-km radii (11.2 miles) have been recommended for migratory populations (Wakkinen et al. 1992; Connelly et al. 2000; Holloran and Anderson 2005).
- Braun (2006, unpublished report) recommended restricting surface occupancy and construction of new roads within 5.5 km (3.4 mi) of active sage-grouse leks.
- A 4-mile (6.4 km) lek buffer encompassed 74-80 percent of sage-grouse nests in Montana and Wyoming (Moynahan 2004; Holloran and Anderson 2005).
- Doherty et al. (2010b), in mapping breeding densities of Greater Sage-grouse rangewide, buffered leks by 8.5 km (5.3 mi), identified by Holloran and Anderson (2005: 746) as an area of interest.
- 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 (Doherty et al. 2010a).
- Sage-grouse nesting habitat was accurately predicted up to 20 km (12.4 mi) from leks in the Powder River Basin in Montana and Wyoming (Doherty et al. 2010a).
- Movements from lek sites to nesting locations can exceed 25 km (15.5 mi) (Holloran and Anderson 2005).
- Characteristics of sagebrush steppe within 54 km (33.6 miles) of sage-grouse leks might influence seasonal movements and also incorporate habitats used outside the breeding season (Swenson et al. 1987; Leonard et al. 2000).

GIS modeling can identify sage-grouse habitat, but only at a larger scales (Doherty et al. 2010a). Within areas identified by GIS modeling as nesting habitat, there is some local variability in which sites are actually suitable for nesting. For example, sage-grouse nests may be clumped in one area, but not other areas the same distance from a lek.

4. Protect Other Seasonal Habitats

Conservation strategies focused on conserving sage-grouse nesting and brood-rearing habitats that fail to address other important seasonal habitats may not yield intended benefits for sage-grouse (Connelly et al. 2000; Doherty et al. 2008). For example, sage-grouse consume forbs in summer found at mesic sites (e.g., wet meadows, riparian areas) and/or at higher elevations (Connelly et al. 2011a, citing others). A lack of mesic sites (for example, during dry years) can be limiting on sage-grouse due to lack of summer food sources (Aldridge 2000). Conservation strategies should seek to protect and restore mesic sites in sage-grouse habitat.

The availability of winter habitat is also important to sage-grouse persistence. The quality of winter habitat appears to influence the abundance and condition of female sage-grouse and their nesting effort and clutch sizes in spring (Moynahan et al. 2007). The species depends almost exclusively on sagebrush exposed above the snow for food and shelter (Connelly et al. 2011a, citing others). Suitable winter habitat is often on wind swept ridges, south-facing slopes or in protected draws (Braun et al. 2005). These landscape features may be limited in some areas (*e.g.,* Beck 1977). Winter habitat should be locally identified and conserved (Braun et al. 2005, *citing* Connelly et al. 2000 and others; Moynahan et al. 2007).

5. Protect a System of Reserves

A system of reserves must conserve a large proportion of habitat to sustain biological processes and conserve species. The commonly cited goal of conserving 10 percent of a given landscape lacks basis in science (Soulé and Sanjayan 1998; Svancara et al. 2005). Much larger areas, perhaps 50 percent of rangewide distribution, may be necessary to conserve biodiversity and ecosystem integrity (Soulé and Sanjayan 1998). Conservation sites identified by experts to protect diverse habitats and species (including sage-grouse) in the Great Basin covered 40 percent of the region (Nachlinger et al. 2001, unpublished report). A system of reserves must be large enough to achieve the goals of biological representation, and ecological redundancy and resiliency within an ecosystem (Svancara et al. 2005). The percentage area needed to conserve biodiversity and ecosystem processes should emerge from the biological requirements of species. Braun (2006, unpublished report) recommended conserving large blocks of sagebrush steppe (in excess of 20 mi^2), one per Township (36 mi^2), in fragmented habitat to conserve sage-grouse.

A system of reserves should protect centers of species abundance on the landscape. Doherty et al. (2010b) found that, while sage-grouse occupy large areas, their breeding distribution is

aggregated in relatively small areas. Areas representing 25 percent of the known sage-grouse population were 3.9 percent of the species range, and 75 percent of sage-grouse were within 27 percent of the species range (Doherty et al. 2010b).

A system of reserves should protect peripheral and/or genetically distinct populations of species. Peripheral populations are often located at the ecological limits of a species range, where species are exposed to environmental circumstances that may later become prevalent in central populations, such as effects from climate change. Such testing of the periphery can act to stabilize the entire species in the face of environmental change (Lesica and Allendorf 1995). Genetically distinct populations increase genetic diversity in a species and expand the genetic background against which natural selection occurs (Lesica and Allendorf 1995). Reserves should be designated to protect the Columbia Basin and Bi-State distinct population segments of Greater Sage-grouse in Washington (Wisdom et al. 2005c) and eastern California/southwestern Nevada, respectively.

A system of reserves should prioritize preservation of areas have moderate or high potential to be maintained or restored in the face of climate change, cheatgrass incursion, unnatural fire and effects from historic and current land uses (*see* Wisdom et al. 2005c). In general, most areas with high potential to maintain or restore sagebrush communities are concentrated in Wyoming, eastern Idaho and northern Nevada. Areas with very low, low, or moderate potential to maintain or restore sagebrush are concentrated in Washington, Oregon, western Idaho and much of Nevada (Wisdom et al. 2005c).

Planning Criteria to Consider

BLM planning guidance requires that the agency address planning issues and follow planning criteria when developing and revising land use plans (BLM Handbook 1610-1). Planning criteria guide the development of a plan by defining the planning space involved. Described another way, the preferred alternative must meet the planning criteria. The planning criteria and issues associated with the recovery alternative draw on objectives and guidelines for sage-grouse conservation in the NTT report and other sources:

- Designate priority sage-grouse habitat in each WAFWA management zone (Stiver et al. 2006) across the current geographic range of sage-grouse that are large enough to stabilize populations in the short-term and enhance populations over the long-term.
- Maintain or increase current sage-grouse populations, and manage or restore priority habitat so that at least 70 percent of the land cover provides adequate sagebrush habitat to meet sage-grouse needs.
- Protect priority habitat from large-scale anthropogenic disturbances that will adversely affect sage-grouse distribution and abundance at any level. Disturbances include but are not limited to highways, roads, transmission lines, substations, wind turbines, oil and gas wells, heavily grazed areas, range developments, severely burned areas, pipelines, landfills, mines, and vegetation treatments that reduce sagebrush cover.

- If priority habitat cannot be protected from disturbance (e.g., due to valid existing rights), minimize impacts by limiting permitted disturbance to one instance per section of sage-grouse habitat regardless of ownership, with no more than three percent surface disturbance (or, where stipulated, implement the disturbance cap prescribed in the applicable state conservation plan, whichever is more protective).
- Ensure that unavoidable small scale disturbances do not cumulatively disturb more than three percent of each priority area.
- Increase the amount of protected priority habitat by aggressively using available tools to resolve land use conflicts, including fluid mineral lease retirement, voluntary grazing permit retirement, mineral withdrawal, coal unsuitability findings, and mineral claim buyout.
- Reduce road density in priority habitat, and establish exclusion areas for new right-of-way permits.
- Ensure that disturbance or land uses permitted outside priority habitat do not negatively impact sage-grouse populations in priority habitat.
- Manage range resources to meet sage-grouse habitat objectives.
- Only implement vegetation treatments that are demonstrated to benefit sage-grouse and retain sagebrush height and cover consistent with sage-grouse habitat objectives.
- Design and implement fuels treatments to protect existing sagebrush ecosystems and support sage-grouse habitat objectives.
- Require adequate protections for sage-grouse general habitat to maintain habitat connectivity, and support sage-grouse persistence and management goals in priority habitat.
- Identify sage-grouse restoration habitat; use primarily passive restoration to restore these areas to support sage-grouse objectives.
- Designate sagebrush reserves (ACECs, SCAs) and develop management stipulations to achieve sage-grouse conservation goals.
- Ensure that plan implementation includes both agency and independent verification through collaborative monitoring.
- Evaluate actions using independent peer review standards (OMB 2004; DOI 2010; USDA 2011).
- Provide a linked sequence of measurable objectives for goals, needed land use prescriptions, actions taken to resolve identified issues, and verifiable monitoring.
- The preferred alternative should be achievable under current and foreseeable agency resources.

National Technical Team (NTT) Report: A Science Foundation to Build On

Although the Buffalo RMP conservation alternative considers the conservation measures in the NTT report, the draft instead adopts some version of Wyoming's sage-grouse strategy as the preferred alternative for managing the species. That strategy, developed by the state and generally adopted by Wyoming BLM in statewide sage-grouse management guidance, is likely to be inadequate to fully recover sage-grouse for the long-term. There are significant

differences between the Wyoming strategy and recommendations in the NTT report (see Appendix 5). The Wyoming sage-grouse amendments and individual RMP revisions must not adopt weaker management prescriptions for sage-grouse than land use plans in other states and regions are expected to use.

The NTT report defines "discrete" disturbances to include roads, transmission lines, oil and gas wells, wind turbines and similar, definite development (SGNTT 2011: 8). The three percent disturbance threshold does not include "diffuse" disturbances; the NTT report identifies livestock grazing and fire (depending on the scale and effects) as diffuse disturbance (SGNTT 2011: 8). We are concerned that the NTT report defines the pervasive, tangible, cumulative effects of livestock grazing as "diffuse." The NTT report notes that "diffuse disturbance over broad spatial and temporal scales can have similar, but less visible effects" (SGNTT 2011: 8). The BLM and USFS should consider heavily grazed areas and range developments as discrete disturbance in sagebrush steppe.

The NTT report identifies remaining areas outside priority sage-grouse habitat as "general habitat" (SGNTT 2011: 9). The NTT report lists sub-objectives for general habitat that include quantifying and delineating general habitat to buffer and connect priority areas; serve as potential replacement priority habitat; and serve as potential restoration sites (SGNTT 2011: 9-10). The recovery alternative, which is structured like the NTT report, also stipulates conservation measures based on habitat designation. In addition to "priority" and "general" habitat, the recovery alternative would designate two additional habitat types: ACECs and "restoration" habitat.

The Wyoming Core Area Strategy Needs Strengthening

A study by Copeland et al. (2013) assessing the Wyoming "core area" conservation strategy, which Bureau of Land Management (BLM) plans including the Buffalo draft RMP have generally adopted as the preferred alternative, predicted that recommended conservation measures will reduce the rate of sage-grouse's decline, but will not stabilize grouse numbers or provide for the species' recovery. This indicates that the preferred alternative must be modified. Another study by Knick et al. (2013) concluded that sage-grouse appear to need greater protection, a three percent disturbance standard, rather than the five percent standard provided by the Wyoming core area strategy.

The State and Wyoming BLM have failed to incorporate new scientific information in their strategies to enhance sage-grouse conservation—even, in the case of Wyoming BLM, that produced by their own agency. In 2011, the BLM convened a Sage-Grouse National Technical Team (NTT) to review scientific and management information on sage-grouse and sagebrush steppe and produce "A Report on National Greater Sage-grouse Conservation Measures" (SGNTT 2011). The report recommended new management prescriptions that are more conservative than the Wyoming Core Area strategies. The NTT report is a scientific benchmark against which the Wyoming Core Area strategies can be measured.

a. The Wyoming Core Area strategies allow too much surface disturbance in core sage-grouse habitat.

Land surface disturbance in sage-grouse habitat is well known to affect the species. Disturbance thresholds are commonly applied in areas of energy development. Under the Wyoming Core Area strategies, the amount of cumulative disturbance allowed in sage-grouse core habitat is five percent per square mile, as calculated by an algorithm known as the Density Disturbance Calculation Tool (DDCT). The DDCT is used to establish an area for measuring the amount of disturbance that may be allowed under a project proposal. The DDCT essentially buffers a proposed project area by 4 miles, identifies all occupied leks within this area and buffers them by 4 miles, and uses the combined area as the denominator to calculate the total land area from which to derive the total percentage of land that could be disturbed by the project.

The five percent disturbance threshold is not known to conserve sage-grouse long-term and is only a best guess by agencies and others seeking to accommodate development in sage-grouse habitat. Past projects approved prior to implementation of the Wyoming Core Area strategies indicate that sage-grouse are adversely affected at lower levels of disturbance. For example, for the Continental Divide/Wamsutter II Natural Gas Project approved in 2000, 3,000 wells were proposed with 22,400 acres of new surface disturbance, representing 2.1 percent of the planning area (with an average well density of 4 wellsites per square mile) (BLM 2000); today, sage-grouse are virtually extirpated in this area, although more than 50 leks existed prior to the project.

In contrast to the Wyoming Core Area strategies, the NTT report recommends managing priority sage-grouse habitat so that discrete anthropogenic disturbances cover less than three percent of any single square-mile section regardless of ownership (SGNTT 2011 at 7). Furthermore, once the three percent limit is reached, additional surface-disturbing projects are precluded, and in cases where the three percent limit is already exceeded, restoration must occur to meet this threshold under the NTT recommendations.

b. ***The Wyoming Core Area strategies allow too much development density in core sage-grouse habitat.***

Scientific research has determined that one energy site per square mile is the density threshold at which significant impacts to sage-grouse populations begin to occur. In accordance with these findings, the Wyoming Core Area strategies set a limit of one energy development site per square mile in core habitat. The same DDCT area used to determine a project's disturbance limit is also used to calculate the density of sites (e.g., number of wellsites) that may be developed per square mile. But the DDCT only calculates site density per square mile, rather than *capping* density at one site per square-mile of land. In cases where the DDCT area is very large, the Core Area strategies may allow more than one well or mine site to be developed in a given square mile as long as the surrounding Core Area lands are relatively free from other development disturbance.

The Lost Creek Uranium In Situ Recovery Project exemplifies how development can exceed disturbance and density limits under the DDCT. The 4,254-acre permit area is located inside a Core Area, and it intersects the 4-mile buffers of 15 sage-grouse leks.[1] The DDCT area for this project is 147,060 acres, almost 230 square miles. If this were a hypothetical oil and gas project with the same 147,060-acre DDCT area, 229 wells would be allowed in the 4,254-acre permit area, for a density of 34.4 well-sites per square mile within the permit area. This extreme density would destroy habitat function for sage-grouse locally, even though well density for the DDCT area would still be within the one well per square-mile limit in the Core Area strategies.

In the case of the Lost Creek project, the extra-large DDCT area was adopted to accommodate intense development within the permit area. The project expects to disturb (i.e., bulldoze) 345 acres, which, when combined with preexisting disturbance, amounts to less than one percent for the DDCT area, but when compared to the 4,254-acre permit area, would yield 8.1 percent disturbance, far above the limit in the Core Area strategies. The 345-acre development area is also violates the strategies' limitation on site density. The DDCT assumes individual development sites (like oil and gas wells) will only each affect 4-5 acres. But for this project, Wyoming Game and Fish Department (WGFD) has classified the entire 345-acre development site as a single "site," which, although it meets the one site per square mile requirement in the Core Area strategies, will eliminate half of square mile section where it is located, and certainly have deleterious effects on sage-grouse for miles around.

c. Sage-grouse lek buffers in the Wyoming Core Area strategies are too small.

Protecting sage-grouse leks and associated nesting and brooding habitat are fundamental to conserving the species. The best available science has recorded significant negative impacts from producing oil and gas wells drilled within 1.9 miles from active leks (Holloran 2005), measureable impacts from coalbed methane fields extend out to 4 miles (Walker 2008), and new research has recorded effects as far away as 12.4 miles from leks (Taylor et al. 2012). WGFD, using lek buffers of 0.25 mile, 0.5 mile, 0.6 mile, 1.0 mile, and 2.0 mile, estimated lek persistence of 4, 5, 6, 10, and 28 percent, respectively (Christiansen and Bohne 2008, memorandum). Unfortunately, both the State and Wyoming BLM Core Area strategies only require protective buffers of 0.6 miles around leks in designated core habitat. By comparison, the NTT report generally recommends a 4-mile lek buffer for siting industrial development in sage-grouse habitat (SGNTT 2011), a prescription in greater accord with the science.

Buffers prescribed for leks outside Core Areas are even smaller. Both Wyoming strategies call for buffers of only 0.25 miles. The WGFD's stated position is for 50 percent probability of lek persistence outside Core Areas (WGFD 2010 at 31). But this is the same level protection criticized by former Governor Freudenthal and former WGFD Director Cleveland as grossly

[1] Calculations derived from data presented in the Lost Creek In Situ Recovery Project Final EIS at ES-2, 4.9-8, 4.9-27, and Appendix D.

inadequate in 2007, and which were found to be inadequate by State fish and game biologists in 2008 (Christiansen and Bohne 2008, memorandum). The BLM has implemented the 0.25-mile lek buffer, paired with a 2-mile seasonal restriction on development activities around sage-grouse leks for years in Wyoming (as prescribed in Instruction Memorandum WY-2012-019), and significant impacts to sage-grouse populations have been documented where these stipulations have been applied (Holloran 2005; Holloran et al. 2008).

d. ***The Wyoming BLM Core Area strategy's 11-square-mile fluid mineral leasing loophole leaves much core sage-grouse habitat unprotected.***

The Wyoming BLM Core Area strategy proscribes future leasing of fluid minerals in Core Areas, but only in areas of 11 contiguous square miles of unleased, BLM-managed minerals (BLM IM WY-2012-019). Unfortunately, many sage-grouse Core Areas were already encumbered with prior existing oil and gas leases at the time of their establishment, and the BLM is in many cases citing the existence of these prior existing leases (the majority of which are undeveloped paper assets that have yet to have any effect on sage-grouse habitat on the ground) as a justification for allowing new leasing inside Core Areas. As of July 10, 2012, twelve of the 31 Core Areas in Wyoming were at least 20 percent leased according to WGFD data, ranging up to 66 percent leased. These 12 Core Areas represent almost 4.5 million acres of sage-grouse habitat. Compounding this problem, all but three of the 31 Core Areas have at least 20 percent non-federal mineral ownership, meaning that a large proportion of Core Area is exempt from protection from future leasing.

The NTT report takes a much stricter approach to future mineral leasing. It recommends two alternatives: closing all priority habitat (Core Areas) to future leasing, or closing all priority habitat to future leasing unless it could be shown that proposed development would result in a net gain in sage-grouse populations for that Core Area.

e. **The Wyoming Core Area Strategies are unlikely to conserve sage-grouse.**

The new Sage-Grouse Conservation Objectives Draft Report (COT), an accompaniment to the NTT report prepared by a team of federal and state sage-grouse scientists, recommends conserving all sage-grouse populations and avoiding anthropogenic disturbances in key sage-grouse habitat (COT 2012, *draft*: 29, 33, 35). The COT report indicates that Wyoming's sage-grouse populations must be maintained or restored to help support the species' long-term persistence (COT 2012, *draft*: 35). The Wyoming Core Area strategies will fail to achieve these goals.

New research (Copeland et al, submitted) projects continued sage-grouse population declines at 14-29 percent in Wyoming. The same study estimates that, even when bolstered by $250 million in targeted conservation easements on private property (a very unlikely assumption), the Core Area policies would only cut anticipated sage-grouse population declines by half in Wyoming, and by two-thirds within high abundance areas.

Government Studies Indicate Protected Areas are Necessary to Conserve Greater Sage-Grouse

A new report by the U.S. Geological Survey (USGS) and other peer-reviewed research indicate that conserving the Greater Sage-Grouse will require both protecting large areas of habitat and making significant changes in land management to reverse population declines of this wide-ranging species. The USGS study (Manier et al) finds that most priority sage grouse habitat is already subject to significant overlapping cumulative impacts and that grouse are only persisting in large, relatively-undisturbed blocks of habitat. (See attached table).

The Conservation Objectives Team report developed by the U.S. Fish and Wildlife Service identifies Priority Areas for Conservation for sage-grouse. These areas are key for sage-grouse conservation and should be specially protected for grouse and other sagebrush-dependent species. The import of this report is that to ensure grouse populations will persist over time, some areas need a much higher level of protection.

The report finds that the loss and fragmentation of sage brush is a primary cause of sage-grouse decline and that very little sagebrush within the range of the sage-grouse remains undisturbed or unaltered. It notes that grouse populations can be significantly reduced, and in some cases locally extirpated by non-renewable energy development activities.

In response, the report recommends the general conservation objective of stopping population declines and habitat loss and states that "achieving this objective requires eliminating activities known to negatively impact sage-grouse and their habitats, or re-designing these activities to achieve the same goal. For priority areas (PACs) these objectives include reversing negative population trends within each Management Zone. Retaining sage-grouse habitats within PACs is identified as a priority as is retaining all remaining large intact sagebrush patches, particularly at low elevation. Energy development in PACs should be avoided as should sagebrush removal in sage-grouse breeding or wintering habitats, and mining.

In many instances, the draft EIS does not follow the guidance of the Conservation Objectives Team report and continues to allow for oil and gas development, mining and other activities likely to further disturb and fragment habitat, including in priority areas. Only within the proposed sagebrush ACEC are the proposed standards in keeping with its recommendations.

USGS Baseline Report Summary (excerpted from Executive Summary)
Summary of Science, Activities, Programs and Policies that Influence the Rangewide Conservation of Greater Sage-Grouse (Manier et al) *http://pubs.usgs.gov/of/2013/1098/*

Habitat conversion, degradation, and fragmentation have accumulated across the entire range such that local conditions as well as habitat distributions at local and regional scales are negatively affecting the long-term persistence of this species [the Greater Sage-Grouse].

The current framework of multiple use (including industrial, agricultural, recreation, and other activities) has been imposed over a system that never fully recovered from the intense use prior to the Taylor Grazing Act (1934). Repurposing of the most productive sagebrush ecosystems (regions with deep, loamy soils, for example) for agriculture and urban development means that sage-grouse have already been marginalized on lands they share with domestic livestock, industry, herds of introduced horses and burros, and other sagebrush inhabitants.

The accumulation of habitat loss, persistent habitat degradation, and fragmentation and perforation by industry and urban infrastructure, as indicated by U.S. Fish and Wildlife Service (USFWS) findings, presents a significant challenge for conservation of this species and sustainable management of the sagebrush ecosystem. Because of the wide variations in natural and human history across these landscapes, no single prescription for management of sagebrush ecosystems (including sage-grouse habitats) will suffice. However, specific activities that fall under the general categories of protecting the isolated pieces of intact and well-functioning sagebrush ecosystems, and improving, mitigating, and restoring less functional ecosystems, if well-informed, coordinated, and wide-ranging, should contribute to reducing the impacts of previous land uses and land-use patterns on current habitat conditions and population trends.

Across the sage-grouse range, the impacts of extensive infrastructure are widespread, including roads, power transmission lines, pipelines, communication towers, and fencing, and localized human activities such as water retention and vegetation treatments have been recognized, but precise influences and remediation solutions are often not well understood. These activities interact with widespread, but generally less intense, pressures including large herbivores (domestic, introduced, and native ungulate populations) in determining range conditions. Range and habitat conditions may be improved, mitigated, and (or) regulated to reduce impacts and better balance the desires of land users with wildlife needs and conservation of public property and interests (lands and wildlife).

Although a suite of direct mortality sources have been discussed and investigated, the evidence clearly suggests that critical aspects of population demographics, including nest success, brood-rearing success, predation risk, disease risk, hunting, and poisoning are only significant when habitat restrictions (that is, loss, fragmentation, and degradation) magnify their effects.

Rather than any single source of habitat degradation, the cumulative and synergistic impact of multiple disturbances, continued spread and dominance of invasive species, and increased impacts of land use continue to have the most significant influence on the trajectory of sagebrush ecosystems and sage-grouse populations.

Habitat Fragmentation and Connectivity (p.25)

Sage-grouse populations generally rely on large, interconnected expanses of sagebrush to accommodate local migrations and access to seasonal habitats distributed within their inhabited range (Connelly and others, 2004), and “fragmentation” represents the dissection of large expanses via various mechanisms. Conclusive, consistent data establishing minimum sizes of sagebrush-dominated landscapes necessary to support viable populations of sage-grouse are unavailable (Connelly and others, 2011d). However, some quantitative indications exist, for example sage-grouse populations in Idaho used an annual range of at least 683,000 acres (2,764 km2; Leonard and others, 2000). Research in Wyoming and Montana suggested that a sagebrush-dominated landscape 77,600

acres (314 km2) in size may provide the area necessary to maintain breeding habitat around a given lek (Doherty and others, 2008). The size of a landscape needed to support breeding habitats of an interspersed population (for example, an area with *multiple* leks spaced less than 6.2 miles [10km] apart) may exceed 247,000 acres (1,000 km2; Doherty and others, 2008).

Investigations from Idaho and Wyoming suggest that relatively large blocks of sagebrush habitat (>9,900 acres [4,000 ha]) are critical to successful reproduction and over-winter survival (Leonard and others, 2000; Walker and others, 2007a). Mean sagebrush patch size within an 18 km radius (250,000 acres [1,018 km2]) was more than nine times as large in occupied versus extirpated sage-grouse range; sagebrush patch size in occupied range averaged 10,300 acres (4,173 ha; Wisdom and others, 2011). Based on natural geographic patterns, it has been suggested that sage-grouse may have adapted to a scale of natural fragmentation in sagebrush habitats organized at 2.8–5.6 mi (4.5 to 9 km; Leu and Hanser 2011); research on selection behavior indicated similar, emergent patterns based on spacing between leks (nearest-neighbor distances of 0.36 mi [5.9 km]), mean lek to nest movements (3.2 mi [5.1 km]), and nest to summer range movements generally limited to less than 6.2 mi (10 km; Fedy and others, 2012), supporting this contention.

The scale of the landscape used by sage-grouse changes throughout seasons and may differ between populations based on available habitats. Strong site fidelity of sage-grouse for established nesting habitat (Fischer and others, 1993; Holloran and others, 2005; Thompson, 2012) and suggested for other seasonal habitats (Berry and Eng, 1985; Thompson, 2012) indicates that the “landscape” targeted by an individual female during different life-history stages may be relatively small. The overall landscape requirements for an individual would be the conglomeration of these seasonal habitats combined with the necessary migration corridors (the length of these corridors will be different between and within populations depending on the local landscape as much as on the birds). Thus, the landscape required by an individual is a combination of the seasonal habitat requirements on a relatively small scale, the spatial distribution of those seasonal habitats, and the habitats required to move between those seasonal ranges.

Wyoming Basin and Colorado Plateau

Management Zones II and VII include nine sage-grouse populations with the bulk of the area constituting the Wyoming Basin population; several smaller areas occupied by sage-grouse are distributed around the Wyoming Basin population, especially south of this population on the Colorado Plateau (Garton and others, 2011). Northern portions of this MZ currently represent the highest abundance of sage-grouse relative to other MZs across the range of the species (Conservation Objectives Team and others, 2012). Leks in northern portions of MZs II and VII are the most highly connected in the range (Knick and Hanser, 2011a).

In contrast to MZ I, 54 percent of the sagebrush habitats in MZs II and VII are Federally managed (Knick and Connelly, 2011b). The Wyoming Basin (MZ II) is currently home to the largest regional extent and highest breeding density of sage-grouse in the Western United States. Livestock grazing has been ubiquitous across these sagebrush dominated ranges, which also have seasonal importance for native elk, mule deer, pronghorn, and several herds of feral horses, for more than a century. Nonrenewable energy extraction (coal, oil, and natural gas), and more recently renewable energy production (wind farms), are superimposed over the habitat gradients created by natural environmental patterns and historic land uses, and the current combination of use and natural dynamics are sufficiently intense to cause measureable changes in sagebrush cover (Xian and others,

2012). Therefore, trends in land cover and land use are recognized as contributing to population declines, in this region, in the recent past.

The major threat to sage-grouse habitats and populations occurring across populations in MZs II and VII is energy development—primarily oil and gas development—and supporting infrastructure (Conservation Objectives Team and others, 2012); less than 1 percent of priority and general habitats are directly influenced by natural gas or oil wells; however, more than 75 percent of PPH and more than 80 percent of PGH lie within the likely effects buffer (11.8 mi [19 km]) providing an indication of the widespread and cumulative influence of energy infrastructure (table 11, fig. 14). Further, approximately 7.8 million acres (31,500 km2, 21 percent) of the sage-grouse habitats in these MZs are currently leased for development of Federal natural gas or oil reserves (table 13). This region also has Federal leases for the research of oil shale extraction overlapping the southern populations (fig. 19*A*).

The potential for coal mining, geothermal energy development, oil shale development, and wind energy development are also widespread throughout this MZ (figs. 18–24). In spite of these competing factors, the loss of habitat from subdivision and housing development and associated infrastructure (for example, roads) has been identified as the greatest threat to sage-grouse populations in southern portions of MZs II and VII (Conservation Objectives Team, 2013). Urban development, power lines, vertical structures, and railroads directly influence less than 5 percent of the sage-grouse habitats in the entire MZ, and these infrastructures are relatively dense in MZs II and VII compared to western portions of the range of sage-grouse (tables 5–9, figs. 10–13). For example, the proportion of sage-grouse habitat influenced directly by urban development in MZs I, II, and VII combined is 3.1 times higher; the amount directly influenced by power lines is 2.1 times higher, and the amount directly influenced by railroads is 1.9 times higher than the proportion directly influenced in the other MZs combined (tables 5–9).

BLM managed grazing allotments not meeting wildlife standards consist of 4 percent of MZs II and VII and are not widespread throughout the region except in southern portions of the MZ (table 22, fig. 28); however, considerable portions of this region have not been recently assessed. Although areas not meeting standards are not widespread in the region, the Greater Sage-Grouse Comprehensive Conservation Strategy (Stiver and others, 2006a) ranked livestock grazing just below energy development and urbanization as an issue requiring immediate attention in eastern portions of the range of sage-grouse. Additionally, a large portion of central regions of this MZ (close to 5 million acres [20,200 km2] across the entire MZ; table 23) is Federally managed wild horse and burro range (fig. 29), suggesting potential effects to sage-grouse of livestock grazing, and the compounding effects of feral grazers need to be considered across the region.

Please see the attached chart detailing direct and indirect cumulative impacts in Northwest Colorado and Wyoming.

Conservation Objectives Team (COT) Report Excerpts

Wyoming Basin

This large population extends into Montana, Idaho, Utah, and Colorado. The population is separated from adjacent populations by distance and topography (Garton *et al*. 2011). This population is the largest population within the species' range (> 20,000 males attending leks annually), and is very robust. However, long-term population trends are slightly downward, although recent counts suggest an increase. Even so, population modeling suggests that

declines will continue over the long-term (Garton *et al*. 2011). This population is described in several smaller pieces, including the Wyoming portion (including the small piece that extends into
Montana) of the population, Uintah and Rich-Morgan-Summit Management Areas in Utah, and
North Park and NWCO subpopulations in Colorado.

In the northwest Colorado portion of this population, representation and redundancy appear to be captured adequately. Priority areas for conservation capture 56 percent of the occupied range and also include 95 percent of all known active leks and 95 percent of habitat that was modeled "high probability of use" within 4 miles of a lek that has been active within the last 10 years.

Most of the sub-management zones within this portion of the population have some connectivity with other portions of this population. This is Colorado's largest area of sage-grouse occupancy and is considered to be at low risk of extirpation. The northern portion is likely to be more resilient than the southeastern portions of this population because of habitat condition and connectivity. There is more habitat fragmentation in the southeastern portion of this population.
According to lek count data, the long-term trend appears to be stable, despite substantial fluctuations. Population peaks have occurred in 1960-70, 1978-80, and in the mid-2000s.

COLORADO PLATEAU
This management zone contains two populations; Parachute-Piceance Basin and Meeker-White
River Colorado. The designated priority areas for conservation appear to capture redundancy and representation. Priority habitats are well mapped and include all high use habitat (which includes breeding, summer, and winter habitat within 4 miles of all known leks) and linkage zones to Management Zone 2 to the north. There is no known connectivity with Utah (Management Zone 3 to the west) due to natural habitat fragmentation and large areas of nonhabitat.

Parachute-Piceance-Roan
The Parachute-Piceance-Roan Basin population appears to be captured within priority areas for conservation, and representation appears to be captured adequately. Priority areas for conservation capture 60 percent of the occupied range in this population and also include 100 percent of all known active leks and all habitats that were modeled "high probability of use" within four miles of a lek that has been active in the last 10 years. Redundancy is not captured within this population because it is a relatively small (three year running average number of males is 93) and somewhat isolated. This population is on the very southern edge of the species range. There is some potential for connectivity to the north to the Wyoming Basin population in
Management Zone 2. Linkage habitats have been included in mapping efforts. Representation and redundancy are at risk within this population due to its small size, energy development and the associated infrastructure, especially road development. Pinyon-juniper encroachment is also an issue. The Parachute-Piceance-Roan population appears to have some resiliency. The

population has been monitored since 2005 and appears to be fluctuating similar to other larger populations in the state. A large majority of PACs are privately owned, mostly by energy companies. Energy and mineral development is the highest ranked threat to sage-grouse in this area. Advances in drilling technology and rapid natural gas demand and subsequent rising prices have led to a significant increase in natural gas drilling activity. Road and infrastructure are also ranked high as they are closely related to energy production. Historic habitat has been lost and fragmented also by pinyon-juniper encroachment. This population is considered to be at high risk.

Meeker-White River Colorado

This population is located just northeast of Parachute-Piceance-Roan Basin. There is no redundancy and little representation in the Meeker-White River population (three-year running average high male count is six birds). Priority areas for conservation capture 27 percent of the occupied range in this population and include the only known active lek. All habitats modeled "high probability of use" and within four miles of any lek (active in the last 10 years) are within priority habitat. Representation and redundancy are at risk within this population due to its small size, proximity to an urbanized setting and, thus, housing development and associated infrastructure and agriculture conversion. This is a very small population located near the town of Meeker and consists of only one active lek that was discovered in 2004, and strutting male counts have been on a steady decline since (e.g., from a high of 30 males in 2004 to six males in
2012). Most of the occupied habitat is privately owned (90 percent) and is in two disconnected patches of habitat, separated by the White River. One of the patches remains unfragmented. The other patch is located where housing development will primarily occur. Meeker-White River has lost resiliency. The population has been monitored since 2004 and the population has been in a steady decline from 30 males to the current six males. Housing development is increasing mainly due to energy development in nearby counties. A large part of the habitat was converted to agriculture in the 1960's, which is likely a primary reason why the population went into decline. A current issue is that some of the lands in pasture and CRP land may now be converted back to crop lands. This population is considered to be at high risk.

An Improved Conservation Alternative C Provides Best Basis for Further Analysis

While resource conservation alternative C in the draft EIS does not follow all of the recommendations indicated by the best available science, it is the best alternative for grouse conservation that was analyzed. It conserves the most land area, designates a significant acreage as a Greater Sage-Grouse Areas of Critical Environmental Concern, and is the most restrictive of vehicle use and mineral development.

We are concerned that the Preferred Alternative D would likely not halt the decline of grouse populations or provide an adequate regulatory mechanism for the species conservation.
We urge the agency to focus further analysis on an improved Alternative C and the designation of Areas of Critical Environmental Concern for Greater Sage-Grouse and to make these the basis for the final NW Colorado EIS. The draft EIS analyzed conservation measures that can be included in the final plan to ensure sustainable management and provide an

adequate regulatory mechanism to ensure conservation of the grouse. These include requiring a three percent disturbance standard and designating protected areas.

Thank you for this opportunity to comment. We look forward to working with Bureau to develop a regional plan that will ensure the conservation of the Greater Sage-Grouse. Please contact me at 202-234-7181 ext. 216 or sholmer@abcbirds.org if you have any questions.

Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy