APPENDIX K:

GREATER SAGE-GROUSE INSTRUCTIONAL MEMORANDA, CONSERVATION MEASURES, AND CORE AREA PROTECTION STRATEGIES

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K.1 Instruction Memorandum 2010-071: Gunnison and Greater Sage-Grouse Management Considerations for Energy Development (Supplement to *National Sage-Grouse Habitat Conservation Strategy*)

BUREAU OF LAND MANAGEMENT

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
http://www.blm.gov/

March 5, 2010

In Reply Refer To:
1110 (230/300) P

EMS TRANSMISSION 03/05/2010
Instruction Memorandum No. 2010-071
Expires: 09/30/2011

To: All Field Officials

From: Director

Subject: Gunnison and Greater Sage-grouse Management Considerations for Energy Development (Supplement to *National Sage-Grouse Habitat Conservation Strategy*)

Program Areas: Oil and Gas, Oil Shale, Geothermal, Wind, Solar, and Associated Rights-of-Way, Wildlife, Land Use Planning, National Environmental Policy Act.

Purpose: This Instruction Memorandum (IM) supplements the Bureau of Land Management's (BLM) 2004 *National Sage-Grouse Habitat Conservation Strategy* (BLM National Strategy). The BLM is issuing this IM in light of—

- recent peer-reviewed scientific studies addressing the impacts of oil and gas development on sage-grouse;
- the currently limited information available concerning the impacts of wind energy development on sage-grouse; and
- the increasing land use pressures on the public lands, including the BLM's authorization of renewable energy projects.

This IM identifies management actions necessary at some sites to ensure environmentally responsible exploration, authorization, leasing, and development of renewable and non-renewable energy resources within the ranges of the Gunnison sage-grouse and greater sage-grouse.

On March 5, 2010, the U.S. Fish and Wildlife Service announced that listing of the greater sage-grouse as an endangered species under the Endangered Species Act (ESA) is warranted, but listing is precluded by the need to complete other listing actions of higher priority. In view of this finding, it is of even greater importance that the BLM continue to work to improve the BLM National Strategy. This IM, focusing on energy development, is another step in that direction. When a range-wide "priority" or "core" sage-grouse habitat map is developed and as additional research on threats to sage-grouse other than energy development becomes available, the BLM will issue a more comprehensive Bureau-wide policy directive. The BLM will continue to work with its partners—the Western Association of Fish and Wildlife Agencies (WAFWA), U.S. Fish and Wildlife Service, U.S. Geological Survey, Natural Resources Conservation Service, U.S. Forest Service, and the Farm Service Agency—within the framework of the partners' Sagebrush Memorandum of Understanding (2008) (Sagebrush MOU) and the *Greater Sage-Grouse Comprehensive Conservation Strategy* (2006) (Multiagency Strategy).

Policy/Action: The Gunnison sage-grouse and greater sage-grouse are BLM sensitive species that are to be managed to promote their conservation and to minimize the need for listing under the ESA, in accordance with the BLM's special status species policy (BLM Manual 6840). Therefore, when necessary to maintain sustainable sage-grouse populations across the broader landscape within the state, field managers will implement an appropriate combination of the following actions in "priority habitat."

Generally speaking, "priority habitat" is the habitat of highest conservation value relative to maintaining sustainable sage-grouse populations range-wide. Priority habitat will be areas of high quality habitat supporting important sage-grouse populations, including those populations that are vulnerable to localized extirpation but necessary to maintain range-wide connectivity and genetic diversity.

I. Actions Available for Protection of Sage-grouse Populations

Oil and Gas/Geothermal:

- Withhold from sale or defer the sale of parcels, in whole or in part, that industry has proposed for oil and gas or geothermal leasing in priority habitat as supported by analysis under the National Environmental Policy Act (NEPA) of the impacts of leasing on sage-grouse.
- If parcels are offered for sale in sage-grouse priority habitat, attach a lease notice to new leases alerting the lessee that additional conditions will be applied to approvals to develop to the lease, including Applications for Permit to Drill (APDs), sundry notices and associated rights-of-way, if future sage-grouse conservation efforts are appropriate.
- In priority habitat and where supported by NEPA analysis, attach conditions to the approval of APDs that are more protective than the stipulations or restrictions identified in the applicable Resource Management Plan (RMP), as appropriate.

Oil Shale:

- Screen new oil shale lease applications to identify whether the proposed leasing area includes priority habitat. If so, alert the applicant as early as possible that, pending NEPA analysis, the application may be delayed or denied or that lease stipulations and project conditions of approval may be imposed that designate avoidance areas or include No Surface Occupancy restrictions, for example.

Wind and Solar Energy Development and Associated Site Testing:

- Screen new right-of-way applications to identify whether the wind or solar energy development or site testing and project area includes priority habitat. If so, alert the applicant as early as possible that the application may be denied or that terms and conditions may be imposed on the right-of-way grant to protect priority habitat as supported by NEPA analysis.

Transmission:

- Re-route proposed transmission projects to avoid priority habitat.

RMP Revisions/Amendments:

- In RMP revisions and amendments, analyze one or more alternatives that would exclude priority habitat from energy development and transmission projects.

The BLM will consider how projects can avoid, minimize, and mitigate impacts onsite. However, the BLM may condition approval of a project proposal upon additional onsite modification or additional mitigation, including offsite mitigation.

Both the BLM and the state fish and wildlife agencies recognize that priority habitat has not been identified range-wide utilizing a consistent methodology. Until the BLM has fully engaged its state fish and wildlife agency counterparts in the mapping of priority habitat, the BLM will identify priority habitat using RMPs, state-led and Local Working Group sage-grouse plans, peer-reviewed literature, conservation plans or agreements, and professional judgment.

II. Future Actions for the Protection of Sage-grouse Populations

Further action that will help to develop a comprehensive Bureau-wide policy for the protection of sage-grouse populations and the conservation of habitat on a landscape scale will be pursued in the near future. These efforts will be undertaken within the collaborative framework established by the Sagebrush MOU and the Multiagency Strategy. Specifically, the following steps will be taken after issuance of this IM:

- The BLM will continue to work with the state fish and wildlife agencies, using a consistent protocol, to delineate and map areas of high priority habitat across the ranges of Gunnison sage-grouse and greater sage-grouse. This map will serve as a platform for a more directed Bureau-wide sage-grouse policy, similar to the approach already taken in Wyoming.
- Upon completion of a range-wide priority habitat map described above, each BLM State Office, working in coordination with the respective state fish and wildlife agency, will identify state-specific management actions (not limited to energy development) on a landscape level that will be undertaken both inside and outside of identified priority habitat in order to maintain sustainable sage-grouse populations.

Protection of sage-grouse populations and habitat is of critical importance, and several BLM State Offices have extensive sage-grouse conservation plans that were developed cooperatively with state fish and wildlife directors and stakeholder groups. In taking the steps listed above, the BLM will work diligently to ensure that it addresses local efforts or situations.

Timeframe: This IM is effective immediately.

Budget Impact: This IM will result in additional costs for mapping, coordination, NEPA review, and monitoring.

Background: It is imperative that fragmentation and degradation of Gunnison sage-grouse and greater sage-grouse habitat not continue to the point that sustainable sage-grouse populations can no longer be supported. In November 2004, the BLM published the BLM National Strategy. The BLM National Strategy set goals and objectives and assembled guidance and resource materials. It also provided comprehensive management direction for the BLM's contributions to the ongoing multi-state sage-grouse conservation effort, in cooperation with WAFWA. This IM reflects continued implementation of the goals set forth in the BLM National Strategy.

Although the focus of this IM is energy development, energy development is not the only or necessarily the most significant threat to Gunnison or greater sage-grouse. The purpose of this IM is to highlight management actions affecting sage-grouse habitat that will be necessary to sustain sage-grouse populations in light of new information and the Department of the Interior's energy-related priorities.

Since completion of the BLM National Strategy, additional peer-reviewed research analyzing the impacts of oil and gas development on greater sage-grouse has become available. Some aspects of oil and gas development affecting sage-grouse use of an area (e.g., construction of facilities, road networks, and resulting habitat fragmentation) also occur in other types of energy development. In addition, while not specific to Gunnison sage-grouse or greater sage-grouse, other research has been completed on the impacts of wind energy development on prairie chickens that is applicable to closely related species such as Gunnison and greater sage-grouse. The BLM will consider this body of research in the context of all energy development activities on the public lands.

The Mineral Leasing Act (Act or MLA) provides that all lands subject to the Act "which are known or believed to contain oil or gas deposits may be leased by the Secretary [of the Interior]." 30 U.S.C. 226(a) (2009). The Supreme Court held that the Act gives the Secretary broad discretion not to offer an oil and gas tract for leasing. *Udall v. Tallman*, 380 U.S. 1, 4 (1965). The U.S. Court of Appeals for the Ninth Circuit held that refusing to issue leases is a legitimate exercise of the Secretary's discretion under the MLA (*see Burglin v. Morton*, 527 F.2d 486, 488 (9th Cir. 1975) (citing *Tallman*, 380 U.S. at 4)). The Interior Board of Land Appeals has expressly held that lands identified for oil and gas leasing in an RMP are open for permissible uses, and the BLM has no duty to offer them for lease, even when the BLM has received a pre-sale non-competitive offer to lease (*Richard D. Sawyer*, 160 IBLA 158, 163 (2003)) or a nomination for competitive lease (*Marathon Oil Co.*, 139 IBLA 347 (1997)). The BLM may also decline to lease even after the BLM has received bids and bonus monies at a competitive lease sale (*Continental Land Resources*, 162 IBLA 1, 14-15 (2004)). The IBLA has also upheld the BLM's authority to impose more stringent protection measures on approval of development plans or permits than provided for in lease stipulations when supported by current science and analyzed through the NEPA process (*see William P. Maycock*, 177 IBLA 1 (2009); *Yates Petroleum Corp.*, 176 IBLA 144 (2008)).

Title V of the Federal Land Policy and Management Act, 43 U.S.C. 1761-1771, authorizes the Secretary to grant rights-of-way over, upon, under, or through the public lands for a variety of purposes, such as roads, water pipelines, systems for generation of electric energy, and communication systems. The IBLA has held that a decision to issue a right-of-way is discretionary. (*Mark Patrick Heath,* 161 IBLA 381, 388 (2004)). The discretionary nature of a right-of-way grant is underscored by BLM regulations at 43 CFR 2804.26, which provide that an application for a right-of-way may be denied if the proposed use would not be in the public interest.

Coordination: This IM was coordinated with the Assistant Director, Renewable Resources and Planning (WO-200), the Assistant Director, Minerals and Realty Management (WO-300), and BLM Deputy State Directors.

Contact: State Directors may direct any questions or concerns to Michael D. Nedd, Assistant Director, Minerals and Realty Management (WO-300), at 202-208-4201 or mike_nedd@blm.gov, and Edwin Roberson, Assistant Director, Renewable Resources and Planning (WO-200), at 202- 208-4896 or edwin_roberson@blm.gov.

Signed by:
Robert V. Abbey
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Authenticated by:
Robert M. Williams
Division of IRM Governance, WO-560

Last updated: 06-05-2010

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K.2 USFWS Letter Agreeing to Management of Greater Sage-Grouse

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
ES-61411/WY11TA0313

June 24, 2011

The Honorable Matthew H. Mead
Governor of Wyoming
State Capitol
Cheyenne, Wyoming 82002

Dear Governor Mead:

Thank you for your letter of June 3, 2011, regarding Executive Order 2011-5, Greater Sage-Grouse Core Area Protection (Executive Order), signed on June 2, 2011. We are pleased with the implementation of this conservation strategy and commend the work of your office and that of the Sage-Grouse Implementation Team (Implementation Team) for the continuing commitment to conserve the Greater sage-grouse in Wyoming.

In your letter, you specifically request a response from our office as to whether the U.S. Fish and Wildlife Service (Service) continues to view implementation of the Executive Order as an adequate mechanism to preclude the need to list this species and if the Executive Order remains a sound policy to manage and protect sage-grouse populations in Wyoming. The Service believes the Executive Order can result in the long-term conservation of the Greater sage-grouse and thus reduce the need to list the species under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). If fully implemented, we believe the Executive Order can provide the conservation program necessary to achieve your goal of precluding listing of the Greater sage-grouse in Wyoming. As you are well aware, actions outside the State borders and by entities not falling under the jurisdiction of the State of Wyoming may influence any final listing decision. However, implementation of the Executive Order is one of the most significant efforts that the State of Wyoming can implement to conserve the Greater sage-grouse.

We believe the Executive Order, along with the guidelines outlined by the Implementation Team and the Inter-agency Implementation working subgroup, is a sound policy framework by which to conserve Greater sage-grouse in Wyoming. As stated in our March 23, 2010, status determination for the Greater sage-grouse (Decision; 75 FR 13910), "the Service believes that the core area strategy … if implemented by all landowners via regulatory mechanisms, would provide adequate protection for sage-grouse and their habitat in that State." This is a critical point and remains true for your new Executive Order. To be effective, State, Federal and private landowners must all implement this Executive Order.

Implementation of the Executive Order will need to keep current with the best available science in order to meet the information requirements of the Act (section 4(b)(1)(A)). This may include incorporation of other important seasonal habitats into core areas as they are identified. The Implementation Team actively engaged this topic, but due to lack of data on the location of those habitats, the final resolution was left to local working groups once data become available. While we support the development of local solutions to address the protection of seasonal habitats as they are identified, these local solutions must be based on sound scientific data. It is also critical that the protections for seasonal habitats address the real conservation concerns for these potentially limiting habitat areas. Additionally, local solutions need to have mechanisms to ensure they will in fact be implemented, for example be regulatory in nature to the extent practicable.

The Service encourages the State to continue to actively advocate for sage-grouse conservation, and perhaps more importantly, healthy sagebrush ecosystems. We understand the reservations you considered in making the decision to execute Executive Order 2011-5. We recognize that the conservation of sage-grouse will involve difficult choices in prioritizing management objectives for a variety of needs within Wyoming. While we do not advocate for elimination or preclusion of any activity, we do encourage the State and project proponents to consider all alternatives that minimizes or removes impacts to the sagebrush ecosystem. We offer our assistance in these efforts if desired. Additionally, we encourage the State to continue to be active participants in the decision-making processes conducted by land managers in Wyoming, including State agencies, which affect sage-grouse and sagebrush. We recognize the State of Wyoming's expertise in sage-grouse and encourage use of that information to inform these planning processes.

In summary, the Service believes the Greater Sage-grouse Core Area Protection provides an excellent model for meaningful conservation of sage-grouse if fully supported and implemented. We believe that when fully realized, this effort could ameliorate many threats to the Greater sage-grouse in Wyoming. We fully recognize and appreciate your commitment and financial obligation to this important conservation effort. This long-term, science-based vision for the conservation of greater sage-grouse has set the stage for similar conservation efforts across the species' range, a notable feat onto itself.

We look forward to continuing to work with the State of Wyoming on Greater sage-grouse conservation. The Service again commends the State's leadership for your proactive and insightful efforts and your commitment to the long-term conservation of this species.

If you have any questions regarding the information provided here, please do not hesitate to contact me at 307-772-2374, extension 234, or Pat Deibert of my staff at extension 226.

Sincerely,

/s/ R. Mark Sattelberg

R. Mark Sattelberg
Field Supervisor
Wyoming Field Office

cc: BLM, Acting State Director, Cheyenne, WY (D. Simpson)
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Governor's Sage Grouse Implementation Team, Chair, Riverton, WY (B. Budd)

K.3 A Report on National Greater Sage-Grouse Conservation Measures

A Report on National Greater Sage-Grouse Conservation Measures

Produced by:

Sage-grouse National Technical Team

December 21, 2011

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Introduction

Sagebrush landscapes have changed dramatically over the last two centuries. The vast expanses of sagebrush crossed by early European settlers and used by sage-grouse have been lost, fragmented, or altered due to invasive plants, changes in fire regimes, and impact of land uses (Knick et al. 2003, Knick and Connelly 2011a). As a consequence, sage-grouse and many other wildlife species that depend on sagebrush have undergone long-term range-wide population declines. Sage-grouse populations now occupy approximately one-half of their pre-European settlement distribution (Schroeder et al. 2004). Anthropogenic habitat impacts and lack of regulatory mechanisms to protect against further losses provided the basis for warranting listing under the Endangered Species Act (ESA) in 2010 (75 FR 13910). The need to address higher priority species and limited funding precluded immediate listing action. However, a litigation settlement requires that a listing decision be made by the U.S. Fish and Wildlife Service (USFWS) by September, 2015.

The Bureau of Land Management (BLM) manages approximately 50% of the sagebrush habitats used by sage-grouse (Knick 2011). Therefore, management actions by BLM in concert with other state and federal agencies, and private land owners play a critical role in the future trends of sage-grouse populations. To ensure BLM management actions are effective and based on the best available science, the National Policy Team created a National Technical Team (NTT) in August of 2011. The BLM's objective for chartering this planning strategy effort was to develop new or revised regulatory mechanisms, through Resource Management Plans (RMPs), to conserve and restore the greater sage-grouse and its habitat on BLM-administered lands on a range-wide basis over the long term. The National Greater Sage-Grouse Planning Strategy Charter charged the NTT to serve as a scientific and technical forum to:

- Understand current scientific knowledge related to the greater sage-grouse.
- Provide specialized sources of expertise not otherwise available.
- Provide innovative scientific perspectives concerning management approaches for the greater sage-grouse.
- Provide assurance that relevant science is considered, reasonably interpreted, and accurately presented; and that uncertainties and risks are acknowledged and documented.
- Provide science and technical assistance to the Regional Management Team (RMT) and Regional Interdisciplinary Team (RIDT), on request.
- Articulate conservation objectives for the greater sage-grouse in measurable terms to guide overall planning.

- Identify science-based management considerations for the greater sage-grouse (e.g., conservation measures) that are necessary to promote sustainable sage-grouse populations, and which focus on the threats (75 FR 13910) in each of the management zones.[1]

The National Technical Team (NTT) met from August 28 through September 2, 2011, in Denver, Colorado, and a subset of the team met December 5-8 in Phoenix, Arizona, to further articulate the scientific basis for the conservation measures. Members of the team included resource specialists and scientists from the BLM, State Fish and Wildlife Agencies, USFWS, Natural Resources Conservation Service (NRCS) and U.S. Geological Survey (USGS).

This document provides the latest science and best biological judgment to assist in making management decisions. Fortunately, recent emphasis on sage-grouse conservation has resulted in a substantial number of publications dealing with a variety of aspects of sage-grouse ecology and management, summarized in the 2010 listing petition (75 FR 13910), as well as Knick and Connelly (2011b). Habitat requirements and other life history aspects of sage-grouse, excerpted from the USFWS listing decision (75 FR 13910), are summarized in Appendix A to provide context for the proposed conservation measures. We have attempted to describe the scientific basis for the conservation measures proposed within each program area. Perspectives on the nature and interpretation of the available science are in Appendix B.

The conservation measures described in this report are not an end point but, rather, a starting point to be used in the BLM's planning processes. Due to time constraints, they are focused primarily on priority sage-grouse habitat areas. General habitat conservation areas were not thoroughly discussed or vetted through the NTT, and the concept of connectivity between priority sage-grouse habitat areas will need more development through the BLM planning process.

[1] Identified in the Western Association of Fish and Wildlife Agencies (WAFWA) Conservation Strategy (Stiver et al. 2006).

Goals and Objectives

The BLM, along with a host of other state and federal agencies who participated in development of the Greater Sage-grouse Comprehensive Conservation Strategy (Stiver et al. 2006), endorsed the goal of that document which was "to maintain and enhance populations and distribution of sage-grouse by protecting and improving sagebrush habitats and ecosystems that sustain these populations". Although it was understood that at least in the short term this goal of maintaining sage-grouse population size and distribution as based on trends from 1965 - 2003, or enhancing above these levels was aspirational, the NTT supports it as a guiding philosophy against which management actions and policies of BLM should be weighed. Therefore, the conservation measures and strategies that follow assume the goal and objectives below.

Goal

Maintain and/or increase sage-grouse abundance and distribution by conserving, enhancing or restoring the sagebrush ecosystem upon which populations depend in cooperation with other conservation partners.

Until such time as more specific conservation objectives relative to sage-grouse distribution or abundance by sage-grouse management zone, state, or population are developed, BLM will strive to maintain or increase current distribution and abundance of sage-grouse on BLM administered lands in support of the range-wide goals. BLM will specifically address threats identified by the Fish and Wildlife Service in their 2010 listing decision (75 FR 13910).

Sage-grouse populations have the greatest chance of persisting when landscapes are dominated by sagebrush and natural or human disturbances are minimal (Aldridge et al. 2008, Knick and Hanser 2011, Wisdom et al. 2011). Within priority habitat, a minimum range of 50-70% of the acreage in sagebrush cover is required for long-term sage-grouse persistence (Aldridge et al. 2008, Doherty et al. 2010, Wisdom et al. 2011). Fire and invasion by exotic grasses are widespread causes for habitat loss, particularly in the western part of the sage-grouse range (Miller et al. 2011). Human land use, including tillage agriculture, historic grazing management, energy development, roads and power line infrastructure, and even recreation have contributed both individually and cumulatively to lower numbers of sage-grouse across the range (75 FR 13910, Knick et al. 2011).

New Paradigm

Through the establishment of the National Sage-grouse Planning Strategy, the Bureau of Land Management has committed to a new paradigm in managing the sagebrush landscape. That new paradigm will require collaborative conservation efforts among private, state, tribal, and other federal partners to conserve sage-grouse. Land uses, habitat treatments, and anthropogenic disturbances will need to be managed below thresholds necessary to conserve not only local sage-grouse populations, but sagebrush communities and landscapes as well. Management priorities will need to be shifted and balanced to maximize benefits to

sage-grouse habitats and populations in priority habitats. Adequacy of management adjustments will be measured by science-based effectiveness monitoring of the biological response of sagebrush landscapes and sage-grouse populations. Ultimately, success will be measured by the maintenance and enhancement of sage-grouse populations well into the future.

Objectives

The overall objective is to protect priority sage-grouse habitats from anthropogenic disturbances that will reduce distribution or abundance of sage-grouse. Priority sage-grouse habitats are areas that have the highest conservation value to maintaining or increasing sage-grouse populations. These areas would include breeding, late brood-rearing, winter concentration areas, and where known, migration or connectivity corridors. These areas have been, or will be identified by state fish and wildlife agencies in coordination with respective BLM offices. Priority habitat designations must reflect the vision, goals and objectives of this overall plan if the conservation measures are to be effective. Additionally, there is an opportunity for synergy and collaboration with WAFWA in order to identify a consistent way to designate priority sage-grouse habitat areas and develop a range-wide priority habitat area map. This collaborative and overarching approach could help ensure activities immediately outside the priority areas do not impact priority habitat.

To reach this objective, it will be necessary to achieve the following sub-objectives for priority habitat:

- Designate priority sage-grouse habitats for 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.
- To maintain or increase current populations, manage or restore priority areas so that at least 70% of the land cover provides adequate sagebrush habitat to meet sage-grouse needs.
- Develop quantifiable habitat and population objectives with WAFWA and other conservation partners at the management zone and/or other appropriate scales. Develop a monitoring and adaptive management strategy to track whether these objectives are being met, and allow for revisions to management approaches if they are not.[ii]
- Manage priority sage-grouse habitats so that discrete anthropogenic disturbances cover less than 3% of the total sage-grouse habitat regardless of ownership. Anthropogenic features include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind

[i] As population trends within each Management Zone respond, long-term success can be judged based on comparisons with data from the 1965-2003 period for that specific Management Zone (Stiver et al., 2006).

[ii] Professional judgment as derived from Holloran 2005, Walker et al. 2007, Doherty et al. 2008, Doherty et al. 2011, Naugle et al. 2011a,b.

turbines, oil and gas wells, geothermal wells and associated facilities, pipelines, landfills, homes, and mines. [iii]

- In priority habitats where the 3% disturbance threshold is already exceeded from any source, no further anthropogenic disturbances will be permitted by BLM until enough habitat has been restored to maintain the area under this threshold (subject to valid existing rights).
- In this instance, an additional objective will be designated for the priority area to prioritize and reclaim/restore anthropogenic disturbances so that 3% or less of the total priority habitat area is disturbed within 10 years.

Note to add context to above objective: Disturbance can be described within categories as discrete (having a distinct measureable impact in space and time) or diffuse (pressure is exerted over broad spatial or temporal scales) (Turner and Gardner 1991). Most anthropogenic disturbance (roads, power lines, oil/gas wells, tall structures) are discrete disturbances. Livestock grazing is a diffuse disturbance. Fire can be either discrete or diffuse depending on its characteristics and the scales at which it is measured. Sage-grouse are extremely sensitive to discrete disturbance (Johnson et al. 2011, Naugle et al. 2011a,b) although diffuse disturbance over broad spatial and temporal scales can have similar, but less visible effects.

Spatial and temporal scales are important components in measuring and interpreting the effects of disturbance (Johnson and St-Laurent 2011). A discrete event might be significant to individuals or local communities but have little effect on the larger population or region (See Figure 2 in Appendix B). Therefore, defining the spatial extent (the region bounding the analysis), spatial and temporal scale (the dimension of the event), and the resolution (the precision of the measurement) are fundamental inputs into any assessment of disturbance (Wheatley and Johnson 2009).

Two spatial extents for measuring anthropogenic disturbance will be used: 1) the area contained within individual priority areas and 2) each one-mile section within the priority area. This hierarchical arrangement allows concentrated anthropogenic disturbance to exceed recommended thresholds within a smaller area, yet still maintain an overall level at the scale to which sage-grouse respond within priority areas.

(1) Large-scale disturbances that impact sage grouse distribution and abundance at any level will not be permitted within priority areas (subject to valid existing rights). Other, smaller scale proposed anthropogenic disturbances will not disturb more than a total of 3% of the acreage within each priority area.

[iii] Professional judgment as derived from Holloran 2005, Walker et al. 2007, Doherty et al. 2008, Doherty et al. 2011, Naugle et al. 2011a,b.

(2) Proposed anthropogenic surface disturbances within an individual priority area will be encouraged to occur in areas of existing development, or areas of non-suitable habitats. Suitable buffers, depending on the occurrence of adjacent seasonal habitats and local information (e.g. migratory vs. non-migratory populations; [Connelly et al. 2000]) may be applied in siting a proposed anthropogenic surface disturbance to protect surrounding suitable, undisturbed habitats.

(3) Concentrating or clustering disturbances locally while maintaining total disturbance below 3% at the priority habitat scale may cause some one-mile^2 analysis sections to exceed the 3% anthropogenic disturbance goal. For example, a sand and gravel mine can result in intensive development of 40 acres, effectively rendering that area unsuitable for sage-grouse. The actual 40-acre disturbance may not push total anthropogenic disturbance to more than 3% for the entire priority area, but obviously has a significant local impact. In these situations, 40 acres of off-site mitigation will be necessary to offset this loss of habitat. The priority is to implement off-site mitigation within the priority sage-grouse habitat, followed by general sage-grouse habitat.

If a project proponent agrees to site proposed anthropogenic surface disturbance within areas of existing development or areas of non-suitable habitat in a priority area, and the resulting localized total surface disturbance exceeds 3% (but the anthropogenic surface disturbance of the entire priority area does not exceed 3%), the need for off-site mitigation should be evaluated on a case-by-case basis.

Additionally, there are sub-objectives that must be met in general sage-grouse habitat. General sage-grouse habitat is occupied (seasonal or year-round) habitat outside of priority habitat. These areas have been, or will be identified by state fish and wildlife agencies in coordination with respective BLM offices.

It will be necessary to achieve the following sub-objectives for general habitat:

- Quantify and delineate general habitat for capability to provide connectivity among priority areas (Knick and Hanser 2011).
- Conserve, enhance or restore sage-grouse habitat and connectivity (Knick and Hanser 2011) to promote movement and genetic diversity, with emphasis on those habitats occupied by sage-grouse.
- Assess general sage-grouse habitats to determine potential to replace lost priority habitat caused by perturbations and/or disturbances and provide connectivity (Knick and Hanser 2011) between priority areas.
    - These habitats should be given some priority over other general sage-grouse habitats that provide marginal or substandard sage-grouse habitat.

Goals and Objectives
National Technical Team

- Restore historical habitat functionality to support sage-grouse populations guided by objectives to maintain or enhance connectivity. Total area and locations will be determined at the Land Use Plan level.
- Enhance general sage-grouse habitat such that population declines in one area are replaced elsewhere within the habitat.

Conservation Measures

The following conservation measures are designed to achieve population and habitat objectives stated in this report. They are organized by resource programs.

Travel and Transportation

The Travel and Transportation program is principally focused on road networks within the sage-grouse range. Roads can range from state or interstate highways to gravel and two-track roads. Within the sage-grouse range, 95% of the mapped sagebrush habitats are within 2.5 km (1.55 miles) of a mapped road; density of secondary roads exceeds 5 km/km^2 (3.1 miles/247 acres) in some regions (Knick et al. 2011).

Roads have multiple impacts on wildlife in terrestrial ecosystems, including:

1) Increased mortality from collision with vehicles;
2) Changes in behavior;
3) Loss, fragmentation, and alteration of habitat;
4) Spread of exotic species; and
5) Increased human access, resulting in facilitation of additional alteration and use of habitats by humans (Formann and Alexander 1998, Jackson 2000, Trombulak and Frissel 2000).

The effect of roads can be expressed directly through changes in habitat and sage-grouse populations and indirectly through avoidance behavior because of noise created by vehicle traffic (Lyon and Anderson 2003, 75 FR 13910).

Priority sage-grouse habitat areas

- Limit motorized travel to designated roads, primitive roads, and trails at a minimum.
- Travel management should evaluate the need for permanent or seasonal road or area closures.
- Complete activity level plans within five years of the record of decision. During activity level planning, where appropriate, designate routes with current administrative/agency purpose or need to administrative access only.
- Limit route construction to realignments of existing designated routes if that realignment has a minimal impact on sage-grouse habitat, eliminates the need to construct a new road, or is necessary for motorist safety
- Use existing roads, or realignments as described above to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary, and add the surface disturbance to the total disturbance in the priority area. If that disturbance exceeds 3 % for that area, then make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat (see Objectives).

- Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road.
- Conduct restoration of roads, primitive roads and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in Wilderness Study Areas and within lands with wilderness characteristics that have been selected for protection.
- When reseeding roads, primitive roads and trails, use appropriate seed mixes and consider the use of transplanted sagebrush.

Recreation

Recreational activities in sagebrush habitats range from hiking, camping and hunting to lek viewing, and off-highway vehicle (OHV) use. Many of these activities are benign uses in sagebrush habitats. However, excessive use, such as repeated disturbance to leks for viewing that disrupts sage-grouse breeding activities, can have negative effects (75 FR 13910). Off-trail recreation by OHV users can fragment habitat and create corridors for spread of exotic plant species (Knick et al. 2011).

Special Recreation Permits (SRP)

- Only allow SRPs that have neutral or beneficial affects to priority habitat areas.

Lands/Realty

The Lands and Realty program primarily influences rights-of-way (ROWs), land tenure adjustments, and proposed land withdrawals. Existing and proposed developments for ROWs (such as powerlines, pipelines, and renewable energy projects) and access to various mineral claims or energy development locations have the potential to cause habitat loss and fragmentation that decreases habitat and population connectivity. Roads also create corridors that facilitate spread of exotic plant species (Gelbard and Belnap 2003). In addition, roads and infrastructure networks can increase sage-grouse mortality from increased predation and collisions with vehicles. Sage-grouse may avoid areas because of noise from vehicle traffic (Lyon and Anderson 2003). Adjustments for land tenure and strategically-located land withdrawals can be used to increase connectivity within sage-grouse populations and sagebrush habitats (Knick and Hanser 2011). In addition, land acquisitions and withdrawals may be important conservation strategies because increased development on private lands, which is not subject to mitigation, will focus greater needs for conservation of sage-grouse and sagebrush on public lands (Knick et al. 2011).

Rights of Way

Priority sage-grouse habitat areas

- Make priority sage-grouse habitat areas exclusion areas for new ROWs permits. Consider the following exceptions:

- Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs may be co-located only if the entire footprint of the proposed project (including construction and staging), can be completed within the existing disturbance associated with the authorized ROWs.
- Subject to valid, existing rights: where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the absolute minimum standard necessary, and add the surface disturbance to the total disturbance in the priority area. If that disturbance exceeds 3% for that area, then make additional effective mitigation necessary to offset the resulting loss of sage-grouse.

- Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas. Sage-grouse may avoid powerlines because of increased predation risk (Steenhof et al. 1993, Lammers and Collopy 2007). Powerlines effectively influence (direct physical area plus estimated area of effect due to predator movements) at least 39% of the sage-grouse range (Knick et al. 2011). Deaths resulting from collisions with powerlines were an important source of mortality for sage-grouse in southeastern Idaho (Beck et al. 2006, 75 FR 13910)
- Where existing leases or ROWs have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.

  Planning Direction Note: While engaged in this sage-grouse EIS planning process, relocate existing designated ROW corridors crossing priority sage-grouse habitat void of any authorized ROWs, outside of the priority habitat area. If relocation is not possible, undesignate that entire corridor during the planning process.

General sage-grouse habitat areas

- Make general sage-grouse habitat areas "avoidance areas" for new ROWs.
- Where new ROWs are necessary, co-locate new ROWs within existing ROWs where possible.

Land Tenure Adjustment

Priority sage-grouse habitat areas

- Retain public ownership of priority sage-grouse habitat. Consider exceptions where:
  - There is mixed ownership, and land exchanges would allow for additional or more contiguous federal ownership patterns within the priority sage-grouse habitat area.
  - Under priority sage-grouse habitat areas with minority federal ownership, include an additional, effective mitigation agreement for any disposal of federal land. As a final preservation measure consideration should be given to pursuing a permanent conservation easement.

- Where suitable conservation actions cannot be achieved, seek to acquire state and private lands with intact subsurface mineral estate by donation, purchase or exchange in order to best conserve, enhance or restore sage-grouse habitat.

Proposed Land Withdrawals

Priority sage-grouse habitat areas

- Propose lands within priority sage-grouse habitat areas for mineral withdrawal.
- Do not approve withdrawal proposals not associated with mineral activity unless the land management is consistent with sage-grouse conservation measures. (For example; in a proposed withdrawal for a military training range buffer area, manage the buffer area with sage-grouse conservation measures.)

Range Management

Potential impacts of herbivory on sage-grouse and their habitat include:

1) Long-term effects of historic overgrazing on sagebrush habitat;

2) Sage-grouse habitat changes due to herbivory;

3) Direct effects of herbivores on sage-grouse, such as trampling of nests and eggs;

4) Altered sage-grouse behavior due to presence of herbivores; and

5) Impacts to sage-grouse and sage-grouse behavior from structures associated with grazing management (Beck and Mitchell 2000).

Managing livestock grazing to maintain residual cover of herbaceous vegetation so as to reduce predation during nesting may be the most beneficial for sage-grouse populations (Beck and Mitchell 2000, Aldridge and Brigham 2003). Other management objectives that control livestock movements and grazing intensities can be achieved broadly through rotational grazing patterns or locally through water and salt placements (Beck and Mitchell 2000). Treatments used to manipulate vegetation ultimately may have far greater effect on sage-grouse through long-term habitat changes rather than direct impacts of grazing itself (Freilich et al. 2003, Knick et al. 2011). An important objective in managing livestock grazing is to maintain residual cover of herbaceous vegetation to reduce predation during nesting (Beck and Mitchell 2000) and to maintain the integrity of riparian vegetation and other wetlands (Crawford et al. 2004). Proper livestock management (timing, location, and intensity) can assist in meeting sage-grouse habitat objectives and reduce fuels (Briske et al. 2011).

- Within priority sage-grouse habitat, incorporate sage-grouse habitat objectives and management considerations into all BLM grazing allotments through AMPs or permit renewals.

- Work cooperatively on integrated ranch planning within sage-grouse habitat so operations with deeded/BLM allotments can be planned as single units.
- Prioritize completion of land health assessments and processing grazing permits within priority sage-grouse habitat areas. Focus this process on allotments that have the best opportunities for conserving, enhancing or restoring habitat for sage-grouse. Utilize Ecological Site Descriptions (ESDs) to conduct land health assessments to determine if standards of range-land health are being met.
- Conduct land health assessments that include (at a minimum) indicators and measurements of structure/condition/composition of vegetation specific to achieving sage-grouse habitat objectives (Doherty et al. 2011). If local/state seasonal habitat objectives are not available, use sage-grouse habitat recommendations from Connelly et al. 2000b and Hagen et al. 2007.

Implementing Management Actions after Land Health and Habitat Evaluations

- Develop specific objectives to conserve, enhance or restore priority sage-grouse habitat based on ESDs and assessments (including within wetlands and riparian areas). If an effective grazing system that meets sage-grouse habitat requirements is not already in place, analyze at least one alternative that conserves, restores or enhances sage-grouse habitat in the NEPA document prepared for the permit renewal (Doherty et al. 2011b, Williams et al. 2011).
- Manage for vegetation composition and structure consistent with ecological site potential and within the reference state to achieve sage-grouse seasonal habitat objectives.
- Implement management actions (grazing decisions, AMP/Conservation Plan development, or other agreements) to modify grazing management to meet seasonal sage-grouse habitat requirements (Connelly et al. 2011c). Consider singly, or in combination, changes in:

  1) Season or timing of use;

  2) Numbers of livestock (includes temporary non-use or livestock removal);

  3) Distribution of livestock use;

  4) intensity of use; and

  5) Type of livestock (e.g., cattle, sheep, horses, llamas, alpacas and goats) (Briske et al. 2011).
- During drought periods, prioritize evaluating effects of the drought in priority sage-grouse habitat areas relative to their needs for food and cover. Since there is a lag in vegetation recovery following drought (Thurow and Taylor 1999, Cagney et al. 2010), ensure that post-drought management allows for vegetation recovery that meets sage-grouse needs in priority sage-grouse habitat areas.

Riparian Areas and Wet Meadows

- Manage riparian areas and wet meadows for proper functioning condition within priority sage-grouse habitats.
    - Within priority and general sage-grouse habitats, manage wet meadows to maintain a component of perennial forbs with diverse species richness relative to site potential (e.g., reference state) to facilitate brood rearing. Also conserve or enhance these wet meadow complexes to maintain or increase amount of edge and cover within that edge to minimize elevated mortality during the late brood rearing period (Hagen et al. 2007, Kolada et al. 2009, Atamian et al. 2010).
- Where riparian areas and wet meadows meet proper functioning condition, strive to attain reference state vegetation relative to the ecological site description.
    - For example: Within priority sage-grouse habitat, reduce hot season grazing on riparian and meadow complexes to promote recovery or maintenance of appropriate vegetation and water quality. Utilize fencing/herding techniques or seasonal use or livestock distribution changes to reduce pressure on riparian or wet meadow vegetation used by sage-grouse in the hot season (summer) (Aldridge and Brigham 2002, Crawford et al. 2004, Hagen et al. 2007).
- Authorize new water development for diversion from spring or seep source only when priority sage-grouse habitat would benefit from the development. This includes developing new water sources for livestock as part of an AMP/conservation plan to improve sage-grouse habitat.
- Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within priority sage-grouse habitats. Make modifications where necessary, considering impacts to other water uses when such considerations are neutral or beneficial to sage-grouse.

Treatments to Increase Forage for Livestock/Wild Ungulates

Priority sage-grouse habitat areas

- Only allow treatments that conserve, enhance or restore sage-grouse habitat (this includes treatments that benefit livestock as part of an AMP/Conservation Plan to improve sage-grouse habitat.[iv]
- Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to priority sage-grouse habitats to determine if they should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings are part of an AMP/

[iv] Conserve or enhance means to allow no degradation and can mean that the improvement or livestock supplement is part of a grazing/AMP/Conservation Plan that facilitates meeting sage-grouse habitat objectives within a pasture or allotment.

Conservation Plan or if they provide value in conserving or enhancing the rest of the priority habitats, then no restoration would be necessary. Assess the compatibility of these seedings for sage-grouse habitat or as a component of a grazing system during the land health assessments (Davies et al. 2011).

- For example: Some introduced grass seedings are an integral part of a livestock management plan and reduce grazing pressure in important sagebrush habitats or serve as a strategic fuels management area.

Structural Range Improvements and Livestock Management Tools

Priority sage-grouse habitat areas

- Design any new structural range improvements and location of supplements (salt or protein blocks) to conserve, enhance, or restore sage-grouse habitat through an improved grazing management system relative to sage-grouse objectives. Structural range improvements, in this context, include but are not limited to: cattleguards, fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments. Potential for invasive species establishment or increase following construction must be considered in the project planning process and monitored and treated post-construction.
- When developing or modifying water developments, use best management practices (BMPs, see Appendix C) to mitigate potential impacts from West Nile virus (Clark et al. 2006, Doherty 2007, Walker et al. 2007b, Walker and Naugle 2011).
- Evaluate existing structural range improvements and location of supplements (salt or protein blocks) to make sure they conserve, enhance or restore sage-grouse habitat.
  - To reduce outright sage-grouse strikes and mortality, remove, modify or mark fences in high risk areas within priority sage-grouse habitat based on proximity to lek, lek size, and topography (Christiansen 2009, Stevens 2011).
  - Monitor for, and treat invasive species associated with existing range improvements (Gelbard and Belnap 2003 and Bergquist et al. 2007).

Retirement of Grazing Privileges

- Maintain retirement of grazing privileges as an option in priority sage-grouse areas when base property is transferred or the current permittee is willing to retire grazing on all or part of an allotment. Analyze the adverse impacts of no livestock use on wildfire and invasive species threats (Crawford et al. 2004) in evaluating retirement proposals.

  Planning direction Note: Each planning effort will identify the specific allotment(s) where permanent retirement of grazing privileges is potentially beneficial.

Wild Horse and Burro Management

Wild horses and burros have the potential to impact habitats used by sage-grouse by reducing grass, shrub, and forb cover and increasing unpalatable forbs and exotic plants including cheatgrass (Beever and Aldridge 2011). Effects of wild equids on habitats may be especially pronounced during periods of drought or vegetation stress. Wild equids have different grazing patterns than domestic livestock, thus increasing the magnitude of grazing across the entire landscape (Beever and Aldridge 2011).

Ongoing Authorizations/Activities

- Manage wild horse and burro population levels within established Appropriate Management Levels (AML).
- Prioritize gathers in priority sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues, including herd health impacts.

Proposed Authorization/Activities

- Within priority sage-grouse habitat, develop or amend herd management area plans (HMAPs) to incorporate sage-grouse habitat objectives and management considerations for all BLM herd management areas (HMAs).
    - For all HMAs within priority sage-grouse habitat, prioritize the evaluation of all AMLs based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.
- Coordinate with other resources (Range, Wildlife, and Riparian) to conduct land health assessments to determine existing structure/condition/composition of vegetation within all BLM HMAs.
- When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in priority sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified above in priority habitats.

Minerals

The primary potential risks to sage-grouse from energy and mineral development are:

1) Direct disturbance, displacement, or mortality of grouse;
2) Direct loss of habitat, or loss of effective habitat through fragmentation and reduced habitat patch size and quality; and
3) Cumulative landscape-level impacts (Bergquist et al. 2007, Walston et al. 2009, Naugle et al. 2011).

There is strong evidence from the literature to support that surface-disturbing energy or mineral development within priority sage-grouse habitats is not consistent with a goal to maintain or increase populations or distribution. None of the published science reports a positive influence of development on sage-grouse populations or habitats. Breeding populations are severely reduced at well pad densities commonly permitted (Holloran 2005, Walker et al. 2007a). Magnitude of losses varies from one field to another, but findings suggest that impacts are universally negative and typically severe.

Mechanisms that lead to avoidance and decreased fitness have not been empirically tested but rather suggested from multiple correlative and observational studies. For example, abandonment may increase if leks are repeatedly disturbed by raptors perching on power lines near leks (Ellis 1984), by vehicle traffic on nearby roads (Lyon and Anderson 2003), or by noise and human activity associated with energy development during the breeding season (Remington and Braun 1991, Holloran 2005, Kaiser 2006, Blickley and Patricelli *In review*). One recently completed research study in Wyoming (Blickley et al. *In press*), experimentally validates noise from natural gas drilling and roads resulted in a decline of 29% and 73% respectively in male peak attendance at leks relative to paired controls; declines were immediate and sustained throughout the experiment with low statistical support for a cumulative effect of noise over time. Collisions with nearby power lines and vehicles and increased predation by raptors may also increase mortality of birds at leks (Connelly et al. 2000). Alternatively, roads and power lines may indirectly affect lek persistence by altering productivity of local populations or survival at other times of the year. For example, sage-grouse mortality associated with power lines and roads occurs year-round (Beck et al. 2006, Aldridge and Boyce 2007), and ponds created by coal bed natural gas development may increase the risk of West Nile virus mortality in late summer (Walker et al. 2004, Zou et al. 2006, Walker et al. 2007b). Loss and degradation of sagebrush habitat can also reduce carrying capacity of local breeding populations (Swenson et al. 1987, Braun 1998, Connelly et al. 2000, 2000b, Crawford et al. 2004). Birds may avoid otherwise suitable habitat as the density of roads, power lines, or energy development increases (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Doherty et al. 2008, Carpenter et al. 2010).

Negative responses of sage-grouse to energy development were consistent among studies regardless of whether they examined lek dynamics or demographic rates of specific cohorts within populations. Sage-grouse populations decline when birds avoid infrastructure in one or more seasons (Doherty et al. 2008, Carpenter et al. 2010) and when cumulative impacts of development negatively affect reproduction or survival (Aldridge and Boyce 2007), or both demographic rates (Lyon and Anderson 2003, Holloran 2005, Holloran et al. 2010). Avoidance of energy development at the scale of entire oil and gas fields should not be considered a simple shift in habitat use but rather a reduction in the distribution of sage-grouse (Walker et al. 2007). Avoidance is likely to result in true population declines if density dependence, competition, or displacement of birds into poorer-quality adjacent habitats lowers survival or reproduction (Holloran and Anderson 2005, Aldridge and Boyce 2007, Holloran et al. 2010). High site fidelity in sage-grouse also suggests that unfamiliarity with new habitats may also reduce survival, as in other grouse species (Yoder et al. 2004). Sage-grouse in the Powder River Basin were 1.3 times more likely to occupy winter habitats that had not been developed for energy (12 wells per 4 square kilometers or 12 wells per 1.5 square miles), and avoidance of developed areas was most pronounced when it occurred in high-quality winter habitat with abundant sagebrush (Doherty et al. 2008). In a similar study in Alberta, avoidance of otherwise suitable

wintering habitats within a 1.9-kilometer (1.2 mile) radius of energy development resulted in substantial loss of functional habitat surrounding wells (Carpenter et al. 2010).

Long-term studies in the Pinedale Anticline Project Area in southwest Wyoming present the most complete picture of cumulative impacts and provide a mechanistic explanation for declines in populations. Early in development, nest sites were farther from disturbed than undisturbed leks, the rate of nest initiation from disturbed leks was 24 percent lower than for birds breeding on undisturbed leks, and 26 percent fewer females from disturbed leks initiated nests in consecutive years (Lyon and Anderson 2003). As development progressed, adult females remained in traditional nesting areas regardless of increasing levels of development, but yearlings that had not yet imprinted on habitats inside the gas field avoided development by nesting farther from roads (Holloran 2005). The most recent study confirmed that yearling females avoided infrastructure when selecting nest sites, and yearling males avoided leks inside of development and were displaced to the periphery of the gas field (Holloran et al. 2010). Recruitment of males to leks also declined as distance within the external limit of development increased, indicating a high likelihood of lek loss near the center of developed oil and gas fields (Kaiser 2006). The most important finding from studies in Pinedale was that sage-grouse declines are explained in part by lower annual survival of female sage-grouse and that the impact on survival resulted in a population-level decline (Holloran 2005). High site fidelity but low survival of adult sage-grouse combined with lek avoidance by younger birds (Holloran et al. 2010) resulted in a time lag of 3–4 years between the onset of development activities and lek loss (Holloran 2005). The time lag observed by Holloran (2005) in the Anticline matched that for leks that became inactive 3–4 years after natural gas development in the Powder River Basin (Walker et al. 2007a). Analysis of seven oil and gas fields across Wyoming showed time lags of 2–10 years between activities associated with energy development and its measurable effects on sage-grouse populations (Harju et al. 2010).

Impacts as measured by the number of males attending leks are most severe near the lek, remain discernible out to >4 miles (Holloran 2005, Walker et al. 2007, Tack 2009, Johnson et al. 2011), and often result in lek extirpations (Holloran 2005, Walker et al. 2007). Negative effects of well surface occupancy were apparent out to 3.1 miles, the largest radius investigated, in 2 of 7 study areas in Wyoming (Harju et al. 2010). Curvilinear relationships show that lek counts decreased with distance to the nearest active drilling rig, producing well, or main haul road and that development within 3 to 4 miles of leks decrease counts of displaying males (Holloran 2005). All well-supported models in Walker et al. (2007) indicate a strong negative effect, estimated as proportion of development within either 0.5 miles or 2 miles, on lek persistence. A model with development at 4 miles had less support, but the regression coefficient indicated that negative impacts within 4 miles were still apparent. Two additional studies reported negative impacts apparent out to 8 miles on large lek occurrence (>25 males; Tack 2009) and out to 11.7 miles on lek trends (Johnson et al. 2011), the largest scales evaluated.

Past BLM conservation measures have focused on 0.25 mile No Surface Occupancy (NSO) buffers around leks, and timing stipulations applied to 0.6 mile buffers around leks to protect both breeding and nesting activities. Given impacts of large scale disturbances described above that occur across seasons and impact all demographic rates, applying NSO or other buffers around leks at any distance is unlikely to be effective. Even if this approach were to be continued, it should be noted that protecting even 75 to >80% of nesting

hens would require a 4-mile radius buffer (Table 1). Even a 4-mile NSO buffer would not be large enough to offset all the impacts reviewed above. A 4-mile NSO likely would not be practical given most leases are not large enough to accommodate a buffer of this size, and lek spacing within priority habitats is such that lek-based buffers may overlap and preclude all development.

We do not include timing restrictions on construction and drilling during the breeding season because they do not prevent impacts of infrastructure (e.g., avoidance, mortality) at other times of the year, during the production phase, or in other seasonal habitats that are crucial for population persistence (e.g., winter; Walker et al. 2007). Seasonal timing restrictions may be effective during the exploration phase. Instead, we recommend excluding mineral development and other large scale disturbances from priority habitats where possible, and where it is not limit disturbance as much as possible.

For these reasons, we believe the conservation strategy most likely to meet the objective of maintaining or increasing sage-grouse distribution and abundance is to exclude energy development and other large scale disturbances from priority habitats, and where valid existing rights exist, minimize those impacts by keeping disturbances to 1 per section with direct surface disturbance impacts held to 3% of the area or less.

Table 1. Distance Of Greater Sage-Grouse Nests From Lek Of Capture[1]

% Nests within 2-mi. radius	% Nests Within 4-mi. radius	Location	Study
46.4 (n = 13/28)	85.7 (n = 24/28)	North Park, CO	Peterson (1980)
59.5 (n = 182/306)	85 (n = 260/306)	Idaho	Autenrieth (1981)
71.8 (n = 51/71)	90.1 (n = 64/71)	North Park, CO	Giesen (1995)
49.5 (n = 192/388)	77.1 (n = 299/388)	Moffat County, CO	Thompson et al. 2005, Thompson 2006
48.4 (n = 15/31)	96.8 (n = 30/31)	Eagle and South Routt Counties, CO	Graham and McConnell 2004, Graham and Jones 2005
44.7 (n = 152/340)	74.4 (n = 243/340)	Wyoming	Holloran and Anderson (2005)
35.5 (n = 86/238)	61 (n = 145/238) @ 3 miles (data unavailable at this time for 4 miles)	Montana	Moynahan and Lindberg (2006)
35.5 (n = 27/76)	76.3 (n = 58/76)	Montana	Tack (2009)
50 (n = 495)	>80 (n = 495)	Oregon	Hagen (2011)

[1]Data obtained from Colorado Greater Sage-grouse Conservation Plan and additional recent studies/plans.

Fluid Minerals

Unleased Federal Fluid Mineral Estate

Alternative A

- Close priority sage-grouse habitat areas to fluid mineral leasing. Upon expiration or termination of existing leases, do not accept nominations/expressions of interest for parcels within priority areas.
- Allow geophysical exploration within priority sage-grouse habitat areas to obtain exploratory information for areas outside of and adjacent to priority sage-grouse habitat areas. Allow geophysical operations only by helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other restrictions that may apply.

Alternative B

- Close priority sage-grouse habitat areas to fluid mineral leasing. Consider an exception:
  - When there is an opportunity for the BLM to influence conservation measures where surface and/or mineral ownership is not entirely federally owned (i.e., checkerboard ownership). In this case, a plan amendment may be developed that opens the priority area for new leasing. The plan must demonstrate long-term population increases in the priority area through mitigation (prior to issuing the lease) including lease stipulations, off-site mitigation, etc., and avoid short-term losses that put the sage-grouse population at risk from stochastic events leading to extirpation.
- Allow geophysical exploration within priority sage-grouse habitat areas to obtain exploratory information for areas outside of and adjacent to priority sage-grouse habitat areas. Only allow geophysical operations by helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other restrictions that may apply.

Leased Federal Fluid Mineral Estate

Priority sage-grouse habitat areas (with varying levels of exploration & development)

Apply the following conservation measures through Resource Management Plan (RMP) implementation decisions (e.g., approval of an Application for Permit to Drill, Sundry Notice, etc.) and upon completion of the environmental record of review (43 CFR 3162.5), including appropriate documentation of compliance with NEPA. In this process evaluate, among other things:

1. Whether the conservation measure is "reasonable" (43 CFR 3101.1-2) with the valid existing rights; and
2. Whether the action is in conformance with the approved RMP.[v]

[v] Plan conformance means, "a resource management action shall be specifically provided for in the plan, or if not specifically mentioned, shall be clearly consistent with the terms, conditions, and decisions of the approved plan or amendment." 43 CFR 1601.0-5(b).

Conservation Measures/Proposed Planning Decisions
National Technical Team

Provide the following conservation measures as terms and conditions of the approved RMP:

- Do not allow new surface occupancy on federal leases within priority habitats, this includes winter concentration areas (Doherty et al. 2008, Carpenter et al. 2010) during any time of the year. Consider an exception:
    - If the lease is entirely within priority habitats, apply a 4-mile NSO around the lek, and limit permitted disturbances to 1 per section with no more than 3% surface disturbance in that section.
    - If the entire lease is within the 4-mile lek perimeter, limit permitted disturbances to 1 per section with no more than 3% surface disturbance in that section. Require any development to be placed at the most distal part of the lease from the lek, or, depending on topography and other habitat aspects, in an area that is less demonstrably harmful to sage-grouse.
- Apply a seasonal restriction on exploratory drilling that prohibits surface-disturbing activities during the nesting and early brood-rearing season in all priority sage-grouse habitat during this period.
- Do not use Categorical Exclusions (CXs) including under the Energy Policy Act of 2005, Section 390 in priority sage-grouse habitats due to resource conflicts.
- Complete Master Development Plans in lieu of Application for Permit to Drill (APD)-by-APD processing for all but wildcat wells.
- When permitting APDs on existing leases that are not yet developed, the proposed surface disturbance cannot exceed 3% for that area. Consider an exception if:
    - Additional, effective mitigation is demonstrated to offset the resulting loss of sage-grouse (see Objectives).
        - When necessary, conduct additional, effective mitigation in 1) priority sage-grouse habitat areas or – less preferably – 2) general sage-grouse habitat (dependent upon the area-specific ability to increase sage-grouse populations).
        - Conduct additional, effective mitigation first within the same population area where the impact is realized, and if not possible then conduct mitigation within the same Management Zone as the impact, per 2006 WAFWA Strategy – pg 2-17.
- Require unitization when deemed necessary for proper development and operation of an area (with strong oversight and monitoring) to minimize adverse impacts to sage-grouse according to the Federal Lease Form, 3100-11, Sections 4 and 6.
- Identify areas where acquisitions (including subsurface mineral rights) or conservation easements, would benefit sage-grouse habitat.
- Require a full reclamation bond specific to the site. Insure bonds are sufficient for costs relative to reclamation (Connelly et al. 2000, Hagen et al. 2007) that would result in full restoration. Base the reclamation costs on the assumption that contractors for the BLM will perform the work.

- Make applicable Best Management Practices (BMPs, see Appendix D) mandatory as Conditions of Approval within priority sage-grouse habitat.

Solid Minerals

Coal

Priority sage-grouse habitat areas

- *Surface mines*: Find unsuitable all surface mining of coal under the criteria set forth in 43 CFR 3461.5.
- *Sub-surface mines:* Grant no new mining leases unless all surface disturbances (appurtenant facilities) are placed outside of the priority sage-grouse habitat area.
- For coal mining operations on existing leases:
    - *Sub-surface mining*: in priority sage-grouse habitat areas, place any new appurtenant facilities outside of priority areas. Where new appurtenant facilities associated with the existing lease cannot be located outside the priority sage-grouse habitat area, co-locate new facilities within existing disturbed areas. If this is not possible, then build any new appurtenant facilities to the absolute minimum standard necessary.

General sage-grouse habitat

- Apply minimization of surface-disturbing or disrupting activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal sage-grouse habitats. Apply these measures during activity level planning.
    - Use additional, effective mitigation to offset impacts as appropriate (determined by local options/needs).

Locatable Minerals

Priority sage-grouse habitat areas

- Propose withdrawal from mineral entry based on risk to the sage-grouse and its habitat from conflicting locatable mineral potential and development.
    - Make any existing claims within the withdrawal area subject to validity patent exams or buy out. Include claims that have been subsequently determined to be null and void in the proposed withdrawal.
    - In plans of operations required prior to any proposed surface disturbing activities, include the following:
        - Additional, effective mitigation in perpetuity for conservation (In accordance with existing policy, WO IM 2008-204). Example: purchase private land and mineral rights or severed subsurface mineral rights within the priority area and deed to US Government).

- Consider seasonal restrictions if deemed effective.

- Make applicable Best Management Practices (see Appendix E) mandatory as Conditions of Approval within priority sage-grouse habitat.

Non-energy Leasable Minerals (i.e. sodium, potash)

Priority sage-grouse habitat areas

- Close priority habitat to non-energy leasable mineral leasing. This includes not permitting any new leases to expand an existing mine.
- For existing non-energy leasable mineral leases, in addition to the solid minerals BMPs (Appendix E), follow the same BMPs applied to Fluid Minerals (Appendix D), when wells are used for solution mining.

Saleable Mineral Materials

Priority sage-grouse habitat areas

- Close priority habitat to mineral material sales.
- Restore saleable mineral pits no longer in use to meet sage-grouse habitat conservation objectives.

Mineral Split Estate

Priority sage-grouse habitat areas

- Where the federal government owns the mineral estate, and the surface is in non-federal ownership, apply the conservation measures applied on public lands.
- Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate Fluid Mineral BMPs (see Appendix D) to surface development.

Wildfire Suppression, Fuels Management and Fire Rehabilitation

These programs address the threats resulting from wildfires and post-wildfire effects along with a program (fuels management) designed to try to reduce these impacts. Together these programs provide a significant opportunity to influence sagebrush habitats that benefit sage-grouse. Wildfire, particularly in low elevation Wyoming big sagebrush systems, has resulted in significant habitat loss primarily because of subsequent invasion by cheatgrass and other exotic plant species (Miller et al. 2011). The number of fires and total acreage burned has increased throughout the sage-grouse range (Miller et al. 2011). Long-term monitoring following prescribed fire is important because treatments may not increase either yield or nutritional quality of forbs eaten by sage-grouse, and also may decrease abundance of insects that are important for growth of sage-grouse chicks (Beck et al. 2009, Rhodes et al. 2010). Therefore, it is critical

not only to conduct management actions that reduce the long-term loss of sagebrush but also to restore and recover burned areas to habitats that will be used by sage-grouse (Pyke 2011). Prescribed fire is a tool that can assist in the recovery of sagebrush habitat in some vegetation types (Davies et al. 2011).

Fuels Management

Priority sage-grouse habitat areas

- Design and implement fuels treatments with an emphasis on protecting existing sagebrush ecosystems.
    - Do not reduce sagebrush canopy cover to less than 15% (Connelly et al. 2000, Hagen et al. 2007) unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of priority sage-grouse habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover in the EA process.
    - Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present in a priority area.
    - Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.
    - Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species; Connelly et al. 2000, Hagen et al. 2007, Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored and site specific variables allow, the use of prescribed fire for fuel breaks that would disrupt the fuel continuity across the landscape could be considered, in stands where cheatgrass is a very minor component in the understory (Brown 1982).
    - Monitor and control invasive vegetation post-treatment.
    - Rest treated areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise (WGFD 2011).
    - Require use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success (Richards et al. 1998). Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat objectives (Pyke 2011).
    - Design post fuels management projects to ensure long term persistence of seeded or pre-treatment native plants. This may require temporary or long-term changes in livestock grazing management, wild horse and burro management, travel management, or other activities to achieve and maintain the desired condition of the fuels management project (Eiswerth and Shonkwiler 2006).

- Design fuels management projects in priority sage-grouse habitat to strategically and effectively reduce wildfire threats in the greatest area. This may require fuels treatments implemented in a more linear versus block design (Launchbaugh et al. 2007).

During fuels management project design, consider the utility of using livestock to strategically reduce fine fuels (Diamond et al. 2009), and implement grazing management that will accomplish this objective Davies et al. 2011 and Launchbaugh et al. 2007). Consult with ecologists to minimize impacts to native perennial grasses.

Fire operations

- In priority sage-grouse habitat areas, prioritize suppression, immediately after life and property, to conserve the habitat.
- In general sage-grouse habitat, prioritize suppression where wildfires threaten priority sage-grouse habitat.
- Follow Best Management Practices (WO IM 2011-138, see appendix E.)

Emergency Stabilization and Rehabilitation (ES&R)

- Prioritize native seed allocation for use in sage-grouse habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from ES&R projects outside of priority sage-grouse habitat to those inside it. Use of native plant seeds for ES&R seedings is required based on availability, adaptation (site potential), and probability of success Richards et al. 1998). Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat conservation objectives (Pyke 2011). Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts.
- Design post ES&R management to ensure long term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain the desired condition of ES&R projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006).
- Consider potential changes in climate (Miller at al. 2011) when proposing post-fire seedings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed. (Kramer and Havens 2009).

Habitat Restoration

Habitat restoration cross-cuts all programs. It is an important tool to create and/or maintain a landscape that benefits sage-grouse.

- Prioritize implementation of restoration projects based on environmental variables that improve chances for project success in areas most likely to benefit sage-grouse (Meinke et al. 2009).
    - Prioritize restoration in seasonal habitats that are thought to be limiting sage-grouse distribution and/or abundance.
- Include sage-grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007) or if available, State Sage-Grouse Conservation plans and appropriate local information in habitat restoration objectives. Make meeting these objectives within priority sage-grouse habitat areas the highest restoration priority.
- Require use of native seeds for restoration based on availability, adaptation (ecological site potential), and probability of success (Richards et al. 1998). Where probability of success or adapted seed availability is low, non-native seeds may be used as long as they support sage-grouse habitat objectives (Pyke 2011).
- Design post restoration management to ensure long term persistence. This could include changes in livestock grazing management, wild horse and burro management and travel management, etc., to achieve and maintain the desired condition of the restoration effort that benefits sage-grouse (Eiswerth and Shonkwiler 2006).
- Consider potential changes in climate (Miller et al. 2011) when proposing restoration seedings when using native plants. Consider collection from the warmer component of the species current range when selecting native species (Kramer and Havens 2009).
- Restore native (or desirable) plants and create landscape patterns which most benefit sage-grouse.
- Make re-establishment of sagebrush cover and desirable understory plants (relative to ecological site potential) the highest priority for restoration efforts.
- In fire prone areas where sagebrush seed is required for sage-grouse habitat restoration, consider establishing seed harvest areas that are managed for seed production (Armstrong 2007) and are a priority for protection from outside disturbances.

Monitoring of Sage-grouse and Sagebrush Habitats

Given the degree of uncertainty associated with managing natural resources, adaptive management approaches that include rigorous monitoring protocols to support them are essential if conservation goals are to be realized (Walters 1986, Burgman et al. 2005, Stankey et al. 2005, Turner 2005, Lyons et al. 2008). Recent efforts to develop range-wide policy and conservation measures for sage-grouse have emphasized the importance of improving monitoring efforts on both sage-grouse distribution and population trends, and the habitat they depend on (Wambolt et al. 2002, Stiver et al. 2006, Reese and Boyer 2007, Connelly et al. 2011a).

Monitoring is necessary to provide an objective appraisal of the effects of potentially positive conservation actions, and to assess the relative negative effects of management actions to sage-grouse populations and their habitats. Adaptive management planning also reveals substantial gaps in knowledge about key processes and functional relationships (Walters 1987), and therefore helps to identify and prioritize research needs. Ideally, monitoring attributes of sage-grouse habitat and sage-grouse populations will allow linking real or potential habitat changes from natural events and management actions to vital rates of sage-grouse populations (Stiver et al. 2006, Naugle and Walker 2007). Population monitoring led by State wildlife agencies and consistent long-term habitat monitoring among all jurisdictions will enable managers to identify indicators associated with population change across large landscapes and to ameliorate negative effects with appropriate conservation actions (Burgman et al. 2005, Turner 2005).

Sage-grouse select habitats at multiple scales across large landscapes (Connelly et al. 2003, Stiver et al. 2006), which monitoring strategies for sage-grouse habitats must reflect. At landscape levels (RMP level), monitoring should track percent of sagebrush and cover and maturity of stands, preservation of key seasonal habitat components, and the degree of connectivity among populations, seasonal habitats and stands. At the project level, a truly effective monitoring strategy will include measures as to how plant communities respond, how that relates to structural and other sage-grouse habitat requirements, and how sage-grouse populations respond demographically. Quantitative data for habitat measurements should be collected that are sensitive to the land use change being proposed (Stiver et al 2006). Monitoring must occur over the proper time frames to evaluate temporal variation of important components of sage-grouse habitats (Stiver et al. 2006).

Recognizing the importance of monitoring both sage-grouse habitat and populations, BLM in November 2004, completed the National Sage-Grouse Habitat Conservation Strategy (USDI BLM 2004) to address conservation and management of sage-grouse. The overarching goal was to "provide a consistent and scientifically based approach for collection and use of monitoring data for sagebrush habitats, sage-grouse and other components of the sagebrush community." Four action items were identified to accomplish this goal: 1) Develop, cooperatively with our partners, appropriate monitoring strategies and protocols at the appropriate scale for sage-grouse habitat in conjunction with the development of the range-wide conservation action plan; 2) Develop, cooperatively with our partners, a sage-grouse habitat assessment methodology in conjunction with development of the range-wide conservation action plan; 3) Incorporate the sage-grouse habitat assessment framework into the land health assessment process for evaluating indicators of healthy rangelands; and 4) In conjunction with the development of the range-wide conservation action plan, issue guidance for collecting fine-scale monitoring and assessment information and incorporating requirements into implementation projects and plans.

To date, BLM has completed portions of the above action items. In August 2010, the Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool was completed (Stiver et al. 2010). The assessment framework provides policy makers, resource managers, and natural resource specialists a comprehensive framework for landscape conservation in sagebrush ecosystems with an emphasis on sage-grouse. Implementation policy directing consistent use of the assessment still needs to be completed by BLM in addition to other guidance identified in the strategy.

BLM has recently completed the agency's Assessment, Inventory, and Monitoring (AIM) Strategy (Toevs 2011). The AIM strategy identifies "core indicators" for reporting landscape level attributes. The AIM strategy has resulted in BLM adopting the Natural Resource Conservation Service's National Resource Inventory (NRI) methodology as part of BLM's Landscape Monitoring Project. The NRI protocols provide BLM a statistical framework for evaluating management actions, and programs and policies at a landscape or regional level. Initial NRI data collection occurred on all lands managed by BLM during the summer of 2011. During the summer of 2012 additional NRI monitoring sites are being incorporated to evaluate sagebrush habitats that contain approximately two-thirds of the sage-grouse populations west wide. At this time, the remaining sage-grouse populations have not been identified for long-term habitat monitoring due to funding short falls. In addition to prioritizing funding to fully achieve this objective, habitat monitoring protocols at a fine scale to evaluate impacts at a project level remain to be developed.

Estimates of sage-grouse population size are not available for any population, rather trends in population size are estimated through a lek count index. Exact estimates of sage grouse abundance, while desirable, are probably less important than trends and particularly how sage grouse respond to management actions.

Counts of males attending leks in the spring have been used by wildlife agencies as the primary index to population trends since Patterson suggested that this method might be useful in 1952 (Patterson 1952). Use of convenience sampling to monitor bird populations has been criticized (Ellingson and Lukacs 2003), and lek counts in particular have been challenged as inconsistently conducted, inherently biased and without any known relationship to population size (Beck and Braun 1980, Walsh et al. 2004, Sedinger 2007). Despite limitations of the method, lek counts remain the best available information on population trends over time, and pragmatic strategies to improve population estimation remain elusive (Reese and Bowyer 2007).

It is beyond the scope of this report to develop methodology to better estimate sage-grouse distribution and abundance, but rather to emphasize that WAFWA should convene a technical group for this purpose, and that this group should consider ways to:

1. Standardize, at least within management zones, lek count methodology.
2. Develop and implement methodology to estimate the number of leks in an unbiased manner (Walsh et al. 2004, Sedinger 2007), and determine the location of new or previously unknown leks (particularly important since priority habitat designations are based in large part on locations of leks).
3. Develop and implement methodology to estimate the proportion of males detected while attending leks, and explore degree and nature of variability.
4. Develop and explore methodology to estimate sex ratios within sage-grouse populations.
5. Use Geographic Information System (GIS) mapping technology and analytical tools to track changes in distribution over time, connectivity among populations and population segments, and explore spatially explicit models that link sage-grouse population performance with ecological indicators (Naugle and Walker 2007).

The standardization of monitoring methods and implementation of a defensible monitoring approach is vital if BLM and other conservation partners are to use the resulting information to guide implementation of conservation activities (Naugle and Walker 2007). Monitoring strategies for sage-grouse habitat and populations must be collaborative, as habitat occurs across varied land ownership (52% BLM, 8% USFS, 31% private 5% state, 4% BIA and other Federal; 75 FR 13910), and state fish and wildlife agencies have primary responsibility for population level management of wildlife, including monitoring.

Acronyms

AML	Appropriate Management Level
AMP	Allotment Management Plan
APD	Application of Permit to Drill
BLM	Bureau of Land Management
BMPs	Best Management Practices
CX	Categorical Exclusion
ERMA	Extensive Recreation Management Areas
ESA	Endangered Species Act
ESD	Ecological Site Description
ES&R	Emergency Stabilization and Rehabilitation
IM	Instruction Memorandum
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NMAC	National Multi-Agency Coordination Group
NRCS	Natural Resources Conservation Service
NPT	National Policy Team
NTT	National Technical Team
RIDT	Regional Interdisciplinary Team
RMP	Resource Management Plan
RMT	Regional Management Team
ROW	Right-of-Way
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WAFWA	Western Association of Fish and Wildlife Agencies

Glossary

2008 WAFWA Sage-grouse MOU: A memorandum of understanding (MOU) among Western Association of Fish and Wildlife Agencies, U.S. Department of Agriculture, Forest Service, U.S. Department of the Interior, Bureau of Land Management, U.S. Department of the Interior, Fish and Wildlife Service, U.S. Department of the Interior, Geological Survey, U.S. Department of Agriculture, Natural Resources Conservation Service, and the U.S. Department of Agriculture, Farm Service Agency. The purpose of the MOU is to provide for cooperation among the participating state and federal land, wildlife management and science agencies in the conservation and management of sage-grouse (*Centrocercus urophasianus*) sagebrush (*Artemisia* spp.) habitats and other sagebrush-dependent wildlife throughout the western United States and Canada and a commitment of all agencies to implement the 2006 WAFWA Conservation Strategy.

2011 Partnership MOU: A partnership agreement among the United States Department of Agriculture Natural Resource Conservation Service, Forest Service, United State Department of the Interior, Bureau of Land Management, and Fish and Wildlife Service. 2011. This MOU is for range management – to implement NRCS practices on adjacent federal properties.

Administrative Access: A term used to describe access for resource management and administrative purposes such as fire suppression, cadastral surveys, permit compliance, law enforcement and military in the performance of their official duty, or other access needed to administer BLM-managed lands or uses.

Avoidance Areas: Areas to be avoided but that may be available for location of ROWs with special stipulations.

Best Management Practices (BMPs): A suite of techniques that guide or may be applied to management actions to aide in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a planning decision unless the plans specify that they are mandatory.

Casual Use: Casual use means activities ordinarily resulting in no or negligible disturbance of the public lands, resources, or improvements. For examples for rights of ways see 43 CFR 2801.5. For examples for locatable minerals see 43 CFR 3809.5.

Conservation Plan: The recorded decisions of a landowner or operator, cooperating with a conservation district, on how the landowner or operator plans, within practical limits, to use his/her land according to its capability and to treat it according to its needs for maintenance or improvement of the soil, water, animal, plant, and air resources.

Conserve: To cause no degradation or loss of sage-grouse habitat. Conserve can also refer to maintaining intact sagebrush steppe by fine tuning livestock use, watching for and treating new invasive species and maintaining existing range improvements that benefit sage-grouse etc.

Ecological Site: A distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation.

Exploration: Active drilling and geophysical operations to:

a. Determine the presence of the mineral resource; or
b. Determine the extent of the reservoir.

Development: Active drilling and production of wells

Development Area: Areas primarily leased with active drilling and wells capable of production in payable quantities.

Enhance: The improvement of habitat by increasing missing or modifying unsatisfactory components and/or attributes of the plant community to meet sage-grouse objectives. Examples include modifying livestock grazing systems to improve the quantity and vigor of desirable forbs, improving water flow in riparian areas by modifying existing spring developments to return more water to the riparian area below the development, or marking fences to minimize sage-grouse hits and mortality.

General Sage-grouse Habitat: Is occupied (seasonal or year-round) habitat outside of priority habitat. These areas have been identified by state fish and wildlife agencies in coordination with respective BLM offices.

Integrated Ranch Planning: A method for ranch planning that takes a holistic look at all elements of the ranching operations, including strategic and tactical planning, rather than approaching planning as several separate enterprises.

Large Scale Anthropogenic Disturbances: Features include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells, geothermal wells and associated facilities, pipelines, landfills, agricultural conversion, homes, and mines.

Late Brood Rearing Area: Habitat includes mesic sagebrush and mixed shrub communities, wet meadows, and riparian habitats as well as some agricultural lands (e.g. alfalfa fields, etc).

Lek:[vi] A traditional courtship display area attended by male sage-grouse in or adjacent to sagebrush dominated habitat. A lek is designated based on observations of two or more male sage-grouse engaged in courtship displays. Sub-dominant males may display on itinerant strutting areas during population peaks. Such areas usually fail to become established leks. Therefore, a site where less than five males are observed strutting should be confirmed active for two years before meeting the definition of a lek (Connelly et al 2000, Connelly et al. 2003, 2004).

> **Lek Complex:** A lek or group of leks within 2.5 km (1.5 mi) of each other between which male sage-grouse may interchange from one day to the next. Fidelity to leks has been well documented.

[vi] Each State may have a slightly different definition of lek, active lek, inactive lek, occupied, and unoccupied leks. Regional planning will use the appropriate definition provided by the State of interest.

Visits to multiple leks are most common among yearlings and less frequent for adult males, suggesting an age-related period of establishment (Connelly et al. 2004).

Active Lek: Any lek that has been attended by male sage-grouse during the strutting season.

Inactive Lek: Any lek where sufficient data suggests that there was no strutting activity throughout a strutting season. Absence of strutting grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: 1) an absence of sage-grouses on the lek during at least 2 ground surveys separated by at least seven days. These surveys must be conducted under ideal conditions (April 1-May 7 (or other appropriate date based on local conditions), no precipitation, light or no wind, half-hour before sunrise to one hour after sunrise) or 2) a ground check of the exact known lek site late in the strutting season (after April 15) that fails to find any sign (tracks, droppings, feathers) of strutting activity. Data collected by aerial surveys should not be used to designate inactive status as the aerial survey may actually disrupt activities.

Occupied Lek: A lek that has been active during at least one strutting season within the prior 10 years.

Unoccupied Lek: A lek that has either been "destroyed" or "abandoned."

Destroyed Lek: A formerly active lek site and surrounding sagebrush habitat that has been destroyed and is no longer suitable for sage-grouse breeding.

Abandoned Lek: A lek in otherwise suitable habitat that has not been active during a period of 10 consecutive years. To be designated abandoned, a lek must be "inactive" (see above criteria) in at least four non-consecutive strutting seasons spanning the 10 years. The site of an "abandoned" lek should be surveyed at least once every 10 years to determine whether it has been re-occupied by sage-grouse.

Master Development Plans: A set of information common to multiple planned wells, including drilling plans, Surface Use Plans of Operations, and plans for future production.

Mitigation: Compensating for resource impacts by replacing or providing substitute resources or habitat.

Notice-level Mining Activities: To qualify for a Notice the mining activity must: 1) constitute exploration, 2) not involve bulk sampling of more than 1,000 tons of presumed ore, 3) must not exceed 5 acres of surface disturbance, and 4) must not occur in one of the special category lands listed in 43 CFR 3809.11(c). The Notice is to be filed in the BLM field office with jurisdiction over the land involved. The Notice does not need to be on a particular form but must contain the information required by 43 CFR 3809.301(b).

Offsite Mitigation: Compensating for resource impacts by replacing or providing substitute resources or habitat at a different location than the project area.

Plan of Operations: A Plan of Operations is required for all mining activity exploration greater than 5 acres or surface disturbance greater than casual use on certain special category lands. Special category lands are described under 43 CFR 3809.11(c) and include such lands as designated Areas of Critical Environmental Concern, lands within the National Wilderness Preservation System, and areas closed to off-road vehicles, among others. In addition, a plan of operations is required for activity greater than casual use on lands patented under the Stock Raising Homestead Act with Federal minerals where the operator does not have the written consent of the surface owner (43 CFR 3814). The Plan of operations needs to be filed in the BLM field office with jurisdiction over the land involved. The Plan of Operations does not need to be on a particular form but must address the information required by 43 CFR 3809.401(b).

Priority Sage-grouse Habitat: Areas that have been identified as having the highest conservation value to maintaining sustainable sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by state fish and wildlife agencies in coordination with respective BLM offices.

Range Improvement: The term range improvement means any activity, structure or program on or relating to rangelands which is designed to improve production of forage; change vegetative composition; control patterns of use; provide water; stabilize soil and water conditions; and provide habitat for livestock and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical means to accomplish the desired results.

Roads, Primitive Roads and Trails: Roads, primitive roads or trails that have been specifically designated for motorized use through a public implementation-level National Environmental Policy Act process in accordance with 43 CFR, Part 8340.

Reclamation: Rehabilitation of a disturbed area to make it acceptable for designated uses. This normally involves re-contouring, replacement of topsoil, re-vegetation, and other work necessary to ensure eventual restoration of the site.

Reference State: The reference state is the state where the functional capacities represented by soil/site stability, hydrologic function, and biotic integrity are performing at an optimum level under the natural disturbance regime. This state usually includes, but is not limited to, what is often referred to as the potential natural plant community.

Restoration: Implementation of a set of actions that promotes plant community diversity and structure that allows plant communities to be more resilient to disturbance and invasive species over the long term. The long-term goal is to create functional, high quality habitat that is occupied by sage-grouse. Short-term goal may be to restore the landform, soils and hydrology and increase the percentage of preferred vegetation, seeding of desired species, or treatment of undesired species.

State: A state is comprised of an integrated soil and vegetation unit having one or more biological communities that occur on a particular ecological site and that are functionally similar with respect to the three attributes (soil/site stability, hydrologic function, and biotic integrity) under natural disturbance regimes.

Stochastic: Randomly determined event, chance event, a condition determined by predictable processes and a random element.

Surface Disruption: Resource uses and activities that are likely to alter the behavior of, displace, or cause stress to sage-grouse occurring at a specific location and/or time. Surface disruption includes those actions that alter behavior or cause the displacement of sage-grouse such that reproductive success is negatively affected, or the physiological ability to cope with environmental stress is compromised. Examples of disruptive activities may include noise, vehicle traffic, or other human presence regardless of the associated activity.

Surface Disturbance: Suitable habitat is considered disturbed when it is removed and unavailable for immediate sage-grouse use.

a. Long-term removal occurs when habitat is physically removed through activities that replace suitable habitat with long term occupancy of unsuitable habitat such as a road, powerline, well pad or active mine. Long-term removal may also result from any activities that cause soil mixing, soil removal, and exposure of the soil to erosive processes.

b. Short–term removal occurs when vegetation is removed in small areas, but restored to suitable habitat within a few years (< 5) of disturbance, such as a successfully reclaimed pipeline, or successfully reclaimed drill hole or pit.

c. Suitable habitat rendered unusable due to numerous anthropogenic disturbances

d. Anthropogenic surface disturbance are surface disturbances meeting the above definitions which result from human activities.

Transition: A shift between two states. Transitions are not reversible by simply altering the intensity or direction of factors that produced the change. Instead, they require new inputs such as revegetation or shrub removal. Practices, such as these, that accelerate succession are often expensive to apply.

Unitization: Operation of multiple leases as a single lease under a single operator

Wildcat Well: An exploratory oil well drilled in land not known to be an oil field.

Wildland Fire: Any non-structure fire that occurs in the vegetation and/or natural fuels. Includes both prescribed fire and wildfire (NWCG Memo #024-2010 April 30, 2010. www.nwcg.gov).

Winter Concentration Areas: Sage-grouse winter habitats which are occupied annually by sage-grouse and provide sufficient sagebrush cover and food to support birds throughout the entire winter (especially periods with above average snow cover). Many of these areas support several different breeding

populations of sage-grouse. Sage-grouse typically show high fidelity for these areas, and loss or fragmentation can result in significant population impacts.

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Appendix A.
National Technical Team

Appendices

Appendix A. Life History Requirements of Greater Sage-grouse (excerpted from 75 FR 13910)

Greater sage-grouse depend on a variety of shrub-steppe habitats throughout their life cycle, and are considered obligate users of several species of sagebrush (e.g., *Artemisia tridentata* ssp. *wyomingensis* (Wyoming big sagebrush), *A. t.* ssp. *vaseyana* (mountain big sagebrush), and *A. t. tridentata* (basin big sagebrush)) (Patterson 1952, Braun et al. 1976, Connelly et al. 2000a, Connelly et al. 2004, Miller et al. 2011). Greater sage-grouse also use other sagebrush species such as *A. arbuscula* (low sagebrush), *A. nova* (black sagebrush), *A. frigida* (fringed sagebrush), and *A. cana* silver sagebrush (Schroeder et al. 1999, Connelly et al. 2004,). Thus, sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats (Schroeder et al. 2004). Sage-grouse exhibit strong site fidelity (loyalty to a particular area even when the area is no longer of value) to seasonal habitats, which includes breeding, nesting, brood rearing, and wintering areas (Connelly et al. 2004, Connelly et al. 2011b). Adult sage-grouse rarely switch between these habitats once they have been selected, limiting their adaptability to changes.

During the spring breeding season, male sage-grouse gather together to perform courtship displays on areas called leks. The proximity, configuration, and abundance of nesting habitat are key factors influencing lek location (Connelly et al., 1981, and Connelly et al., 2000b, cited in Connelly et al., 2011). Leks can be formed opportunistically at any appropriate site within or adjacent to nesting habitat (Connelly et al. 2000a) and, therefore, lek habitat availability is not considered to be a limiting factor for sage-grouse (Schroeder et al. 1999). Nest sites are selected independent of lek locations, but the reverse is not true (Bradbury et al. 1989,Wakkinen et al. 1992). Thus, leks are indicative of nesting habitat.

Females have been documented to travel more than 20 km (12.5 mi) to their nest site after mating (Connelly et al. 2000a), but distances between a nest site and the lek on which breeding occurred is variable (Connelly et al. 2004, Connelly et al. 2011b). Average distance between a female's nest and the lek on which she was first observed ranged from 3.4 km (2.1 mi) to 7.8 km (4.8 mi) in five studies examining 301 nest locations (Schroeder et al. 1999).

Productive nesting areas are typically characterized by sagebrush with an understory of native grasses and forbs, with horizontal and vertical structural diversity that provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while she is incubating (Gregg 1991Schroeder et al. 1999, Connelly et al. 2000a, Connelly et al. 2004, Connelly et al. 2011b). Sage-grouse also may use other shrub or bunchgrass species for nest sites (Klebenow 1969, Connelly et al. 2000a, Connelly et al. 2004). Shrub canopy and grass cover provide concealment for sage-grouse nests and young, and are critical for reproductive success (Barnett and Crawford 1994, Gregg et al. 1994, DeLong et al.1995, Connelly et al. 2004).

Hens rear their broods in the vicinity of the nest site for the first 2-3 weeks following hatching (within 0.2-5 km (0.1-3.1 mi)), based on two studies in Wyoming (Connelly et al. 2004). Forbs and insects are essential nutritional components for chicks (Klebenow and Gray 1968, Johnson and Boyce 1991, Connelly et al. 2004). Therefore, early brood-rearing habitat must provide adequate cover (sagebrush canopy cover of 10 to 25 percent; Connelly et al. 2000a) adjacent to areas rich in forbs and insects to ensure chick survival during this period (Connelly et al. 2004, Hagen et al. 2007).

All sage-grouse gradually move from sagebrush uplands to more mesic areas (moist areas such as streambeds or wet meadows) during the late brood-rearing period (3 weeks post-hatch) in response to summer desiccation of herbaceous vegetation (Connelly et al. 2000a). Summer use areas can include sagebrush habitats as well as riparian areas, wet meadows and alfalfa fields (Schroeder et al. 1999). These areas provide an abundance of forbs and insects for both hens and chicks (Schroeder et al. 1999, Connelly et al. 2000a).

As vegetation continues to desiccate through the late summer and fall, sage-grouse shift their diet entirely to sagebrush (Schroeder et al. 1999). Sage-grouse depend entirely on sagebrush throughout the winter for both food and cover (Connelly et al. 2011a). Sagebrush stand selection is influenced by snow depth (Patterson 1952, Hupp and Braun 1989), availability of sagebrush above the snow to provide cover (Connelly et al. 2004, and references therein) and, in some areas, topography (e.g., elevation, slope and aspect, Beck 1977, Crawford et al. 2004).

Many populations of sage-grouse migrate between seasonal ranges in response to habitat distribution (Connelly et al. 2004). Migration can occur between winter and breeding and summer areas, between breeding, summer and winter areas, or not at all. Migration distances of up to 161 km (100 mi) have been recorded (Patterson 1952), however, distances vary depending on the locations of seasonal habitats (Schroeder et al. 1999). Migration distances for female sage-grouse generally are less than for males (Connelly et al. 2004), but in one study in Colorado, females travelled further than males (Beck 1977). Almost no information is available regarding the distribution and characteristics of migration corridors for sage-grouse (Connelly et al. 2004). Sage-grouse dispersal (permanent moves to other areas) is poorly understood (Connelly et al. 2004, Knick and Hanser 2011) and appears to be sporadic (Dunn and Braun 1986). Estimating an "average" home range for sage-grouse is difficult due to the large variation in sage-grouse movements both within and among populations. This variation is related to the spatial availability of habitats required for seasonal use and annual recorded home ranges have varied from 4 to 615 square kilometers (km^2) (1.5 to 237.5 square miles (mi^2)), Connelly et al. *2011b*).

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Appendix B.
National Technical Team

Appendix B. Scientific Inference

When making natural resource management decisions, managers desire a high level of certainty that their management actions will have the anticipated outcome (Ratti and Garton 1994, Garton et al. 2005). Unfortunately, natural systems have inherent complexity and stochasticity that make certainty in wildlife management decisions challenging (Williams et al. 2002). In an effort to ameliorate some of this uncertainty, managers use quality, published scientific investigations which are reliant upon thoughtful research design (Ratti and Garton 1994, Garton et al. 2005) to guide population and habitat management decisions. When relevant peer reviewed literature does not exist, managers have to resort to best professional judgment and/or unpublished studies. In addition, when using published and unpublished literature, managers must also be cognizant of the research findings for certainty of the conclusions, the scientific method, and if the findings can be applied from the data and results (Murphy and Noon 1991).

Most wildlife research is located along a continuum of field studies (Ratti and Garton 1994, Garton et al. 2005; Fig. 1) and provides varying degrees of reliable knowledge (Romesburg 1981, Hurlbert, 1984, Eberhardt and Thomas 1991). The more rigorous the research design, results, and conclusions, the more confident managers can be in the anticipated outcome (Ratti and Garton 1994, Garton et al. 2005). Research that bases its results and interpretation on an integrated research process includes field level experiments, field study, and modeling (Fig. 1). If designed appropriately, these research efforts can provide for a more broad-based application of research results as opposed to descriptive natural history studies (Ratti and Garton 1994, Garton et al. 2005) (Fig. 1).

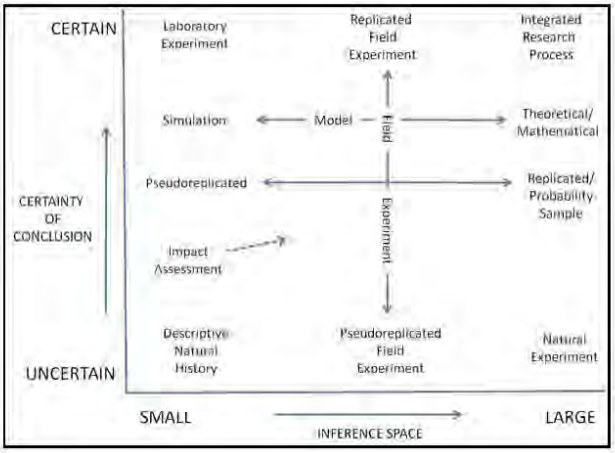

Figure 1. The spectrum of types of wildlife studies that can produce results and conclusions with a large amount of certainty over a very large area of applicability (adapted from Ratti and Garton 1994 and Garton et al. 2005).

Because sage-grouse research has been on-going for over 60 years, managers have access to published literature from several studies (metareplication (Johnson 2002)) that includes different years, study areas, methods, and investigators (Johnson 2002) which leads to more certainty in conclusions (for example see Hagen et al. 2007). In contrast, for some management actions, access to published and unpublished literature may be limited to a single descriptive study. A single descriptive study and/or professional judgment has the lowest level of certainty and lowest inference space. Unfortunately, it may be the only information available on the subject. Ultimately, the result is succinctly summarized by Anderson et al. (2001:312) who stated, "In the long run, science is safeguarded by repeated studies to ascertain what is real and what is merely a spurious result from a single study."

Management in sagebrush ecosystems is further complicated by new forms of development or the unprecedented pace at which traditional uses are increasing. Wind and other renewable energy sources are being proposed and developed in areas that previously had undergone little development. The applicability of results from previous research in other regions on oil and gas development to these new forms of land use is unknown, but is the best information currently available. We also do not know how sagebrush and sage-grouse respond to the increasing intensity of all uses ranging from traditional commodity development to nonconsumptive activities, such as recreation and OHV travel that is occurring across their range. Although previous research can guide management decisions, the changes due to the cumulative effect of this new level of increased development may take years to be fully expressed in habitat and population response.

No single research study, or even a series of studies, regardless of design, and/or inference extent can provide complete certainty in their conclusion(s). As a result, managers must be vigilant in their judgment of research study design, its inference space, and applicability to their management issue when making management decisions. This report cites a large number of published and unpublished studies that can be placed along the continuum of certainty of conclusion and inference space (Fig. 1). Many of the studies cited are from different researchers, study sites, methodologies, and/or years which assists and improves the certainty of the conclusion and inference space (Fig. 1), but ultimately, it is incumbent upon managers to assess their level of risk (consequences of being wrong) with management decisions based upon the cited findings.

Appendix B.
National Technical Team

The large spatial scales occupied by sage-grouse seasonally (as much as 1,700 mi ^{2}; Leonard et al. 2000) have made research on how they respond to habitat perturbations difficult to conduct. Although strength of inference is strongest for replicated experiments, studies of this nature have not been conducted on large scale perturbations such as oil and gas developments, wind farms, coal mines, powerlines, etc. We therefore relied on retrospective and correlational studies that looked at changes in sage-grouse distribution, abundance or demographic rates over time following these developments. We gave greater credence to conclusions obtained from multiple studies conducted at different locations at different times that showed similar results.

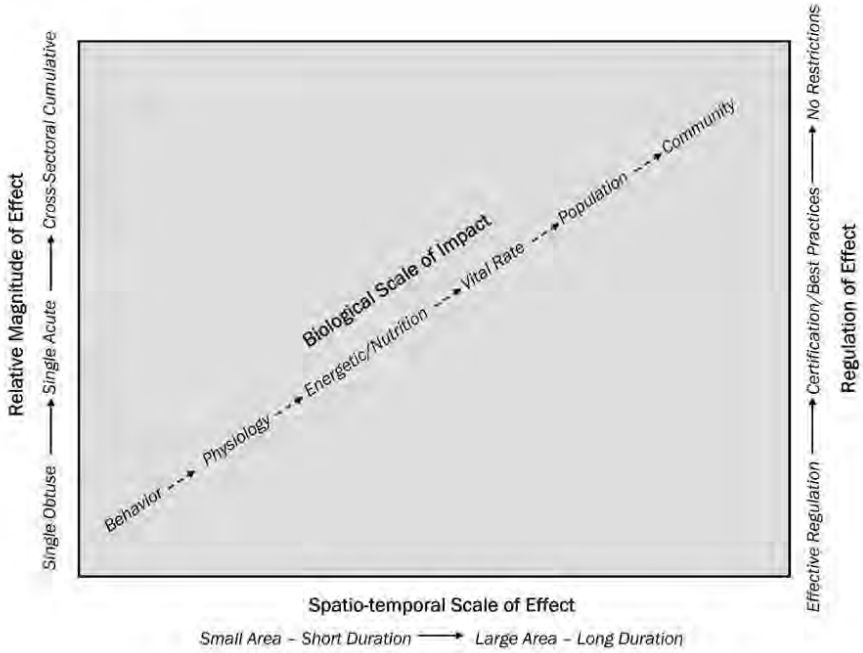

Figure 2. Schematic representation of a typology for classifying and predicting the impacts of human-wildlife interactions (as modified from Johnson and St-Laurent 2011).

Conservation measures described in this report are derived from interpretation of the best available scientific studies using our best professional judgment. Because there is a degree of uncertainty about the

effectiveness of these conservation measures, we recommend a rigorous adaptive management process be employed, with population and habitat monitoring as well as feedback loops so that conservation measures or policies that are ineffective can be changed (Lyons et al. 2008).

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Appendix C. BMPs for how to make a pond that won't produce mosquitoes that transmit West Nile virus (from Doherty (2007)).

The following are seven distinct site modifications that if adhered to, would minimize exploitation of CBNG ponds by *Culex tarsalis*:

1. Increase the size of ponds to accommodate a greater volume of water than is discharged. This will result in un-vegetated and muddy shorelines that breeding *Cx. tarsalis* avoid (De Szalay and Resh 2000). This modification may reduce *Cx. tarsalis* habitat but could create larval habitat for *Culicoides sonorensis*, a vector of blue tongue disease, and should be used sparingly (Schmidtmann et al. 2000). Steep shorelines should be used in combination with this technique whenever possible (Knight et al. 2003).

2. Build steep shorelines to reduce shallow water (>60 cm) and aquatic vegetation around the perimeter of impoundments (Knight et al. 2003). Construction of steep shorelines also will create more permanent ponds that are a deterrent to colonizing mosquito species like *Cx. tarsalis* which prefer newly flooded sites with high primary productivity (Knight et al. 2003).

3. Maintain the water level below that of rooted vegetation for a muddy shoreline that is unfavorable habitat for mosquito larvae. Rooted vegetation includes both aquatic and upland vegetative types. Avoid flooding terrestrial vegetation in flat terrain or low lying areas. Aquatic habitats with a vegetated inflow and outflow separated by open water produce 5-10 fold fewer Culex mosquitoes than completely vegetated wetlands (Walton and Workman 1998). Wetlands with open water also had significantly fewer stage III and IV instars which may be attributed to increased predator abundances in open water habitats (Walton and Workman 1998).

4. Construct dams or impoundments that restrict down slope seepage or overflow by digging ponds in flat areas rather than damming natural draws for effluent water storage, or lining constructed ponds in areas where seepage is anticipated (Knight et al. 2003).

5. Line the channel where discharge water flows into the pond with crushed rock, or use a horizontal pipe to discharge inflow directly into existing open water, thus precluding shallow surface inflow and accumulation of sediment that promotes aquatic vegetation.

6. Line the overflow spillway with crushed rock, and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation.

7. Fence pond site to restrict access by livestock and other wild ungulates that trample and disturb shorelines, enrich sediments with manure and create hoof print pockets of water that are attractive to breeding mosquitoes.

Appendix C.
National Technical Team

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Appendix D. Best Management Practices for Fluid Mineral Development

Priority Habitats - BMPs are continuously improving as new science and technology become available and therefore are subject to change. Include from the following BMPs those that are appropriate to mitigate effects from the approved action.

Roads

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among ROW holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
- Do not issue ROWs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (use signing, gates, etc.)
- Use dust abatement practices on roads and pads.
- Close and rehabilitate duplicate roads.

Operations

- Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Consider using oak (or other material) mats for drilling activities to reduce vegetation disturbance and for roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment following drilling.
- Apply a phased development approach with concurrent reclamation.
- Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority areas (minimizes perching and nesting opportunities for ravens and raptors and truck traffic). Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).

- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury distribution power lines.
- Corridor power, flow, and small pipelines under or immediately adjacent to roads.
- Design or site permanent structures which create movement (e.g. a pump jack) to minimize impacts to sage-grouse.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce sage-grouse mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Evangelista et al. 2011). (E.g. by washing vehicles and equipment.)
- Use only closed-loop systems for drilling operations and no reserve pits.
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
    - Overbuild size of ponds for muddy and non-vegetated shorelines.
    - Build steep shorelines to decrease vegetation and increase wave actions.
    - Avoid flooding terrestrial vegetation in flat terrain or low lying areas.
    - Construct dams or impoundments that restrict down slope seepage or overflow.
    - Line the channel where discharge water flows into the pond with crushed rock.
    - Construct spillway with steep sides and line it with crushed rock.
    - Treat waters with larvicides to reduce mosquito production where water occurs on the surface.
- Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. *In preparation*).
- Require noise shields when drilling during the lek, nesting, broodrearing, or wintering season.
- Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).

- Require sage-grouse-safe fences.
- Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.
- Clean up refuse (Bui et al. 2011).
- Locate man camps outside of priority habitats.

Reclamation

- Include objectives for ensuring habitat restoration to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). . Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Irrigate interim reclamation if necessary for establishing seedlings more quickly.
- Utilize mulching techniques to expedite reclamation and to protect soils.

General sage-grouse habitat

Best Management Practices

Make applicable BMPs mandatory as Conditions of Approval within general sage-grouse habitat. BMPs are continuously improving as new science and technology become available and therefore are subject to change. At a minimum include the following BMPs:

Roads

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Do not issue ROWs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Coordinate road construction and use among ROW holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Use dust abatement practices on roads and pads.

- Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

Operations

- Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Clean up refuse (Bui et al. 2010).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce sage-grouse mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use.
- Control the spread and effects from non-native plant species. (e.g. by washing vehicles and equipment.)
- Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).

Reclamation

- Include restoration objectives to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to enhance or restore sage-grouse habitat.

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Appendix E. Best Management Practices for Locatable Mineral Development

BMPs are continuously improving as new science and technology become available and therefore are subject to change. Include from the following BMPs those that are appropriate to mitigate effects from the approved action.

Roads

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among ROW holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Do not issue ROWs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.)
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

Operations

- Cluster disturbances associated with operations and facilities as close as possible.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury power lines.
- Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce sage-grouse mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

- Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
    - Overbuild size of ponds for muddy and non-vegetated shorelines.
    - Build steep shorelines to decrease vegetation and increase wave actions.
    - Avoid flooding terrestrial vegetation in flat terrain or low lying areas.
    - Construct dams or impoundments that restrict down slope seepage or overflow.
    - Line the channel where discharge water flows into the pond with crushed rock.
    - Construct spillway with steep sides and line it with crushed rock.
    - Treat waters with larvicides to reduce mosquito production where water occurs on the surface.
- Require sage-grouse-safe fences around sumps.
- Clean up refuse (Bui et al. 2010).
- Locate man camps outside of priority sage-grouse habitats.

Reclamation

- Include restoration objectives to meet sage-grouse habitat needs in reclamation practices/sites. Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community.
- Irrigate interim reclamation as necessary during dry periods.

Utilize mulching techniques to expedite reclamation.

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Appendix E.
National Technical Team

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Appendix F.
National Technical Team

Appendix F. Best Management Practices for Fire & Fuels (wo IM 2011-138)

Fuels Management BMPs:

1. Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patters which most benefit sage-grouse habitat.

2. Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.

3. Use fire prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity).

4. Ensure proposed sagebrush treatments are planned with interdisciplinary input from BLM and /or state wildlife agency biologist and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.

5. Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by sage-grouse (See Connelly et al., 2000*)

6. Where applicable, incorporate roads and natural fuel breaks into fuel break design.

7. Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

8. Design vegetation treatment in areas of high frequency to facilitate firefighting safety, reduce the risk of extreme fire behavior; and to reduce the risk and rate of fire spread to key and restoration habitats.

9. Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands first to sites which are adjacent to or surrounded by sage-grouse key habitats. Annual grasslands are second priority for restoration when the sites not adjacent to key habitat, but within 2 miles of key habitat. The third priority for annual grasslands habitat restoration projects are sites beyond 2 miles of key habitat. The intent is to focus restoration outward from existing, intact habitat.

10. As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.

11. Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

12. Remove standing and encroaching trees within at least 100 meters of occupied sage-grouse leks and other habitats (e.g., nesting, wintering, and brood rearing) to reduce the availability of perch sites for avian predators, as appropriate, and resources permit.

13. Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

14. Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way.

15. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, and strictly managed grazed strips) to aid in controlling wildfire should wildfire occur near key habitats or important restoration areas (such as where investments in restoration have already been made).

Fire Management BMPs:

1. Develop state-specific sage-grouse toolboxes containing maps, a list of resource advisors, contact information, local guidance, and other relevant information.

2. Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

3. Assign a sage-grouse resource advisor to all extended attack fires in or near key sage-grouse habitat areas. Prior to the fire season, provide training to sage-grouse resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals.

4. On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in sage-grouse habitat areas.

5. During periods of multiple fires, ensure line officers are involved in setting priorities.

6. To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases) in areas where physical disturbance to sage-grouse habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.

7. Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and ATVs prior to deploying in or near sage-grouse habitat areas to minimize noxious weed spread.

8. Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.

9. Minimize burnout operations in key sage-grouse habitat areas by constructing direct fireline whenever safe and practical to do so.

10. Utilize retardant and mechanized equipment to minimize burned acreage during initial attack.

11. As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

Appendix F.
National Technical Team

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Appendix G. National Technical Team Members

Appendix C.
National Technical Team

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K.4 Instruction Memorandum 2012-043: Greater Sage-Grouse Interim Management Policies and Procedures

BUREAU OF LAND MANAGEMENT

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
http://www.blm.gov/
December 22, 2011

In Reply Refer To:
1110 (170/200/300/400) P

EMS TRANSMISSION 12/27/2011
Instruction Memorandum No. 2012-043
Expires: 09/31/2013

To: All Field Office Officials

From: Director

Subject: Greater Sage-Grouse Interim Management Policies and Procedures

Program Areas: All Programs.

Purpose: This Instruction Memorandum (IM) provides interim conservation policies and procedures to the Bureau of Land Management (BLM) field officials to be applied to ongoing and proposed authorizations and activities that affect the Greater Sage-Grouse *(Centrocercus urophasianus)* and its habitat. This direction ensures that interim conservation policies and procedures are implemented when field offices authorize or carry out activities on public land while the BLM develops and decides how to best incorporate long-term conservation measures for Greater Sage-Grouse into applicable Land Use Plans (LUP). This direction promotes sustainable Greater Sage-Grouse populations and conservation of its habitat while not closing any future options before the planning process can be completed.

This IM supplements the direction for Greater Sage-Grouse contained in Washington Office (WO) IM 2010-071 (*Gunnison and Greater Sage-Grouse Management Considerations for Energy Development*) and is consistent with WO-IM-2011-138 (*Sage-Grouse Conservation Related to Wildland Fire and Fuels Management*). The Gunnison Sage-Grouse, bi-state distinct population segment in California and Nevada, and the Washington State distinct population segment are not covered by this IM and will be addressed through other policies and planning efforts. WO-IM-2010-071 remains applicable to the Gunnison Sage-Grouse.

The 2010 U.S. Fish and Wildlife Service (FWS) findings on petitions to list the Greater Sage-Grouse (petition decision) (75 FR 13910 – 14014; 03/23/2010) identified habitat conversion and fragmentation from wildfire, invasive plants, energy and infrastructure development, urbanization, and agricultural conversion as the primary threats to the species throughout its range. Through this IM, the BLM is providing interim conservation policies and procedures across multiple programs, in order of threat magnitude, while the BLM considers amendments or revisions to LUPs. Maintaining and restoring high quality habitat for the Greater Sage-Grouse is consistent with the BLM multiple-use and sustained-yield management direction of the Federal Land Policy and Management Act.

Policy/Action: As summarized in the BLM's National Strategy, emphasis for protecting and managing Greater Sage-Grouse habitat incorporates the following principles:

1) Protection of unfragmented habitats;
2) Minimization of habitat loss and fragmentation; and
3) Management of habitats to maintain, enhance, or restore conditions that meet Greater Sage-Grouse life history needs.

To provide guidance to field offices about how to promote these principles, this IM transmits policies and procedures that apply to ongoing and proposed BLM actions, including use authorizations, within Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH). PPH comprises areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by the BLM in coordination with respective state wildlife agencies. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been identified by the BLM in coordination with respective state wildlife agencies.

The policies and procedures identified in this IM are designed to minimize habitat loss in PPH and PGH and will advance the BLM's objectives to maintain or restore habitat to desired conditions by ensuring that field offices analyze and document impacts to PPH and PGH and coordinate with states and the Fish and Wildlife Service when issuing the decisions described below. These policies and procedures are in addition to and do not replace more protective measures in existing LUPs. The direction in this IM is time-limited: for each planning area where Greater Sage-Grouse occur, the conservation policies and procedures described in this IM will be applied until the BLM makes decisions through the land use planning process. All such LUP decisions are expected to be completed by the end of 2014. The BLM field offices do not need to apply the conservation policies and procedures described in this IM in areas in which (1) a state and/or local regulatory mechanism has been developed for the conservation of the Greater Sage-Grouse in coordination and concurrence with the FWS (including the Wyoming Governor's Executive Order 2011-5, Greater Sage-Grouse Core Area Protection); and (2) the state sage-grouse plan has subsequently been adopted by the BLM through the issuance of a state-level BLM IM. If BLM programs are not addressed in the adopted state Greater Sage-Grouse plan then program direction will default to the policies and procedures set forth in this WO IM.

PPH and PGH data and maps have been developed through a collaborative effort between the BLM and the respective state wildlife agencies and are stored at the National Operations Center (NOC). These science-based maps were developed using the best available data and may change as new information becomes available. Such changes would be science-based and coordinated with the state wildlife agencies so that the resulting delineation of PPH and PGH provides for sustainable populations. In those instances where the BLM state offices have not completed this delineation, the Breeding Bird Density maps developed by Doherty 2010[1] will be used. The NOC will establish the process for updating files to include the latest PPH and PGH delineations for each state. This information will assist in applying the interim conservation policies and procedures identified in Sections I and II below. As LUPs are amended or revised, the BLM state offices will be responsible for coordinating with the NOC to use the newest delineation of PPH and PGH. BLM staff may access the PPH and PGH data, using the following link: \\blm\dfs\loc\EGIS\OC\Wildlife\Transfers\GREATER_SAGE_GROUSE_GIS_DATA. Non-BLM personnel, may access these maps through the respective state wildlife agency.

The BLM will continue to work with its partners including the Western Association of Fish and Wildlife Agencies (WAFWA), FWS, U.S. Geological Survey (USGS), Natural Resource Conservation Service (NRCS), U.S. Forest Service (USFS), and the Farm Services Agency (FSA) within the framework of the Sagebrush Memorandum of Understanding (2008) and the WAFWA *Greater Sage-Grouse Comprehensive Conservation Strategy* (2006).

I. Interim Conservation Policies and Procedures for "Preliminary Priority Habitat"

Through these policies and procedures, you should seek to maintain, enhance, or restore conditions for Greater Sage-Grouse and its habitat. These policies and procedures apply to PPH only. Separate policies and procedures for PGH are provided in Section II of this IM.

Integrated Vegetation Management

Proposed Authorizations/Activities

- Evaluate land treatments (including Greater Sage-Grouse habitat treatments) in a landscape-scale context to address habitat fragmentation, effective patch size, invasive species presence, and protection of intact sagebrush communities. Coordinate land treatments with adjacent land owners to avoid any unintended negative landscape effects to Greater Sage-Grouse.
- When designing vegetation treatments, reference Ecological Site Descriptions (ESD), where available; the BLM *Integrated Vegetation Management Handbook* (H-1740-2); and a white paper developed by the Western Association of Fish and Wildlife Agencies entitled, *Prescribed Fire as a Management Tool in Xeric Sagebrush Ecosystems: Is it Worth the Risk to Sage-Grouse?*.
- Coordinate, plan, design, and implement vegetation treatments (e.g., pinyon/juniper removal, fuels treatments, green stripping) and associated effectiveness monitoring between Resources, Fuels Management, Emergency Stabilization, and Burned Area Rehabilitation programs to:
    - Promote the maintenance of large intact sagebrush communities;
    - Limit the expansion or dominance of invasive species, including cheatgrass;
    - Maintain or improve soil site stability, hydrologic function, and biological integrity; and
    - Enhance the native plant community, including the native shrub reference state in the *State and Transition Model*, with appropriate shrub, grass, and forb composition identified in the applicable ESD where available.
- When conducting National Environment Policy Act (NEPA) analysis for vegetation treatments, document your analysis of (1) short- and long-term objectives and (2) direct, indirect, and cumulative effects of treatment types on Greater Sage-Grouse and its habitat.
- Pursue short-term objectives that include maintaining soil stability and hydrologic function of the disturbed site so a resilient plant community can be established.
- Pursue a long-term objective to maintain resilient native plant communities. Choose native plant species outlined in ESDs, where available, to revegetate sites. If the commercial supply of appropriate native seed/plants is limited, work with the BLM Native Plant Materials Development Program (NPMDP) through your respective State Office Plant Conservation Program Lead. It is a primary objective of the NPMDP to ensure native plants used by Greater Sage-Grouse are being collected and developed into commercially viable crops. If currently available supplies are limited, use the materials that provide the greatest benefit for Greater Sage-Grouse. When necessary, analyze the use of non-native species that do not impede long-term reestablishment goals of native plant communities and Greater Sage-Grouse habitat.
- Meet vegetation management objectives that have been set for seeding projects prior to returning the area to authorized uses, specifically livestock grazing. This generally takes a minimum of two growing seasons (see Handbook H-1742, *Emergency Fire Rehabilitation Handbook*). When treating invasive species, use the standard operating procedures and best management practices outlined in the *2007 Vegetation Treatments Using Herbicides on BLM Lands in 17 States Environmental Impact Statement* and applicable practices found in its accompanying *Biological Assessment*.
- Where pinyon and juniper trees are encroaching on sagebrush plant communities, design treatments to increase cover of sagebrush and/or understory to (1) improve habitat for Greater Sage-Grouse; and (2) minimize avian predator perches and predation opportunities on Greater Sage-Grouse.
- Implement management actions, where appropriate, to improve degraded Greater Sage-Grouse habitats that have become encroached upon by shrubland or woodland species.
- Identify opportunities for prescribed fire; including where prescribed fire has been identified as the most appropriate tool to meet fuels management objectives and Greater Sage-Grouse conservation objectives, and the potential expansion or dominance of invasive species has been determined to be minimal through an invasive species risk determination for the treatment project (see BLM Manual Section 9015). Before using prescribed fire, field offices must analyze the potential expansion or dominance of invasive species as a result of this treatment.

Wildfire Emergency Stabilization and Burned Area Rehabilitation

Both Ongoing and Proposed Authorizations/Activities

- In Emergency Stabilization and Burned Area Rehabilitation plans, prioritize re-vegetation projects to (1) maintain and enhance unburned intact sagebrush habitat when at risk from adjacent threats; (2) stabilize soils; (3) reestablish hydrologic function; (4) maintain and enhance biological integrity; (5) promote plant resiliency; (6) limit expansion or dominance or invasive species; and (7) reestablish native species.
- Increase post-fire activities through the use of integrated funding opportunities with other resource programs and partners.
- In areas burned within the past 5 years, ensure that effectiveness monitoring outlined in post-fire stabilization and rehabilitation plans continues and report the results as outlined in WO-IM-2010-195. Post-fire stabilization and rehabilitation monitoring should continue until post-fire objectives are met.

Wildfire Suppression and Fuels Management

Ongoing Authorizations/Activities

- Threatened, endangered, and sensitive species (including sage-grouse) and associated habitats will continue to be a high natural resource priority for National and Geographic Multi-Agency Coordination Groups, whose purpose is to manage and prioritize wildland fire operations on a national and geographic area scope when fire management resource shortages are probable.
- Greater Sage-Grouse protection and habitat enhancement is a high priority for the fire management program. A full range of fire management activities and options will be utilized to sustain healthy ecosystems (including Greater Sage-Grouse habitats) within acceptable risk levels. Local agency administrators and resource advisors will convey protection priorities to incident commanders.
- Comply with the policies established in WO-IM-2011-138 (Sage-Grouse Conservation Related to Wildland Fire and Fuels Management) or successor guidance, regarding suppression operations and fuels management activities.
- Identify opportunities for prescribed fire; including where prescribed fire has been identified as the most appropriate tool to meet fuels management objectives and Greater Sage-Grouse conservation objectives, and the potential expansion or dominance of invasive species has been determined to be minimal through an invasive species risk determination for the treatment project (see BLM Manual Section 9015). Before using prescribed fire, field offices must analyze the potential expansion or dominance of invasive species as a result of this treatment.

Rights-of-Way (ROW) (e.g., Renewable Energy Projects, Roads, Powerlines, Pipelines)

Existing Authorized ROW (i.e., permit has been issued and the project may have been constructed)

- Where Greater Sage-Grouse conservation opportunities exist, BLM field offices should work in cooperation with rights-of-way (ROW) holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effects on Greater Sage-Grouse and its habitat.
- When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to Greater Sage-Grouse habitat and minimize such impacts to the extent allowed by law.

Pending and Future ROW Applications (i.e., permit application has not been received or has been received and is being processed)

- If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a Draft EIS (DEIS) or a Finding of No

Significant Impact (FONSI)) (i.e., permit application has been received and is currently being analyzed through an EIS or EA)

- o Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
- o Determine, in coordination with the respective state wildlife agency, whether the proposed ROW would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed ROW would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Pending and Future Applications").

- All Other Pending and Future Proposed Applications

  - o Conduct pre-application meetings for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February 7, 2011).
  - o For pending applications, assess the impact of the proposed ROW on Greater Sage-Grouse and its habitat, and implement the following:
    - Ensure that reasonable alternatives for siting the ROW outside of the PPH or within a BLMâ€designated utility corridor are considered and analyzed in the NEPA document.
    - Identify technically feasible best management practices, conditions, etc. (e.g., siting, burying powerlines) that may be implemented in order to eliminate or minimize impacts.
  - o For ROWs where the total project disturbance from the ROW and any connected action is less than 1 linear mile, or 2 acres of disturbance, develop mitigation measures related to construction, maintenance, operation, and reclamation activities that, as determined in cooperation with the respective state wildlife agency, would cumulatively maintain or enhance Greater Sage-Grouse habitat.
  - o For ROW applications where the total project disturbance from the ROW and any connected action is greater than 1 linear mile or 2 acres of disturbance, it is BLM policy that where a field office determines that it is appropriate to authorize a ROW, the following process must be followed:
    - The BLM will document the reasons for its determination and require the ROW holder to implement measures to minimize impacts to sage-grouse habitat.
    - In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (Refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.
    - Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed ROW and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed ROW decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed ROW, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed ROW, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
  - o Field offices retain the discretion to reject or deny a ROW application, where appropriate, or defer making a final decision on an application until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Leasable Minerals (Energy and Non-energy)

Proposed Leasing (i.e., a lease has not been issued and, therefore, no valid existing rights have been established)

- Solid Mineral Leasing (Coal, Oil Shale, and Non-energy)

  Assess the impact to Greater Sage-Grouse and its habitat, and implement the following:

  - o If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a DEIS or a FONSI:
    - Work in cooperation with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
      Determine, in coordination with the respective state wildlife agency, whether the proposed leasing decision would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed leasing decision would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Proposed Solid Mineral Leasing").
  - o All Other Proposed Solid Mineral Leasing

    It is BLM policy that where a field office determines that it is appropriate to authorize a proposed leasing decision, the following process must be followed:
    - The BLM will document the reasons for its determination and implement measures to minimize impacts to sage-grouse habitat.
    - In addition to considering opportunities for onsite mitigation, the BLM will consider whether it is appropriate to condition the lease with a requirement for offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation).
    - Unless the BLM determines, in coordination with their respective state wildlife agency, that the proposed lease and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed lease must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed lease, then the proposed decision must be forwarded to Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed lease, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
    - Exception: New leases may be issued for mine expansion provided the mines will undergo concurrent surface mine reclamation and will result in minimal additional surface disturbance adjacent to an existing operation.
  - o Field offices retain the discretion to not move forward with a nomination, or defer making a final decision on a leasing nomination until the completion of the LUP process described in the National Greater Sage-Grouse Planning Strategy for the affected area.

- Fluid Mineral Leasing (i.e., oil, gas, and geothermal)

  - o It is BLM policy that where a field office determines that it is appropriate to authorize a proposed leasing decision, the following process must be followed:
    - The BLM will document the reasons for its determination and require the lessee to implement measures to minimize impacts to sage-grouse habitat.
    - In addition to considering opportunities for onsite mitigation, the BLM will consider whether it is appropriate to condition the lease with a requirement for offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize

habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation).
- Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed lease and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed lease decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed lease, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed lease, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
- Exception: Where drainage is likely or the lands are designated as No Surface Occupancy (NSO) in the existing LUP, the BLM may issue new leases with an NSO stipulation. The NSO stipulation will also have appropriate exception, waiver, and modification criteria. **Note:** A Controlled Surface Use stipulation is not an appropriate substitution for an NSO stipulation.

- Field offices retain the discretion to not move forward with a nomination or defer making a final decision on a leasing decision until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Authorizations on Existing Leases (i.e., the lease has been issued and valid existing rights have been established)

- Existing Authorizations (i.e., a permit has been issued)

  - Where Greater Sage-Grouse conservation opportunities exist, work in cooperation with operators to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
  - Fluid Minerals: Issue Written Orders of the Authorized Officer (43 CFR 3161.2) requiring reasonable protective measures consistent with the lease terms where necessary to avoid or minimize effects to Greater Sage-Grouse populations and its habitat.

- Proposed Pending Authorizations (i.e., permit application has not been received or has been received and is being processed)
  - If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a DEIS or a FONSI:
    - Work in cooperation with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
      - Determine, in coordination with the respective state wildlife agency, whether the proposed authorization would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed authorization would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Proposed Authorizations").

  - All Other Proposed Authorizations

It is BLM policy that where a field office determines that it is appropriate to issue a proposed authorization, the following process must be followed:

- Where the BLM has not issued a permit for development, design future conditions or restrictions to minimize adverse effects to Greater Sage-grouse and its habitat (e.g., Best Management Practices (BMP), noise limitations, seasonal restrictions, minimization of habitat fragmentation, improved reclamation standards, proper siting/designing infrastructure, restoring habitat) prior to permit approval. These measures may be in addition to and more protective or restrictive than the stipulations and restrictions identified in approved LUPs, when reasonable (43 CFR 3101.1-2), supported by science, and analyzed through the NEPA process.
  Fluid Minerals: Consider suspending non-producing leases in instances where mitigation would not adequately protect the integrity of Greater Sage-Grouse habitat until the BLM amends or revises the LUPs. Consistently apply protective measures to split estate lands.
- In areas where Greater Sage-Grouse populations have been substantially diminished, and where few birds remain, include actions in the authorization (e.g., siting/designing infrastructure, hastened habitat restoration) that will minimize habitat loss and promote restoration of habitat when development activities cease.
- In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.
- For geophysical exploration activities, include seasonal timing limitations and BMPs as permit conditions of approval to eliminate or minimize surface-disturbing and disruptive activities within nesting and brood-rearing habitat and winter concentration areas.
- Fluid Minerals: Ensure authorizations under Onshore Oil and Gas Order No. 7 (Disposal of Produced Water) consider the potential impacts to Greater Sage-Grouse from West Nile virus and develop appropriate mitigation measures.

Grazing Permit/Leases Issuance/Grazing Management

Grazing can have localized adverse effects on Greater Sage-Grouse habitat depending on the condition of the habitat and the grazing practices used. Depending on design and application, grazing practices can also be used as a tool to protect intact sagebrush habitat and increase habitat extent and continuity which is beneficial to Greater Sage-Grouse and its habitat. Given the potential financial constraints in addressing the primary threats identified by the FWS, enhanced management of livestock grazing may be the most cost-effective opportunity in many instances to improve Greater Sage-Grouse habitat on public lands.

To promote grazing practices that will protect PPH and minimize adverse effects on Greater Sage-Grouse and its habitat, the BLM will implement the following:

Ongoing Authorization Activities

- If periods of drought occur, where appropriate evaluate the season of use and stocking rate and adjust through coordination and annual billings processes.
- Continue to coordinate with other Federal agencies, state agencies, and non-Federal partners. Leverage funding to implement habitat projects and implement the recent Memorandum of Understanding between the BLM, NRCS, FWS, and USFS for enhancing PPH through grazing practices.
- Continue to prioritize use supervision and effectiveness monitoring of grazing activities to ensure compliance with permit conditions and that progress is being made on achieving land health standards.
- Continue to evaluate existing range improvements (e.g., fences, watering facilities) associated with grazing management operations for impacts on Greater Sage-Grouse and its habitat.

Proposed Authorizations/Activities – Permit/Lease Renewal/Issuance

- When several small or isolated allotments occur within a watershed or delineated geographic area, strive to evaluate all of the allotments together. Prioritize this larger geographic area against other PPH areas for processing permits/leases for renewal.
- Coordinate BMPs and vegetative objectives with NRCS for consistent application across jurisdictions where the BLM and NRCS have the greatest opportunities to benefit Greater Sage-Grouse, particularly as it applies to the NRCS's National Sage-Grouse Initiative (http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/farmbill/initiatives/?&cid=steldevb1027671).
- Pursue opportunities to incorporate multiple allotments under a single management plan/strategy where incorporation would result in enhancing Greater Sage-Grouse populations or its habitat as determined in coordination with respective state wildlife agency.
- Where current livestock grazing management has been identified as a causal factor in not meeting Land Health Standards (43 CFR 4180), use the process in WO-IM-2009-007, Process for Evaluating Status of Land Health and Making Determinations of Causal Factors When Land Health Standards Are Not Achieved, to identify appropriate actions.
- Evaluate progress towards meeting standards that may affect Greater Sage-Grouse or its habitat prior to authorizing grazing on an allotment that was not achieving land health standards in the last renewal cycle, and livestock was a significant causal factor. Where available, use current monitoring data

to identify any trends (e.g., progress) toward meeting the standards. Where monitoring data are not available or inadequate to determine whether progress is being made toward achieving Land Health Standards, an interdisciplinary team should be deployed as practicable to conduct a new land health assessment. The NEPA analysis for the permit/lease renewal must address a range of reasonable alternatives including alternatives that improve Greater Sage-Grouse habitat.

- If livestock grazing was the cause of not achieving land health standards that have potential to impact Greater Sage-Grouse or its habitat in the last permit renewal cycle, an interdisciplinary team should be deployed as practicable to conduct a new land health evaluation to determine if the allotment is making progress and if livestock grazing remains a casual factor.
- Plan and authorize livestock grazing and associated range improvement projects on BLM lands in a way that maintains and/or improves Greater Sage-Grouse and its habitat. Analyze through a reasonable range of alternatives any direct, indirect, and cumulative effects of grazing on Greater Sage-Grouse and its habitats through the NEPA process:
  - Incorporate available site information collected using the *Sage-Grouse Habitat Assessment Framework[2]* when evaluating existing resource condition and developing resource solutions,
  - Incorporate management practices that will provide for adequate residual plant cover (e.g., residual grass height) and diversity in the understories of sagebrush plant communities as part of viable alternatives. When addressing residual cover and species diversity, refer to the ESD and "*State and Transition Model*," where they are available, to guide the analysis.
  - Evaluate and implement grazing practices that promote the growth and persistence of native shrubs, grasses, and forbs. Grazing practices include kind and numbers of livestock, distribution, seasons of use, and livestock management practices needed to meet both livestock management and Greater Sage-Grouse habitat objectives.
  - Evaluate the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. Address those structural range improvements identified as posing a risk during the renewal process.
  - Balance grazing between riparian habitats and upland habitats to promote the production and availability of beneficial forbs to Greater Sage-Grouse in meadows, mesic habitats, and riparian pastures for Greater Sage-Grouse use during nesting and brood-rearing while maintaining upland conditions and functions. Consider changes to season-of-use in riparian/wetland areas before or after the summer growing season.
- To ensure that the NEPA analysis for permit/lease renewal has a range of reasonable alternatives:
  - Include at least one alternative that would implement a deferred or rest-rotation grazing system, if one is not already in place and the size of the allotment warrants it.
  - Include a reasonable range of alternatives (e.g., no grazing or a significantly reduced grazing alternative, current grazing alternative, increased grazing alternative, etc.) to compare the impacts of livestock grazing on Greater Sage-Grouse habitat and land health from the proposed action.
  - If land treatments and/or range improvements are the primary action for achieving land health standards for Greater Sage-Grouse habitat maintenance or enhancement, clearly display the effects of such actions in the alternatives analyzed.

Fences (Applicable to all programs)

- Evaluate the need for proposed fences, especially those within 1.25 miles[3] of leks that have been active within the past 5 years and in movement corridors between leks and roost locations. Consider deferring fence construction unless the objective is to benefit Greater Sage-Grouse habitat, improve land health, promote successful reclamation, protect human health and safety, or provide resource protection. If the BLM authorizes a new fence, then, where appropriate, apply mitigation (e.g., proper siting, marking, post and pole construction) to minimize or eliminate potential impacts to Greater Sage-Grouse as determined in cooperation with the respective state wildlife agency.
- To improve visibility, mark existing fences that have been identified as a collision risk. Prioritizing fences within 1.25 miles[3] of a lek, fences posing higher risks to Greater Sage-Grouse include those:
  - On flat topography;
  - Where spans exceed 12 feet between T-posts;
  - Without wooden posts; or
  - Where fence densities exceed 1.6 miles of fence per section (640 acres).[3]

Water Developments (applicable to all programs)

Proposed Authorizations/Activities

- NEPA analysis for all new water developments must assess impacts to Greater Sage-Grouse and its habitat.
- Install escape ramps and a mechanism such as a float or shut-off valve to control the flow of water in tanks and troughs.
- Design structures in a manner that minimizes potential for production of mosquitoes which may carry West Nile virus.

Special Recreation Permits

Ongoing Authorization/Activities

- Work with permittees to avoid or minimize effects to Greater Sage-Grouse and its habitat.
- Evaluate existing Special Recreation Permits (SRP) for adverse effects to Greater Sage-Grouse and modify or cancel the permit, as appropriate, to avoid or minimize effects of habitat alterations or other physical disturbances to Greater Sage-Grouse (e.g., breeding, brood-rearing, migration patterns, or winter survival).
- Implement any necessary habitat restoration activities after SRP events. Restoration activities must be consistent with Greater Sage-Grouse habitat objectives as determined by the BLM field office in collaboration with the respective state wildlife agency.

Proposed Authorizations/Activities

- Work with permit applicants to avoid impacts to Greater Sage-Grouse and its habitat.
- It is BLM policy that where a field office determines that it is appropriate to authorize a proposed special recreation permit, the following process must be followed:
  - The BLM will document the reasons for its determination and require the permitee to implement measures to minimize impacts to sage-grouse habitat.
  - In addition to considering opportunities for onsite mitigation, the BLM will consider whether it is appropriate to condition the permit with a requirement for offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation).
  - Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed permit and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed special recreation permit decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed special recreation permit, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed special recreation permit, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
- Field offices retain the discretion to not move forward with a special recreation permit application or defer making a final decision on a special recreation

permit decision until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Recreation Sites

- Use conservation measures to avoid impacts to Greater Sage-Grouse at existing recreation sites.
- Consider closing recreational sites either seasonally or permanently and restricting traffic to avoid or minimize effects of habitat alterations or other physical disturbances to Greater Sage-Grouse (e.g., breeding, brood-rearing, migration patterns, or winter survival).

Travel Management

Ongoing Authorizations/Activities

- Evaluate authorizations and use and implement seasonal road/primitive road/trail restrictions if continued use would result in habitat alterations or other physical disturbances that impair life history functions of the Greater Sage-Grouse, such as breeding, brood-rearing, migration patterns, or winter survival, as appropriate.
- Place a high priority on closing and reclaiming unauthorized motor vehicle routes.
- Limit and enforce motorized vehicle use to existing or designated roads, primitive roads, and trails and seasons of use to prevent habitat loss or other physical disturbance that impair life history functions of the Greater Sage-Grouse, such as breeding, migration patterns, or winter survival.

Proposed Authorizations/Activities

- Route construction should be limited to realignments of existing or designated routes to enhance other resources only if that realignment conserves or enhances sage-grouse habitat. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new road constructed will be built to the absolute minimum standard necessary. No improvement to existing routes will occur that would change route category (i.e., road, primitive road, or trail) or enhance capacity.

Locatable Minerals

Ongoing Authorizations/Activities (i.e., existing operations conducted under a Notice or a Plan of Operations)

- Request that holders of Notices and Plans of Operation modify their operations to avoid or minimize adverse effects on Greater Sage-Grouse and its habitat. Operators must be informed in the request that compliance is not mandatory.

Proposed Authorizations/Activities (i.e., new Notices or Plans of Operation)

- Require that new notices and plans of operation include measures to avoid or minimize adverse effects to Greater Sage-Grouse populations and its habitat. Ensure that new notices and plans of operation comply with the requirements in 43 CFR 3809 to prevent unnecessary or undue degradation. Such compliance may assist in avoiding or minimizing adverse effects to Greater Sage-Grouse populations and habitat.

Salable Minerals

Ongoing Authorizations/Activities (i.e., an authorization has been issued)

- Where valid existing rights exist, work with the holders of authorizations to develop actions such as siting/design of infrastructure, timing of operations, or reclamation standards that will avoid or minimize effects to Greater Sage-Grouse populations and its habitat.

Proposed Authorizations/Activities

- If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a DEIS or a FONSI:

  - Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
  - Determine, in coordination with the respective state wildlife agency, whether the proposed authorization would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed authorization would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Proposed Authorizations/Activities").

- All Other Proposed Authorizations/Activities

  It is BLM policy that where a field office determines that it is appropriate to issue an authorization, the following process must be followed:

  - The BLM will document the reasons for its determination and implement measures to minimize impacts to sage-grouse habitat.
  - In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.
  - Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed pit and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed pit authorization decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed authorization, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed authorization, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
  - Exception- Pit Expansion Only: New permits may be issued for pit expansion, provided there are no adverse effects on Greater Sage-Grouse and its habitat.

- Field offices retain the discretion to not move forward with an authorization, where appropriate, or defer making a final decision on regarding an authorization until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Grasshopper and Mormon Cricket Control and Management

Proposed Authorizations/Activities

- If grasshopper control is proposed, the NEPA analysis must address impacts on Greater Sage-Grouse and its habitat.
- Continue to implement WO-IM-2010-084, Grasshopper and Mormon Cricket Treatments within Sage-grouse Habitat, and reference WY-IM-2010-12, Greater Sage-Grouse Habitat Management Policy on Wyoming Bureau of Land Management (BLM) Administered Public Lands including the Federal

Mineral Estate, for grasshopper or Mormon cricket control.
- Coordinate with local Animal and Plant Health Inspection Service (APHIS) personnel and state wildlife agencies concerning treatments in Greater Sage-Grouse habitat.
- Management actions and operating procedures may include, but are not limited, to the following:

  o Evaluate and restrict or modify treatment methods and timing of use or other mitigation.
  o Avoid spraying treatment areas in May and June (or as appropriate to local circumstances) to provide insect availability for early development of Greater Sage-Grouse chicks.
  o Application timing should be implemented to reduce disturbance and impacts to Greater Sage-Grouse.
  o Use approved chemicals with the lowest toxicity to Greater Sage-Grouse that still provide effective control of grasshopper and Mormon cricket. Coordinate with APHIS to determine the approved chemical with the lowest toxicity.
  o Evaluate the appropriate percentages of Environmental Protection Agency (EPA) allowable chemical rates and the pros and cons of available chemical use, in coordination with state wildlife agencies, FWS, and APHIS.
  o Use *Carbaryl* only when necessary to treat large grasshopper and Mormon cricket populations late in the season. APHIS will coordinate the use with the respective BLM state office prior to any application.
  o Implement effectiveness monitoring, if warranted.

Wild Horse and Burro Management

Ongoing Authorizations/Activities

- Manage wild horse and burro population levels within established Appropriate Management Levels (AML).
- Wild Horse Herd Management Areas will receive priority for removal of excess horses.
- Wild horses and burros remaining in Herd Management Areas where the AML has been established as zero will receive priority for removal.
- When developing overall workload priorities for the upcoming year, prioritize horse gathers except where removals are necessary in non-PPH to prevent catastrophic herd health and ecological impacts.

Realty Actions (e.g., Land Exchanges, Transfers, and Sales)

It is BLM policy that where a field office determines that it is appropriate to implement a public land disposal action, the following process must be followed:

- The BLM will document the reasons for its determination and implement measures to minimize impacts to sage-grouse habitat. Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed land disposal action would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed land disposal action must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed land disposal action, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed land disposal action, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
- Exception: Those land disposal actions (e.g., the BLM's acceptance of an Application for Land for Recreation and Public Purposes, Publication of a Federal Register Notice of Realty Action, Execution of an Agreement to Initiate an Exchange, the BLM's acceptance of a State Application for Selection) initiated prior to or if the BLM is within 90 days of the issuance of a DEIS or FONSI for a land disposal action following the date of this IM.

Vegetation and Resource Monitoring

Ongoing Authorizations/Activities

- Continue to coordinate with NRCS and its contractors to implement the BLM *Landscape Monitoring Framework Project* developed under the *Assessment, Inventory and Monitoring Strategy* to assess the condition of public lands including PPH at a landscape level.
- Continue to work with livestock grazing permittees/lessees to collect specific kinds of monitoring information on their allotments to supplement monitoring information collected by the BLM (refer to WO-IB-2010-015, Grazing Permittee - Joint Cooperative Monitoring, for additional information).
- Until further direction is provided, and within the range of the Greater Sage-Grouse, the Wildlife Program (1110) will collect, consolidate, and report the following annually to the Division of Fish and Wildlife Conservation (WO-230):

  o Miles, acres, and/or number of structures (e.g., fences, water developments, well pads, gravel pits, roads) removed, installed, relocated, decommissioned, modified, or mitigated to benefit Greater Sage-Grouse and its habitat;
  o Number of BLM use authorizations issued or deferred and the associated acres where changes in management were implemented to benefit Greater Sage-Grouse and its habitat;
  o Acres where the BLM implemented changes in use in order to improve habitat for the Greater Sage-Grouse in cooperation with other Federal or state agencies;
  o Acres of habitat altered by wildland fire, acres treated after fire, and acres not treated after fire that were in need of treatment;
  o Acres of habitat altered by fuels treatment projects and how those treatments affected habitat;
  o Acres of vegetation treated to benefit Greater Sage-Grouse habitat; and
  o Number of allotments assessed for land health standards and the associated acres, according to Table 7A of the *Rangeland Inventory, Evaluation and Monitoring Report*.

Proposed Authorizations/Activities

- New activity plans and/or project plans must include clear objectives to benefit Greater Sage-Grouse habitat and vegetative resource conditions. Base these vegetative objectives on (1) the native shrub reference state as shown in the *State and Transition Model* outlined in the applicable ESD, where available; (2) published scientific habitat guidelines for specific areas; and (3) local sage-grouse working group recommendations.
- Monitor activities and projects using the BLM core indicators and protocols (see the BLM *Assessment, Inventory and Monitoring Strategy*) to ensure that the objectives are being met. Supplement data collection, as necessary, with other programmatic information for the site to demonstrate that objectives are being met.
- Complete habitat inventories/assessments using the *Sage-Grouse Habitat Assessment Frameworkin* a timely manner so that data are available for consideration in livestock grazing permit renewals and other management decisions.
-

II. Interim Conservation Policies and Procedures for "Preliminary General Habitat"

The intent of these interim conservation policies and procedures in PGH is to reduce and mitigate adverse effects on Greater Sage-Grouse and its habitat to the extent practical. These policies and procedures differ from those applied to PPH.

- When approving uses and authorizations, consider and analyze management measures that would reduce direct, indirect, and cumulative adverse effects on Greater Sage-Grouse and its habitat. For example, consider alternatives that would increase buffer distances around active leks and timing

restrictions within existing LUPs as needed to further reduce adverse effects on Greater Sage-Grouse and its habitat.
- Consider deferring authorizations in PGH where appropriate, depending on local characteristics, new science and/or data (e.g., migratory corridors or habitat between PPH), and relative habitat importance if authorizations could result in Greater Sage-Grouse population loss in PPH.
- Consider offsite mitigation measures in collaboration with state wildlife agencies and project proponents when authorizing activities.
- Evaluate and address anticipated fence collision risks within 1.25 miles[3] of leks and other seasonal habitats. Where NEPA analysis suggests that a deviation from this distance is warranted, modifications of this distance are acceptable.

Timeframe: This IM is effective immediately and will remain in effect until the BLM completes the LUP process described in the *National Greater Sage-Grouse Planning Strategy*.

Budget Impact: This IM will result in additional costs for coordination, NEPA review, planning, implementation, and monitoring.

Background: In March 2010, the FWS published its petition decision for the Greater Sage-Grouse as "Warranted but Precluded." Inadequacy of regulatory mechanisms was identified as one of the major factors in the FWS's finding on Greater Sage-Grouse. The FWS has identified the principal regulatory mechanism for the BLM as protective measures embedded in LUPs. The BLM is identifying sage-grouse conservation measures for consideration through the planning process, with a target decision date of September 2014. The goal is to conserve habitat necessary to sustain Greater Sage-Grouse populations and reduce the likelihood of listing under the Endangered Species Act.

In July 2011, the BLM announced the *National Greater Sage-Grouse Planning Strategy* which provides a framework for establishing adequate regulatory mechanisms (conservation measures) in applicable BLM LUPs throughout the range of the Greater Sage-Grouse.

Manual/Handbook Sections Affected: None.

Coordination: This IM was coordinated with the Office of National Landscape Conservation System and Community Partnership (WO-400), Assistant Director, Renewable Resources and Planning (WO-200), Minerals and Realty Management (WO-300), Fire and Aviation (FA-100), BLM state offices, FWS, and state wildlife agencies.

Contact: State Directors may direct any questions or concerns to Edwin Roberson, Assistant Director, Renewable Resources and Planning (WO-200), at 202-208-4896 or eroberso@blm.gov, and Michael D. Nedd, Assistant Director, Minerals and Realty Management (WO-300), at 202-208-4201 or mnedd@blm.gov.

Signed by:
Mike Pool
Acting, Director

Authenticated by:
Ambyr Fowler
Division of IRM Governance, WO- 560

1 Attachment
1-Definitions (2 pp)

[1] Doherty, K. E., J.D. Tack, J.S. Evans and D. E. Naugle. 2010. Mapping breeding densities of Greater Sage-Grouse: A tool for range-wide conservation planning. BLM Completion Report: Interagency Agreement # L10PG00911.

[2]Stiver, S.J., E.T Rinkes, AND D.E. Naugle. 2010. Sage-grouse Habitat Assessment Framework. U.S. Bureau of Land Management. Unpublished Report. U.S. Bureau of Land Management, Idaho State Office, Boise, Idaho.

[3] Stevens, B.S. 2011. Impacts of Fences on Greater Sage-Grouse in Idaho: Collision, Mitigation, and Spatial Ecology (Master's Thesis). University of Idaho, Moscow, Idaho.

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K.5 State of Wyoming Executive Order 2011-5: Greater Sage-Grouse Core Area Protection

MATTHEW H. MEAD
GOVERNOR

THE STATE OF WYOMING

STATE CAPITOL
CHEYENNE, WY 82002

Office of the Governor

STATE OF WYOMING
EXECUTIVE DEPARTMENT
EXECUTIVE ORDER

Order 2011-5
(Replaces 2010-4)

GREATER SAGE-GROUSE CORE AREA PROTECTION

WHEREAS, the Greater Sage-Grouse (Centrocercus urophasianus) inhabits much of the sagebrush-steppe habitat in Wyoming; and

WHEREAS, the sagebrush-steppe habitat type is abundant across the state of Wyoming; and

WHEREAS, the state of Wyoming currently enjoys robust populations of Greater Sage-Grouse; and

WHEREAS, the state of Wyoming has management authority over Greater Sage-Grouse populations in Wyoming; and

WHEREAS, the Greater Sage-Grouse has been the subject of several petitions to list the species as a threatened or endangered species pursuant to the Endangered Species Act; and

WHEREAS, the United States Department of the Interior has determined that listing the Greater Sage-Grouse as a threatened or endangered species is warranted over all of its range, including the populations in Wyoming; and

WHEREAS, the United States Department of the Interior has determined that listing the Greater Sage-Grouse as a threatened or endangered species is currently precluded by higher priority listing actions; and

WHEREAS, the Greater Sage-Grouse is currently considered a "candidate" species under the auspices of the Endangered Species Act; and

WHEREAS, the United States Department of the Interior is required to review the status of all candidate species every year; and

WHEREAS, the listing of the Greater Sage-Grouse would have a significant adverse effect on the economy of the state of Wyoming, including the ability to generate revenues from state lands; and

WHEREAS, the listing of the Greater Sage-Grouse would have a significant adverse effect on the custom and culture of the state of Wyoming; and

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WHEREAS, the Wyoming State Legislature and other agencies have dedicated significant state resources to conserve Greater Sage-Grouse populations in Wyoming; and

WHEREAS, the state of Wyoming has developed a "Core Population Area" strategy to weave the many on-going efforts to conserve the Greater Sage-Grouse in Wyoming into a statewide strategy; and

WHEREAS, members of the Sixtieth Legislature of the State of Wyoming signed a Joint Resolution recognizing "the Greater Sage Grouse Core Area Strategy [then embodied under Governor's Executive Order 2008-2] as the State of Wyoming's primary regulatory mechanism to conserve sage-grouse and preclude the need for listing the bird as a threatened or endangered species pursuant to the Endangered Species Act of 1973."; and

WHEREAS, on April 17, 2008, the Office of the Governor requested that the U.S. Fish and Wildlife Service review the "Core Population Area" strategy to determine if it was a "sound policy that should be moved forward" and on May 7, 2008, the U.S. Fish and Wildlife Service responded that the "core population area strategy, as outlined in the Implementation Team's correspondence to the Governor, is a sound framework for a policy by which to conserve greater sage-grouse in Wyoming"; and

WHEREAS, on November 10, 2010, the U.S. Fish and Wildlife Service again confirmed that "This long-term, science-based vision for the conservation of greater sage-grouse has set the stage for similar conservation efforts across the species range," and that "the Core Population Area Strategy for the greater sage-grouse provides an excellent model for meaningful conservation of sage-grouse is fully supported and implemented"; and

WHEREAS, several western states have adopted or are considering adopting the Wyoming Core Area Strategy, thus making the concept consistent across the species range; and

WHEREAS, new science, information and data continue to emerge regarding "Core Population Areas" and the habitats and behaviors of the Greater Sage-Grouse, which led the Governor's Sage-Grouse Implementation Team to re-evaluate the original "core population areas" and protective stipulations for Greater Sage-Grouse.

NOW, THEREFORE, pursuant to the authority vested in me by the Constitution and Laws of the State, and to the extent such actions are consistent with the statutory obligations and authority of each individual agency including those found in Title 9, Chapter 5, Article 3 of Wyoming State Statutes, otherwise cited as the Wyoming Regulatory Takings Act, I, Matthew H. Mead, Governor of the State of Wyoming, do hereby issue this Executive Order providing as follows:

1. Management by state agencies should focus on the maintenance and enhancement of Greater Sage-Grouse habitats, populations and connectivity areas identified in Attachment A. Absent substantial and compelling information, these Core Population Areas should not be altered for at least five (5) years.

2. Existing land uses within Core Population Areas should be recognized and respected by state agencies. It is assumed that activities existing in Core Population Areas prior to August 1, 2008 will not be managed under Core Population Area stipulations. Examples of existing activities include oil and gas, mining, agriculture, processing facilities, housing and other uses that were in place prior to the development of the Core Population Areas (prior to August 1, 2008). Provided these activities are within a defined project boundary (such as a recognized federal oil and gas unit, drilling and spacing unit, mine plan, subdivision plat, etc.) they should be allowed to continue within the existing boundary, even if the

use exceeds recommended stipulations (see Attachment B) recognizing that all applicable federal actions shall continue.

3. New development or land uses within Core Population Areas should be authorized or conducted only when it can be demonstrated that the activity will not cause declines in Greater Sage-Grouse populations.

4. Development consistent with the stipulations set forth in Attachment B shall be deemed sufficient to demonstrate that the activity will not cause declines in Greater Sage-Grouse populations.

5. Funding, assurances (including efforts to develop Candidate Conservation Agreements and Candidate Conservation Agreements with Assurances), habitat enhancement, reclamation efforts, mapping and other associated proactive efforts to assure viability of Greater Sage-Grouse in Wyoming should be focused and prioritized to take place in Core Population Areas.

6. To the greatest extent possible, a non-regulatory approach shall be used to influence management alternatives within Core Population Areas. Management alternatives should reflect unique localized conditions, including soils, vegetation, development type, predation, climate and other local realities.

7. For activities outside of Core Population Areas, no more than a one-quarter (1/4) mile no surface occupancy standard and a two (2) mile seasonal buffer should be applied to occupied leks. Incentives to enable development of all types outside Core Population Areas should be established (these should include stipulation waivers, enhanced permitting processes, density bonuses, and other incentives). Development scenarios should be designed and managed to maintain populations, habitats and essential migration routes where possible. It is recognized that some incentives may result in reduced numbers of sage-grouse outside of Core Population Areas.

8. Incentives to accelerate or enhance required reclamation in habitats adjacent to Core Population Areas should be developed, including but not limited to stipulation waivers, funding for enhanced reclamation, and other strategies. It is recognized that some incentives may result in reduced numbers of sage-grouse outside of the Core Population Areas.

9. Existing rights should be recognized and respected.

10. On-the-ground enhancements, monitoring, and ongoing planning relative to sage-grouse and sage-grouse habitat should be facilitated by sage-grouse local working groups whenever possible.

11. Fire suppression efforts in Core Population Areas should be emphasized, recognizing that other local, regional, and national suppression priorities may take precedent. However, public and firefighter safety remains the number one priority for all fire management activities.

12. State and federal agencies, including the U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, and other federal agencies shall work collaboratively to ensure a uniform and consistent application of this Executive Order to maintain and enhance Greater Sage-Grouse habitats and populations.

13. State agencies shall work collaboratively with local governments and private landowners to maintain and enhance Greater Sage-Grouse habitats and populations in a manner consistent with this Executive Order.

14. It is critical that existing land uses and landowner activities continue to occur in core areas, particularly agricultural activities on private lands. For the most part, these activities on private lands are not subject to state agency review or approval. Only those activities occurring after August 1, 2008 which state agencies are required by state or federal statute to review or approve are subject to consistency review. This Executive Order in no way adds or expands the review or approval authority of any state agency. It is acknowledged that such land uses and activities could have localized impacts on Greater Sage-Grouse. To offset these impacts, Core Population Areas have been mapped to include additional habitat beyond that strictly necessary to prevent listing of the species. The additional habitat included within the Core Population Area boundaries is adequate to accommodate continuation of existing land uses and landowner activities. As a result, state agencies are not required to review most existing land uses and landowner activities in Core Population Areas for consistency with this Executive Order. Attachment C contains a list of existing land uses and landowner activities that do not require review for consistency.

15. It will be necessary to construct significant new transmission infrastructure to transport electricity generated in Wyoming to out-of-state load centers. New transmission lines constructed within Core Population Areas will be consistent with this Executive Order if they are constructed between July 1 and March 14 (or between July 1 and November 30 in winter concentration areas) and within one half (1/2) mile either side of existing (prior to Governor's Executive Order 2010-4) 115 kV or larger transmission lines creating a corridor no wider than one (1) mile. New transmission lines outside this one (1) mile wide corridor within Core Population Areas should be authorized or conducted only when it can be demonstrated that the activity will not cause declines in Greater Sage-Grouse populations.

16. For purposes of consistency with this Executive Order there is established a transmission line corridor through Core Population Areas in south central and southwestern Wyoming as illustrated on Attachment D. This two (2) mile wide corridor represents the state of Wyoming's preferred alternative for routing transmission lines across the southern portion of the state while reducing impacts to Core Population Areas and other natural resources. New transmission lines constructed within this corridor shall be considered consistent with this Executive Order if construction occurs within the corridor between July 1 and March 14 (or between July 1 and November 30 in winter concentration areas).

17. New distribution, gathering, and transmission lines sited outside established corridors within Core Population Areas should be authorized or conducted only when it can be demonstrated by the state agency that the activity will not cause declines in Greater Sage-Grouse populations.

18. State agencies shall strive to maintain consistency with the items outlined in this Executive Order, but it should be recognized that adjustments to the stipulations may be necessary based upon local conditions and limitations. The goal is to minimize future disturbance by co-locating proposed disturbances within areas already disturbed or naturally unsuitable.

19. The protective stipulations outlined in this Executive Order should be reevaluated on a continuous basis and at a minimum annually, as new science, information and data emerge regarding Core Population Areas and the habitats and behaviors of the Greater Sage-Grouse.

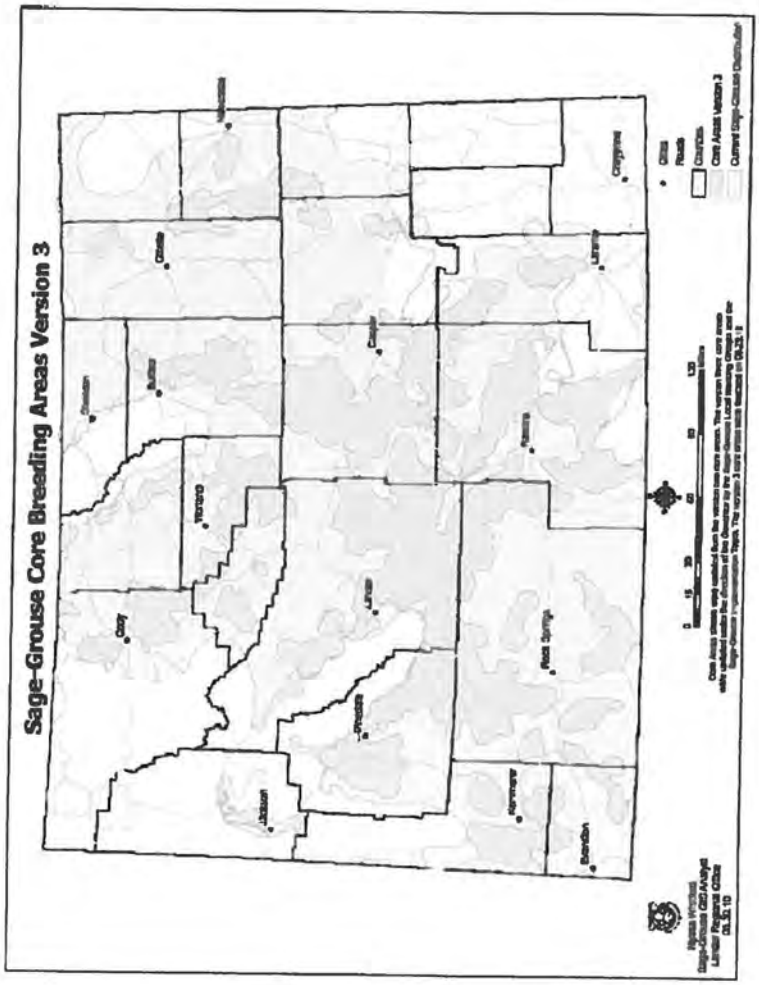
20. State agencies shall report to the Office of the Governor within ninety (90) days of signing and annually thereafter detailing their actions to comply with this Executive Order.

This Executive Order shall remain in effect until August 18, 2015, at which time all provisions of this Executive Order shall be reevaluated.

Given under my hand and the Executive Seal of the State of Wyoming this 2 day of June, 2011.

Matthew H. Mead
Governor

ATTACHMENT A



ATTACHMENT B

Permitting Process and Stipulations for Development in Sage-Grouse Core Areas

PERMITTING PROCESS

Point of Contact: The first point of contact for addressing sage-grouse issues for any state permit application should be the Wyoming Game and Fish Department (WGFD). Project proponents (proponents) need to have a thorough description of their project and identify the potential effects on sage-grouse prior to submitting an application to the permitting agency (details such as a draft project implementation area analysis, habitat maps and any other information will help to expedite the project). Project proponents should contact WGFD at least 45-60 days prior to submitting their application. More complex projects will require more time. It is understood that WGFD has a role of consultation, recommendation, and facilitation, and has no authority to either approve or deny the project. The purpose of the initial consultation with the WGFD is to become familiar with the project proposal and ensure the project proponent understands recommended stipulations and stipulation implementation process.

Maximum Disturbance Process: All activities will be evaluated within the context of maximum allowable disturbance (disturbance percentages, location and number of disturbances) of suitable sage-grouse habitat (See Appendix 1 for definition of suitable sage-grouse habitat and disturbance of suitable sage-grouse habitat) within the area affected by the project. The maximum disturbance allowed will be analyzed via a Density/Disturbance Calculation Tool (DDCT) process conducted by the Federal Land Management Agency on federal Land and the project proponent on non-federal (private, state) land. Unsuitable habitat occurring within the project area will not be included in the disturbance cap calculations.

1. Density/Disturbance Calculation Tool (DDCT): Determine all occupied leks within a core population area that may be affected by the project by placing a 4 mile boundary around the project boundary (as defined by the proposed area of disturbance related to the project). All occupied leks located within the 4 mile boundary and within a core population area will be considered affected by the project.

   A four-mile boundary will then be placed around the perimeter of each affected lek. The core population area within the boundary of affected leks and the 4 mile boundary around the project boundary creates the DDCT for each individual project. Disturbance will be analyzed for the DDCT as a whole and for each individual affected lek within the DDCT. Any portion of the DDCT occurring outside of core area will be removed from the analysis.

   If there are no affected leks within the 4 mile boundary around the project boundary, the DDCT area will be that portion of the 4 mile project boundary within the core population area.

2. Disturbance analysis: Total disturbance acres within the DDCT will be determined through an evaluation (Appendix 1) of:

   a. Existing disturbance (sage-grouse habitat that is disturbed due to existing anthropogenic activity and wildfire).

b. Approved permits (that have approval for on the ground activity) not yet implemented.

3. Habitat Assessment:

a. A habitat assessment is not needed for the initial DDCT area provided that the entire DDCT area is considered suitable.
b. A habitat assessment should be conducted when the initial DDCT indicates proposed project will cause density/disturbance thresholds to be exceeded, to see whether siting opportunities exist within unsuitable or disturbed areas that would reduce density/disturbance effects.
c. When a habitat assessment is conducted it should create a baseline survey identifying:
    i. Suitable and unsuitable habitat within the DDCT area
    ii. Disturbed habitat within the DDCT area
    iii. Sage-grouse use of suitable habitat (seasonal, densities, etc.)
    iv. Priority restoration areas (which could reduce the 5% cap)
        A. Areas where plug and abandon activities will eliminate disturbance
        B. Areas where old reclamation has not produced suitable habitat
    v. Areas of invasive species
    vi. Other assurances in place (CCAA, easements, habitat, contracts, etc.)

4. Determination of existing and allowable suitable habitat disturbance: Acres of disturbance within suitable habitat divided by the total suitable habitat within the DDCT area times 100 equals the percent of disturbed suitable habitat within the DDCT area. Subtracting the percentage of existing disturbed suitable habitat from 5% equals new allowable suitable habitat disturbance until plant regeneration or reclamation reduces acres of disturbed habitat within the DDCT area.

Permitting: The complete analysis package developed by consultation and review outlined herein will be forwarded to the appropriate permitting agency. WGFD recommendations will be included, as will other recommendations from project proponents and other appropriate agencies. Project proponent shall have access to all information used in developing recommendations. Where possible and when requested by the project proponent, state agencies shall provide the project proponent with development alternatives other than those contained in the project proposal.

Exempt Activities: A list of exempt ("de minimus") activities, including standard uses of the landscape is available in Attachment C.

GENERAL STIPULATIONS

These stipulations are designed to maintain existing suitable sage-grouse habitat by permitting development activities in core areas in a way that will not cause declines in sage-grouse populations. General stipulations are recommended to apply to all activities in core areas, with the exception of exempt ("de minimus") actions defined herein (Attachment C) or specifically identified activities. The specific industry stipulations are considered in addition to the general stipulations.

1. **Surface Disturbance:** Surface disturbance will be limited to 5% of suitable sage-grouse habitat per an average of 640 acres. The DDCT process will be used to determine the

level of disturbance. Distribution of disturbance may be considered and approved on a case-by-case basis. Unsuitable habitat should be identified in a seasonal and landscape context, on a case-by-case basis, outside the 0.6 mile buffer around leks. This will incentivize proponents to locate projects in unsuitable habitat to avoid creating additional disturbance acres. Acres of development in unsuitable habitat are not considered disturbance acres. The primary focus should be on protection of suitable habitats and protecting from habitat fragmentation. See Appendix 1 for a description of suitable, unsuitable habitat and disturbance.

2. **Surface Occupancy:** Within 0.6 miles of the perimeter of occupied sage-grouse leks there will be no surface occupancy (NSO). NSO, as used in these recommendations, means no surface facilities including roads shall be placed within the NSO area. Other activities may be authorized with the application of appropriate seasonal stipulations, provided the resources protected by the NSO are not adversely affected. For example, underground utilities may be permissible if installation is completed outside applicable seasonal stipulation periods and significant resource damage does not occur. Similarly, geophysical exploration may be permissible in accordance with seasonal stipulations.

3. **Seasonal Use:** Activity (production and maintenance activity exempted) will be allowed from July 1 to March 14 outside of the 0.6 mile perimeter of a lek in core areas where breeding, nesting and early brood-rearing habitat is present. In areas used solely as winter concentration areas, exploration and development activity will be allowed March 14 to December 1. Activities in unsuitable habitat may also be approved year-round (including March 15 to June 30) on a case-by-case basis (except in specific areas where credible data shows calendar deviation). Activities may be allowed during seasonal closure periods as determined on a case-by-case basis. While the bulk of winter habitat necessary to support core sage-grouse populations likely occurs inside Core Population Areas, seasonal stipulations (December 1 to March 14) should be considered in locations outside Core Population Areas where they have been identified as winter concentration areas necessary for supporting biologically significant numbers of sage-grouse nesting in Core Population Areas. All efforts should be made to minimize disturbance to mature sagebrush cover in identified winter concentration areas.

4. **Transportation:** Locate main roads used to transport production and/or waste products > 1 .9 miles from the perimeter of occupied sage-grouse leks. Locate other roads used to provide facility site access and maintenance > 0.6 miles from the perimeter of occupied sage-grouse leks. Construct roads to minimum design standards needed for production activities.

5. **Overhead Lines:** Bury lines when possible, if not; locate overhead lines at least 0.6 miles from the perimeter of occupied sage-grouse leks. New lines should be raptor proofed if not buried.

6. **Noise:** New noise levels, at the perimeter of a lek, should not exceed 10 dBA above ambient noise (existing activity included) from 6:00 p.m. to 8:00 a.m. during the initiation of breeding (March 1 – May 15). Ambient noise levels should be determined by measurements taken at the perimeter of a lek at sunrise.

7. **Vegetation Removal:** Vegetation removal should be limited to the minimum disturbance required by the project. All topsoil stripping and vegetation removal in suitable habitat

will occur between July 1 and March 14 in areas that are within 4 miles of an occupied lek. Initial disturbance in unsuitable habitat between March 15 and June30 may be approved on a case-by-case basis.

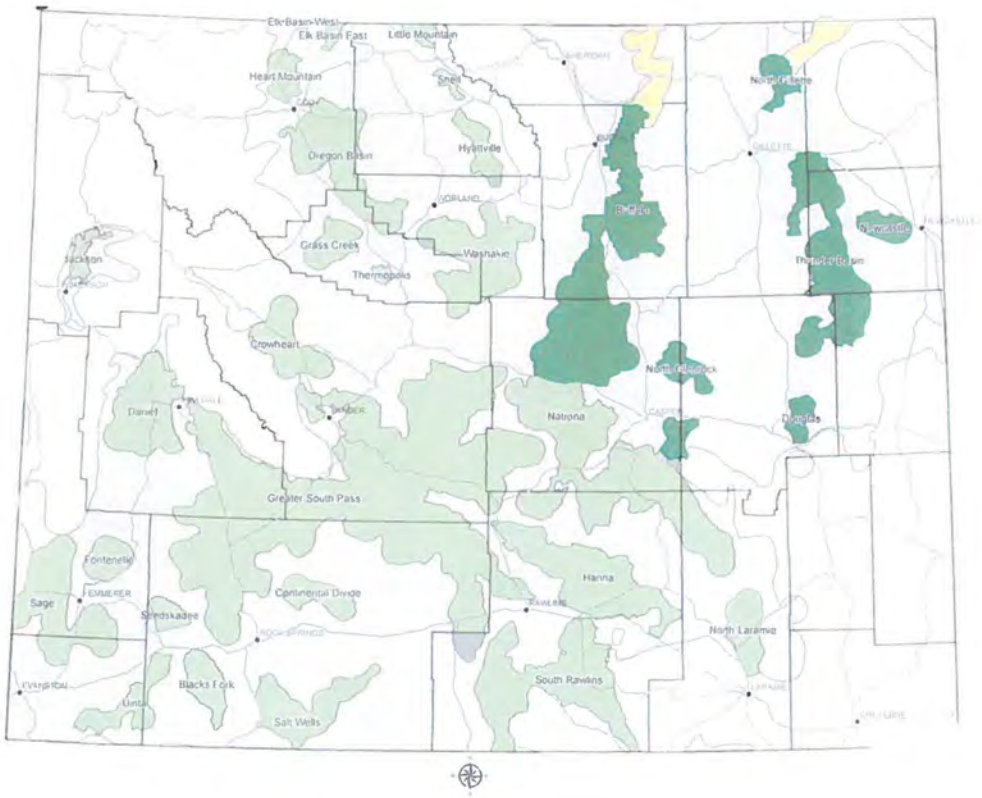
8. **Sagebrush Treatment:** Sagebrush eradication is considered disturbance and will contribute to the 5% disturbance factor. Northeast Wyoming, as depicted in Figure 1, is of particular concern because sagebrush habitats rarely exceed 15% canopy cover and large acreages have already been converted from sagebrush to grassland or cropland. Absent some demonstration that the proposed treatment will not reduce canopy cover to less than 15% within the treated area, habitat treatments in northeast Wyoming (Figure 1) should not be conducted. In stands with less than 15% cover, treatment should be designed to maintain or improve sagebrush habitat. Sagebrush treatments that maintain sagebrush canopy cover at or above 15% total canopy cover within the treated acres will not be considered disturbance. Treatments that reduce sagebrush canopy cover below 15% will be allowed, excluding northeast Wyoming (Figure 1), if all such treated areas make up less than 20% of the suitable sagebrush habitat within the DDCT, and any point within the treated area is within 60 meters of sagebrush habitat with 10% or greater canopy cover. Treatments to enhance sagebrush/grassland will be evaluated based upon the existing habitat quality and the functional level post-treatment.

9. **Monitoring/adaptive response:** Proponents of new projects are expected to coordinate with the permitting agency and local WGFD biologist to determine which leks need to be monitored and what data should be reported by the proponent. Certain permits may be exempted from monitoring activities pending permitting agency coordination. If declines in affected leks (using a three-year running average during any five year period relative to trends on reference leks) are determined to be caused by the project, the operator will propose adaptive management responses to increase the number of birds. If the operator cannot demonstrate a restoration of bird numbers to baseline levels (established by pre-disturbance surveys, reference surveys and taking into account regional and statewide trends) within three years, operations will cease until such numbers are achieved.

10. **Reclamation:** Reclamation should re-establish native grasses, forbs and shrubs during interim and final reclamation to achieve cover, species composition, and life form diversity commensurate with the surrounding plant community or desired ecological condition to benefit sage-grouse and replace or enhance sage-grouse habitat to the degree that environmental conditions allow. Seed mixes should include two native forbs and two native grasses with at least one bunchgrass species. Where sagebrush establishment is prescribed, establishment is defined as meeting the standard prescribed in the individual reclamation plan. Landowners should be consulted on desired plant mix on private lands. The operator is required to control noxious and invasive weed species, including cheatgrass. Rollover credit, if needed, will be outlined in the individual project reclamation plan.

Credit may be given for completion of habitat enhancements on bond released or other minimally functional habitat when detailed in a plan. These habitat enhancements may be used as credit for reclamation that is slow to establish in order to maintain the disturbance cap or to improve nearby sage-grouse habitat.

Figure 1. Wyoming Core Area with northeast Wyoming core (dark green) and connectivity areas (yellow).



11. **Existing Activities:** Areas already disturbed or approved for development within Core Areas prior to August 1, 2008 are not subject to new sage-grouse stipulations with the exception existing operations may not initiate activities resulting in new surface occupancy within 0.6 mile of the perimeter of a sage-grouse lek. Any existing disturbance will be counted toward the calculated disturbance cap for a new proposed activity. The level of disturbance for existing activity and rollover credit may exceed 5%.

12. **Exceptions:** Any exceptions to these general or specific stipulations will be considered on a case by case basis and must show that the exception will not cause declines in sage-grouse populations.

SPECIFIC STIPULATIONS (To be applied in addition to general stipulations)

1. Oil and Gas: Well pad densities not to exceed an average of one pad per square mile (640 acres) and suitable habitat disturbed not to exceed 5% of suitable habitat within the DDCT. As an example, the number of well pads within a two mile radius of the perimeter of an occupied sage-grouse lek should not exceed 11, distributed preferably in a clumped pattern in one general direction from the lek.

2. Mining

   a. For development drilling or ore body delineation drilled on tight centers, (approximately 100'X100') the disturbance area will be delineated by the external limits of the development area. Assuming a widely-spaced disturbance pattern, the actual footprint will be considered the disturbance area.
   b. Monitoring results will be reported annually in the mine permit annual report and to WGFD. Pre-disturbance surveys will be conducted as required by the appropriate regulatory agency.
   c. The number of active mining development areas (e.g., operating equipment and significant human activity) are not to exceed an average of one site per square mile (640 acres) within the DDCT.
   d. Surface disturbance and surface occupancy stipulations will be waived within the Core Area when implementing underground mining practices that are necessary to protect the health, welfare, and safety of miners, mine employees, contractors and the general public. The mining practices include but are not limited to bore holes or shafts necessary to: 1) provide adequate oxygen to an underground mine; 2) supply inert gases or other substances to prevent, treat, or suppress combustion or mine fires; 3) inject mine roof stabilizing substances; and 4) remove methane from mining areas. Any surface disturbance or surface occupancy necessary to access the sites to implement these mining practices will also be exempt from any stipulation.
   e. Coal mining operations will be allowed to continue under the regulatory and permit-specific terms and conditions authorized under the federal Surface Mining Control and Reclamation Act.

3. Connectivity:

   a. The suspension of federal and state leases in connectivity corridors (Figure 1) is encouraged where there is mutual agreement by the leasing agency and the operator. These suspensions should be allowed until additional information

clarifies their need. Where suspensions cannot be accommodated, disturbance should be limited to no more than 5% (up to 32 acres) per 640 acres of suitable sage-grouse habitat within connectivity corridors.

b. For protection of connectivity corridors (Figure 1), a controlled surface use (CSU) buffer of 0.6 miles around leks or their documented perimeters is required. In addition, a March 15 to June 30 timing limitation stipulation is required within nesting habitat within 4 miles of leks.

4. Process Deviation or Undefined Activities: Development proposals incorporating less restrictive stipulations or development that is not covered by these stipulations may be considered depending on site-specific circumstances and the proponent must have data demonstrating that the alternative development proposal will not cause declines in sage-grouse populations in the core area. Proposals to deviate from standard stipulations will be considered by a team including WGFD and the appropriate land management and permitting agencies, with input from the U.S. Fish and Wildlife Service. Project proponents need to demonstrate that the project development would meet at least one of the following conditions:

   a. No suitable habitat is present in one contiguous block of land that includes at least a 0.6 mile buffer between the project area and suitable habitat;

   b. No sage-grouse use occurs in one contiguous block of land that includes at least a 0.6 mile buffer between the project area and adjacent occupied habitat, as documented by total absence of sage-grouse droppings and an absence of sage-grouse activity for the previous ten years;

   c. Provision of a development/mitigation plan that has been implemented and demonstrated by previous research not to cause declines in sage-grouse populations. The demonstration must be based on monitoring data collected and analyzed with accepted scientific based techniques.

5. Wind Energy Development: Wind development is not recommended in sage-grouse core areas, but will be reevaluated on a continuous basis as new science, information and data emerges.

Appendix 1
Suitable Sage-Grouse Habitat Definition

Sage-grouse require somewhat different seasonal habitats distributed over large areas to complete their life cycle. All of these habitats consist of, are associated with, or are immediately adjacent to, sagebrush. If sage-grouse seasonal habitat use maps do not exist for the project site the following description of suitable habitat should be used to determine areas of unsuitable sage-grouse habitat for development siting purposes. An abbreviated description of a complex system cannot incorporate all aspects of, or exceptions to, what habitats a local sage-grouse population may or may not utilize.

Suitable sage-grouse habitat (nesting, breeding, brood-rearing, or winter) is within the mapped occupied range of sage-grouse, and:

1) has 5% or greater sagebrush canopy cover as measured by the technique developed by interagency efforts. "Sagebrush" includes all species and sub-species of the genus Artemisia except the mat-forming sub-shrub species: frigida (fringed) and pedatifida (birdfoot); or
2) is riparian, wet meadow (native or introduced) or areas of alfalfa or other suitable forbs (brood rearing habitat) within 60 meters of sagebrush habitat with 10% or greater canopy cover and the early brood rearing habitat does not exceed 20% of the suitable sagebrush habitat present within the DDCT, Larger riparian/wet meadow, and grass/forb producing areas may be considered suitable habitat as determined on a case by case basis.

Transitional sage-grouse habitat is land that has been treated or burned prior to 2011 resulting in <5% sagebrush cover but is actively managed to meet a minimum of 5% sagebrush canopy cover with associated grasses and forbs by 2021 (by analysis of local condition and trend) and may or may not be considered disturbed. Land that does not meet the above vegetation criteria by 2021 should be considered disturbed.

Land treatments post 2010 must meet sagebrush vegetation treatment guidelines or the treatment will be considered disturbed. Following wildfire, lands shall be treated as disturbed pending an implementation management plan with trend data showing the area returning to functional sage-grouse habitat.

To evaluate the 5% disturbance cap per average 640 acres using the DDCT, suitable habitat is considered disturbed when it is removed and unavailable for immediate sage-grouse use.

The following items are guidelines for determining suitable habitat:

a. Long-term removal occurs when habitat is physically removed through activities that replace suitable habitat with long term occupancy of unsuitable habitat such as a road, well pad or active mine.
b. Short—term removal occurs when vegetation is removed in small areas, but restored to suitable habitat within a few years of disturbance, such as a successfully reclaimed pipeline, or successfully reclaimed drill hole or pit.
c. There may be additional suitable habitat considered disturbed between two or more long term (greater than 1 year) anthropogenic disturbance activities with a footprint greater than 10 acres each if the activities are located such that sage-grouse use of the suitable habitat between these activities is significantly reduced due to the close proximity (less than 1.2 miles apart, 0.6 miles from each activity) and resulting in cumulative effects of these large scale activities. Exemptions may be provided.

d. Land in northeast Wyoming (Figure 1 of Attachment B) that has had sagebrush removed post-1994 (based on Orthophoto interpretation) and not recovered to suitable habitat will be considered disturbed when using the DDCT.

ATTACHMENT C
Exempt ("de minimus") Activities

Existing Land Uses and Landowner Activities in Greater Sage-Grouse Core Population Areas That Do Not Require State Agency Review for Consistency With Executive Order No. 2011-02

1. Existing animal husbandry practices (including branding, docking, herding, trailing, etc).

2. Existing farming practices (excluding conversion of sagebrush/grassland to agricultural lands).

3. Existing grazing operations that utilize recognized rangeland management practices (allotment management plans, NRCS grazing plans, prescribed grazing plans, etc).

4. Construction of agricultural reservoirs and habitat improvements less than 10 surface acres and drilling of agriculture and residential water wells (including installation of tanks, water windmills and solar water pumps) more than 0.6 miles from the perimeter of the lek. Within 0.6 miles from leks no review is required if construction does not occur March 15 to June 30 and construction does not occur on the lek. All water tanks shall have escape ramps.

5. Agricultural and residential electrical distribution lines more than 0.6 miles from leks. Within 0.6 miles from leks no review is required if construction does not occur March 1 5 to June 30 and construction does not occur on the lek. Raptor perching deterrents shall be installed on all poles within 0.6 miles from leks.

6. Agricultural water pipelines if construction activities are more than 0.6 miles from leks. Within 0.6 miles from leks no review is required if construction does not occur March 15 to June 30 and construction is reclaimed.

7. New fencing more than 0.6 miles from leks and maintenance on existing fence. For new fencing within 0.6 miles of leks, fences with documented high potential for strikes should be marked.

8. Irrigation (excluding the conversion of sagebrush/grassland to new irrigated lands).

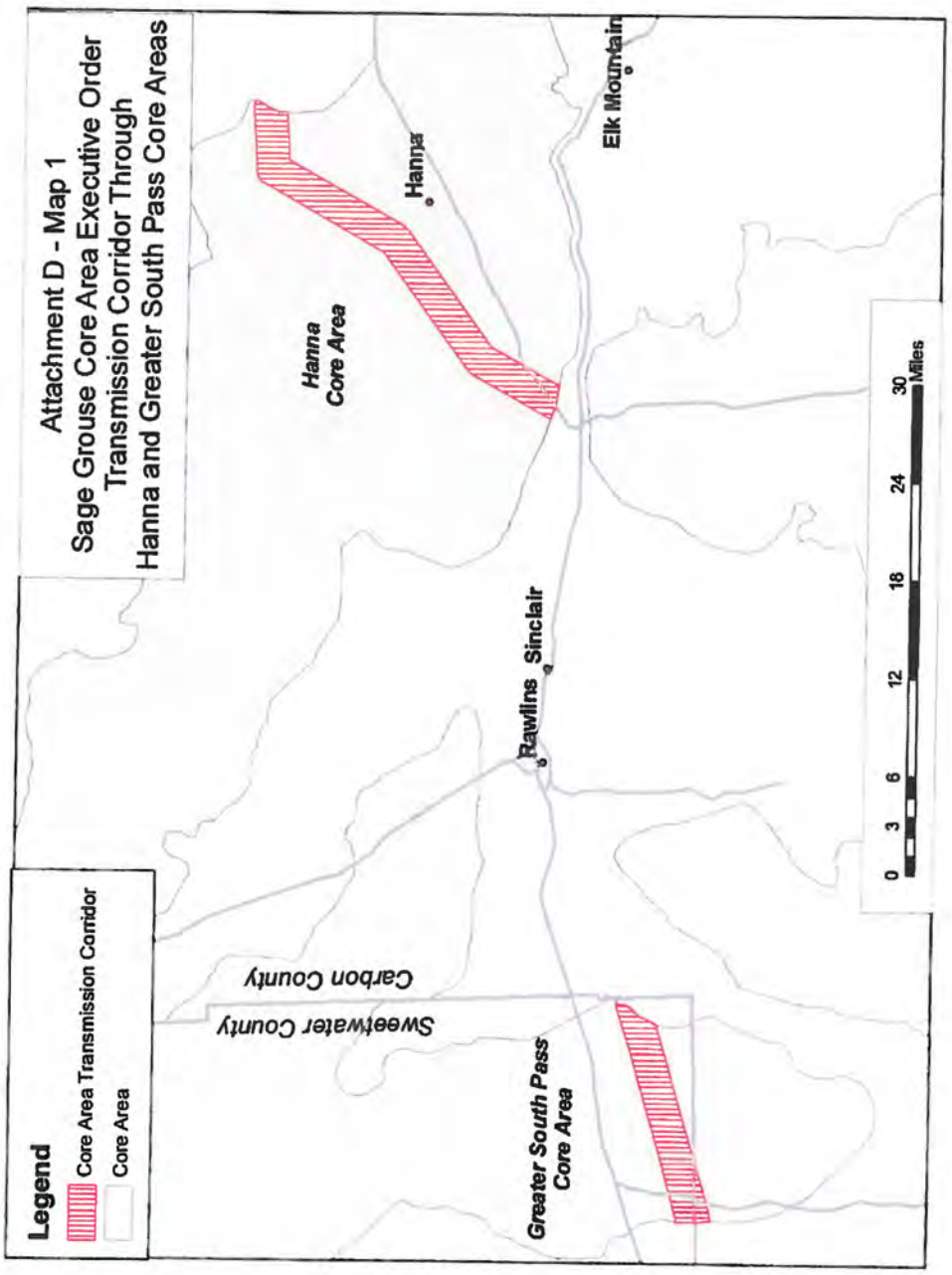
9. Spring development if the spring is protected with fencing and enough water remains at the site to provide mesic (wet) vegetation.

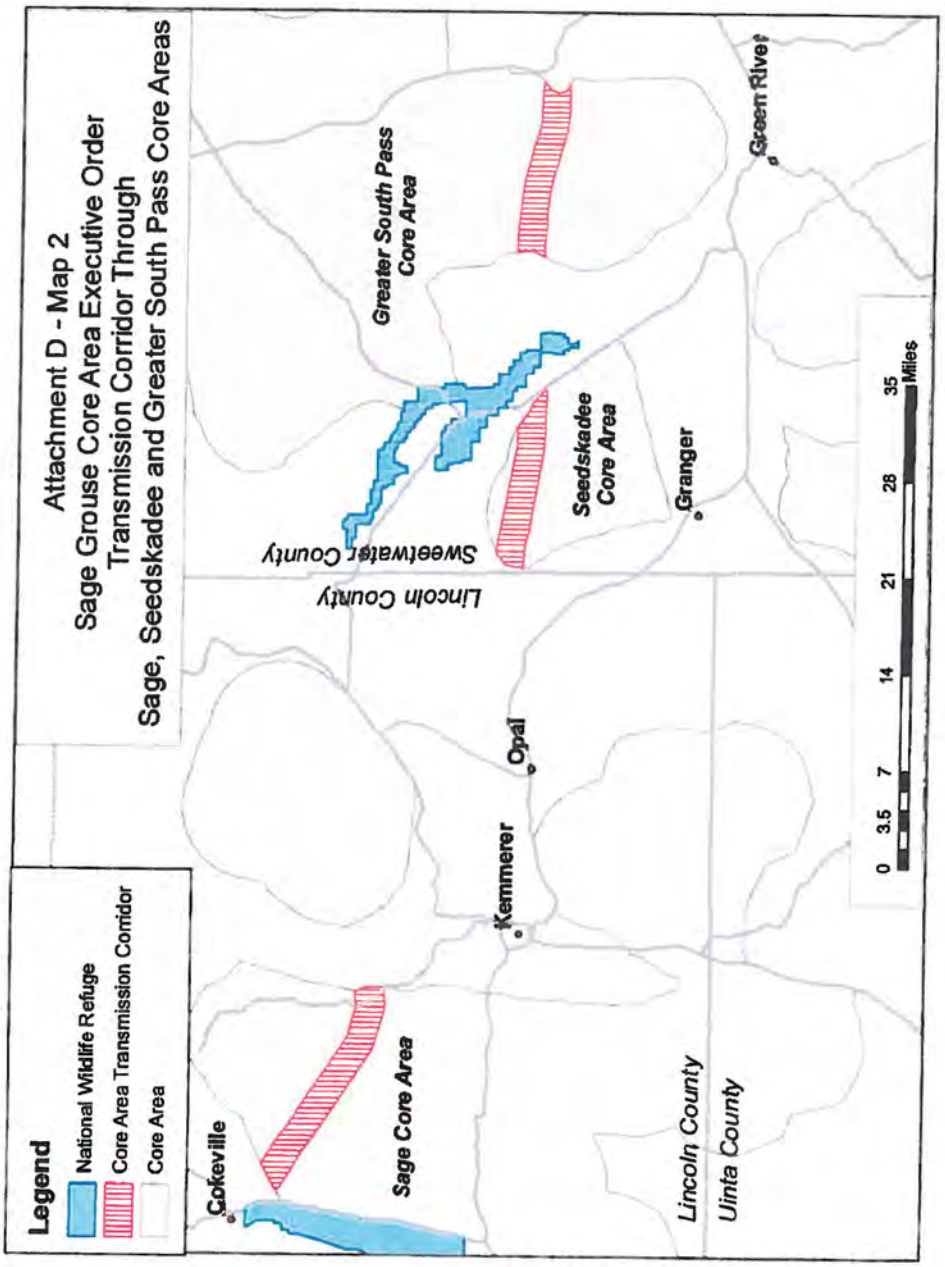
10. Herbicide use within existing road, pipeline and power line rights-of-way. Herbicides application using spot treatment. Grasshopper/Mormon cricket control following Reduced Agent-Area Treatments (RAATS) protocol.

11. Existing county road maintenance.

12. Cultural resource pedestrian surveys.

13. Emergency response.


Attachment D - Map 1
Sage Grouse Core Area Executive Order
Transmission Corridor Through
Hanna and Greater South Pass Core Areas
Hanna
Elk Mountain
Hanna Core Area
Rawlins
Sinclair
Sweetwater County
Carbon County
Greater South Pass Core Area
Legend
Core Area Transmission Corridor
Core Area
0 3 6 12 18 24 30 Miles


Attachment D - Map 2
Sage Grouse Core Area Executive Order
Transmission Corridor Through
Sage, Seedskadee and Greater South Pass Core Areas
Legend
National Wildlife Refuge
Core Area Transmission Corridor
Core Area
Greater South Pass Core Area
Seedskadee Core Area
Sage Core Area
Sweetwater County
Lincoln County
Uinta County
Cokeville
Kemmerer
Opal
Granger
Green River
0 3.5 7 14 21 28 35 Miles

K.6 Instruction Memorandum 2012-044: BLM National Greater Sage Land Use Planning Strategy

U.S. DEPARTMENT OF THE INTERIOR **BUREAU OF LAND MANAGEMENT** National

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
http://www.blm.gov/
December 27, 2011

In Reply Refer To:
1110 (230/300) P

EMS TRANSMISSION 12/27/2011
Instruction Memorandum No. 2012-044
Expires: 09/30/2013

To: All Field Officials

From: Director

Subject: BLM National Greater Sage-Grouse Land Use Planning Strategy

Program Areas: All Programs.

Purpose: This Instruction Memorandum (IM) provides direction to the Bureau of Land Management (BLM) for considering Greater Sage-Grouse conservation measures identified in the Sage-Grouse National Technical Team's - *A Report on National Greater Sage-Grouse Conservation Measures* (Attachment 1) during the land use planning process that is now underway in accordance with the 2011 *National Greater Sage-Grouse Planning Strategy* (Attachment 2).

This IM supplements direction for Greater Sage-Grouse contained in WO IM No. 2010-071 (*Gunnison and Greater Sage-Grouse Management Guidelines for Energy Development*), the BLM's 2004 *National Sage-Grouse Habitat Conservation Strategy* and is a component of the 2011 *National Greater Sage-Grouse Planning Strategy* (Attachment 2). It is also consistent with WO IM No. 2011-138 (*Sage-Grouse Conservation Related to Wildland Fire and Fuels Management*).

In March 2010, the U.S. Fish and Wildlife Service (FWS) published its decision on the petition to list the Greater Sage-Grouse as "Warranted but Precluded." 75 Fed. Reg. 13910 (March 23, 2010). Over 50 percent of the Greater Sage-Grouse habitat is located on BLM-managed lands. In its "warranted but precluded" listing decision, FWS concluded that existing regulatory mechanisms, defined as 'specific direction regarding sage-grouse habitat, conservation, or management' in the BLM's Land Use Plans (LUPs), were inadequate to protect the species. The FWS is scheduled to make a new listing decision in Fiscal Year (FY) 2015.

The BLM has 68 land use planning units which contain Greater Sage-Grouse habitat. Based on the identified threats to the Greater Sage-Grouse and the FWS timeline for making a listing decision on this species, the BLM needs to incorporate explicit objectives and desired habitat conditions, management actions, and area-wide use restrictions into LUPs by the end of FY 2014. The BLM's objective is to conserve sage-grouse and its habitat and potentially avoid an ESA listing.

In August 2011, the BLM convened the Sage-Grouse National Technical Team (NTT), which brought together resource specialists and scientists from the BLM, State Fish and Wildlife Agencies, the FWS, the Natural Resources Conservation Service (NRCS), and the U.S. Geological Survey (USGS). The NTT met in Denver, Colorado in August and September 2011, and in Phoenix, Arizona in December 2011, and developed a series of science-based conservation measures to be considered and analyzed through the land use planning process. This IM provides direction to the BLM on how to consider these conservation measures in the land use planning process.

In order to be effective in our ability to conserve Greater Sage-Grouse and their habitat, the BLM will continue to work with its partners including: the Western Association of Fish and Wildlife Agencies (WAFWA), FWS, USGS, NRCS, U.S. Forest Service (USFS), and Farm Services Agency (FSA) within the framework of the Sagebrush Memorandum of Understanding (2008) and the *Greater Sage-Grouse Comprehensive Conservation Strategy* (2006).

Policy/Action: The BLM must consider all applicable conservation measures when revising or amending its RMPs in Greater Sage Grouse habitat. The conservation measures developed by the NTT and contained

in Attachment 1 must be considered and analyzed, as appropriate, through the land use planning process by all BLM State and Field Offices that contain occupied Greater Sage-Grouse habitat. While these conservation measures are range-wide in scale, it is expected that at the regional and sub-regional planning scales there may be some adjustments of these conservation measures in order to address local ecological site variability. Regardless, these conservation measures must be subjected to a hard look analysis as part of the planning and NEPA processes. This means that a reasonable range of conservation measures must be considered in the land use planning alternatives. As appropriate, the conservation measures must be considered and incorporated into at least one alternative in the land use planning process. Records of Decision (ROD) are expected to be completed for all such plans by the end of FY 2014. This is necessary to ensure the BLM has adequate regulatory mechanisms in its land use plans for consideration by FWS as part of its anticipated 2015 listing decision.

When considering the conservation measures in Attachment 1 through the land use planning process, BLM offices should ensure that implementation of any of the measures is consistent with applicable statute and regulation. Where inconsistencies arise, BLM offices should consider the conservation measure(s) to the fullest extent consistent with such statute and regulation.

The NTT-developed conservation measures were derived from goals and objectives developed by the NTT and included in Attachment 1. These goals and objectives are a guiding philosophy that should inform the goals and objectives developed for individual land use plans. However, it is anticipated that individual plans may develop goals and objectives that differ and are specific to individual planning areas.

Through the land use planning process, the BLM will refine Preliminary Priority Habitat and Preliminary General Habitat data (defined below) to: (1) identify Priority Habitat and analyze actions within Priority Habitat Areas to conserve Greater Sage-Grouse habitat functionality, or where possible, improve habitat functionality, and (2) identify General Habitat Areas and analyze actions within General Habitat Areas that provide for major life history function (e.g., breeding, migration, or winter survival) in order to maintain genetic diversity needed for sustainable Greater Sage-Grouse populations. Any adjustments to the NTT recommended conservation measures at the local level are still expected to meet the criteria for Priority and General Habitat Areas.

Preliminary Priority Habitat (PPH): Areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been/are being identified by the BLM in coordination with respective state wildlife agencies.

Preliminary General Habitat (PGH): Areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been/are being identified by the BLM in coordination with respective state wildlife agencies.

PPH and PGH data and maps have been/are being developed by the BLM through a collaborative effort between the BLM and the respective state wildlife agency, and are stored at the National Operations Center (NOC). These science-based maps were developed using the best available data and may change as new information becomes available. Such changes would be science-based and coordinated with the state wildlife agencies so that the resulting delimitation of PPH and PGH provides for sustainable populations. In those instances where the BLM State Offices have not completed this delineation, the Breeding Bird Density maps developed by Doherty 2010[1] As LUPs are amended or revised, the BLM State Offices will be responsible for coordinating with the NOC to use the newest delineation of PPH and PGH. To access the PPH and PGH data, please use the following link: \\blm\dfs\loc\EGIS\OC\Wildlife\Transfers\GREATER_SAGE_GROUSE_GIS_DATA. will be used. The NOC will establish the process for updating files to include the latest PPH and PGH delineations for each state. This information will assist in applying the conservation measures identified in Attachment 1 below.

Timeframe: This IM is effective immediately and will remain in effect until LUPs are revised or amended by the end of FY 2014.

Budget Impact: This IM will result in additional costs for coordination, NEPA review, planning, implementation, and monitoring.

Background: Following a full status review in 2005, the FWS determined that the Greater Sage Grouse was "not warranted" for protection. Decision documents in support of that determination noted the need to continue and/or expand all efforts to conserve sage-grouse and their habitats. As a result of litigation challenging the 2005 determination, the FWS revisited the determination and concluded in March 2010 that the listing of the Greater Sage-Grouse is warranted but precluded by higher priority listing actions.

In November 2004, the BLM published the *National Sage-Grouse Habitat Conservation Strategy*. The BLM National Strategy emphasizes partnerships in conserving Greater Sage-Grouse habitat through consultation, cooperation, and communication with WAFWA, FWS, NRCS, USFS, USGS, state fish and wildlife agencies, local sage-grouse working groups, and various other public and private partners. In

addition, the *Strategy* set goals and objectives, assembled guidance and resource materials, and provided comprehensive management direction for the BLM's contributions to the ongoing multi-state sage-grouse conservation effort.

In July 2011, the BLM announced its *National Greater Sage-Grouse Planning Strategy* (Attachment 2). The goal of the *Strategy* and this IM is to review existing regulatory mechanisms and to implement new or revised regulatory mechanisms through the land use planning process to conserve and restore the Greater Sage-Grouse and their habitat. The Gunnison Sage-Grouse, bi-state population in California and Nevada and the Washington State distinct population segments of the Greater Sage-Grouse will be addressed through other policies and planning efforts.

Manual/Handbook Sections Affected: None.

Coordination: This IM was coordinated with the office of National Landscape Conservation System and Community Partnership (WO-170), Assistant Director, Renewable Resources and Planning, (WO-200), Minerals and Realty Management (WO-300), Fire and Aviation (WO-400), BLM State Offices, FWS and state fish and wildlife agencies.

Contact: State Directors may direct questions or concerns to Edwin Roberson, Assistant Director, Renewable Resources and Planning (WO-200) at 202-208-4896 or edwin_roberson@blm.gov; and Michael D. Nedd, Assistant Director, Minerals and Realty Management (WO-300) at 202-208-4201 or mike_nedd@blm.gov.

Signed by:
Mike Pool
Acting, Director

Authenticated by:
Ambyr Fowler
Division of IRM Governance, WO-560

2 Attachments:
1 - Sage-Grouse National Technical Team - *A Report on National Greater Sage-Grouse Conservation Measures*, December, 2011 (74 pp)
2 - 2011 BLM National Greater Sage-Grouse Planning Strategy (8 pp)

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[1] Doherty, K. E., J.D. Tack, J.S. Evans and D. E. Naugle. 2010. Mapping breeding densities of greater sage-grouse: A tool for range-wide conservation planning. BLM Completion Report: Interagency Agreement # L10PG00911.

K.7 Instruction Memorandum WY-2012-019 with Attachments: Greater Sage-Grouse Habitat Management Policy on Wyoming Bureau of Land Management (BLM) Administered Public Lands Including the Federal Mineral Estate

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82009-1828

IN REPLY REFER TO:
6840 (930) P

February 10, 2012

EMS TRANSMISSION: 02/15/2012
Instruction Memorandum No. WY-2012-019
Expires: 9/30/2013

To: District Managers and Deputy State Directors

From: State Director

Subject: Greater Sage-Grouse Habitat Management Policy on Wyoming Bureau of Land Management (BLM) Administered Public Lands Including the Federal Mineral Estate

Program Area: All programs

Purpose: This Instruction Memorandum (IM) provides guidance to Bureau of Land Management Wyoming (BLM WY) Field Offices (FOs) regarding management consideration of Greater Sage-Grouse habitats for proposed activities until resource management planning updates are completed. This guidance is in place of direction provided in Washington Office (WO) IM No. 2012-043 concerning interim management policies and procedures for Greater Sage-Grouse. Specifically, this IM addresses all BLM WY programs and provides all necessary interim program direction consistent with WO IM No. 2012-043. Where planning efforts to update and incorporate this guidance are not yet completed, the BLM WY State Office will conduct periodic review of the implementation of measures and directives contained in this IM to determine their applicability and effectiveness and make changes as necessary. This IM replaces IM No. WY-2010-012 and IM No.WY-2010-013 (USDI BLM 2010a, USDI BLM 2010b). This IM also acknowledges that Wyoming BLM will be meeting the intent of WO IM-No. 2012-044, BLM National Greater Sage Grouse Land Use Planning Strategy.

Policy/Action: It is the policy of BLM WY to manage Greater Sage-Grouse seasonal habitats and maintain connectivity in identified areas in support of the population management objectives set by the State of Wyoming. This guidance is consistent with guidelines and recommendations

provided for in the Wyoming Governor's Sage-Grouse Implementation Team's Core Population Area Strategy and the most recent Wyoming Governor's Executive Order (EO) 2011-5. This IM is also consistent with the BLM National Sage-grouse Habitat Conservation Strategy (USDI BLM 2004a), WO policy guidance including:

- IM No. WO-2011-138 (Sage-Grouse Conservation Related to Wildland Fire and Fuels Management);
- IM No. WO-2010-071 (Gunnison and Greater Sage-Grouse Management Considerations for Energy Development);
- IM No. WO-2012-043 (Greater Sage-Grouse Interim Management Policies and Procedures);
- National BLM Policy Manual 6840 which provides direction for the management of BLM Sensitive Species; and
- IM NO. WO-2012-044, BLM National Greater Sage-Grouse Land Use Planning Strategy.

Because Washington Office IM No. WO-2012-043 references the terms Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH), the following explanation of terms used in Wyoming to describe these areas is necessary. BLM WY will refer to PPH in this IM as "core" or "connectivity" areas because these areas currently correspond to the mapped boundaries of the State of Wyoming's Core Population Area Strategy and meet the instructed intent of WO guidance. Connectivity areas are not the same as core areas in Wyoming, but they are a high priority for management, as identified by the State (EO 2011-5; Figure 1). Additionally, the BLM WY, Buffalo Field Office (BFO) has identified sage-grouse "Focus Areas" for adaptive management direction during the Buffalo resource management plan revision process. A record of the management direction for these existing "focus areas" can be reviewed by visiting the following BLM WY BFO web-site:

(http://www.blm.gov/wy/st/en/field_offices/Buffalo/wildlife/sagegrouse.html).

Finally, PGH in Wyoming corresponds to all Greater Sage-Grouse habitats not located within identified core, connectivity or focus areas.

This guidance is structured to utilize an adaptive management approach that effectively adopt the goals and objectives of the State's Sage-Grouse Core Protection Area Strategy regarding habitat conservation, restoration, and reclamation practices for Sage-Grouse habitats in Wyoming.

The IM policy guidance will be implemented in conjunction with existing program-specific policies and Best Management Practices (BMPs) such as, but not limited to, those contained in the fluid minerals program and the lands and realty program. It is the goal of BLM WY to continue to work toward the long-term conservation of Greater Sage-Grouse habitats in

Wyoming through coordination with partners, including the Governor's Office of the State of Wyoming, the Wyoming Game and Fish Department (WGFD)and the U.S. Fish and Wildlife Service (FWS), and to also utilize input from the Resource Advisory Council (RAC), Local Sage-Grouse Working Groups (LWGs), BLM cooperators and stakeholders through a process that includes the immediate implementation of the following measures and statements.

Policy Statement 1: Habitat Mapping and Assessment

The BLM WY State Office will, along with other involved partners, continue to support the development and use of the statewide sage-grouse seasonal habitat models. In addition, BLM WY will continue to support the development of genetic connectivity information and other tools appropriate and necessary to support BLM management decisions. It is anticipated that regionally-based, seasonal habitat models will be fully developed for nesting, early brood-rearing and winter habitat areas by 2013. BLM WY FOs are encouraged to work with the WGFD, using input from LWGs, researchers, industry, and other partners to identify, delineate, and manage important sage-grouse seasonal habitats and movement corridors even before the completion of these models. BLM WY will refer to core area maps located in the State's EO 2011-5. EO 2011-5 also includes clarified management prescriptions for the designated areas of non-core and connectivity areas. If, through the planning process, BLM proposes to adjust management strategy or boundaries of these areas from the State EO, all such adjustments must be coordinated with the State of Wyoming and other cooperators throughout the established NEPA and planning compliance processes.

The BLM WO has finalized the Sage-grouse Habitat Assessment Framework (HAF) as of August 2010, and instruction from the HAF must be considered when assessing the use of best tools for delineating relative abundance or quality of important seasonal sage-grouse habitats in core. Wyoming Sage-Grouse definitions are provided in Attachment 1 of this IM for reference and consideration of the following statements. Additionally, Attachment 2 provides habitat component descriptions for reference and consideration of the following statements.

Policy Statement 2: Timing, Distance, Disturbance, and Density Restrictions

Pending completion of ongoing land use planning revisions and amendments, BLM WY FOs must consider and evaluate the following sage-grouse habitat conservation measures related to timing, distance, disturbance, and density for proposed projects both within and outside of core areas as appropriate. FOs should, on a project-by-project basis, evaluate these and other project-specific habitat conservation measures within the context of the proposal and associated documentation of National Environmental Policy Act (NEPA) compliance.

With regard to timing limitations, the Governor's EO presents timing restrictions, as recommended by the Sage-Grouse Implementation Team (SGIT), of March 15 to June 30 for the protection of breeding activities (*i.e.*, lek, nesting, and early brood rearing) as well as the winter seasonal protections from November 1 to March 14 for Winter Concentration Areas (WCAs). At a minimum, the BLM will consider these recommended timing restrictions in core areas. Where local FOs have obtained credible data and information to support an additional 2 weeks of

protection preceding these recommended dates or subsequent to these dates, then BLM FOs may consider expanding the dates of restriction for the protection of sage-grouse breeding, early brood rearing, and winter concentration habitat areas. This instruction is consistent with the Wyoming Governor's EO (EO 2011-5; Attachment B; Statement 2).

The following sage-grouse habitat conservation measures, which FOs must consider and evaluate consistent with applicable laws, when considering proposed actions, are concentrated on providing direction for identified core and connectivity habitats and those areas of habitat outside these designations. For management prescriptions within WY BLM - BFO focus areas, refer to established management prescriptions for these areas that would be applied during the RMP revision process. The BFO is the only WY BLM FO that has, or will, identify sage-grouse focus areas.

Timing and Distance:

Sage-grouse leks inside core/connectivity areas: Surface occupancy and/or disruptive activities are prohibited on or within a six tenths (0.6) mile radius of the perimeter[1] of occupied[2] sage-grouse leks.

For the purposes of implementation of this policy, FOs must consider and evaluate an alternative that would not allow new surface facilities, including roads, to be authorized within a 0.6-mile buffer around occupied core or connectivity leks. Other actions may be consistent with the State's strategy when authorized (e.g., buried power and flowlines) with adherence to seasonal restrictions in nesting/early brood-rearing habitat and/or winter concentration areas, where the action(s) would not result in adverse impacts to core sage-grouse populations.

Sage-grouse outside core/connectivity areas[3]: Surface occupancy and/or disruptive activities are prohibited on or within a one-quarter (0.25) mile radius of the perimeter of occupied sage-grouse leks.

For the purposes of implementation of this policy, FOs must consider and evaluate an alternative that would not allow new surface facilities, including roads, to be authorized within a 0.25 mile buffer around occupied leks outside core or connectivity areas. Other actions may be consistent with the State's strategy when authorized (e.g., buried power and flowlines) with adherence to seasonal restrictions in nesting/early brood-rearing habitat

[1] Mapping of lek perimeters is underway in cooperation with the WGFD. Field Offices are encouraged to continue to coordinate with WGFD to complete lek perimeter mapping. FOs must use lek perimeter data from WGFD if available, and until such time as the perimeter is mapped, use 0.6 miles from the center of the lek.

[2] Wyoming Sage-Grouse Definitions are in Attachment 1.

[3] Connectivity Areas as identified by SGIT recommendations and Wyoming Governor's EO 2011-5.

and/or winter concentration areas, where the action(s) would not result in adverse impacts to core sage-grouse populations.

Sage-grouse nesting/early brood-rearing habitat in core areas: Surface disturbing and/or disruptive activities are prohibited from March 15–June 30 to protect sage-grouse nesting and early brood rearing habitat. Apply this restriction to all nesting and early brood-rearing habitats inside core areas regardless of distance from the lek. Where credible data support different timeframes for this seasonal restriction, dates may be expanded by up to 14 days prior to or subsequent to the above dates.

Sage-grouse nesting/early brood-rearing habitat in connectivity areas: Surface disturbing and/or disruptive activities are prohibited from March 15–June 30 to protect nesting and early brood-rearing habitats within 4 miles of the lek or lek perimeter of any occupied sage-grouse lek within identified connectivity areas. Where credible data support different timeframes for this seasonal restriction, dates may be expanded by 14 days prior or subsequent to the above dates.

Sage-grouse nesting/early brood-rearing habitat outside core or connectivity areas: Surface disturbing and/or disruptive activities are prohibited from March 15–June 30 to protect sage-grouse nesting and early brood rearing habitats within 2 miles of the lek or lek perimeter of any occupied lek located outside core or connectivity areas. Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates.

Sage-grouse late brood-rearing and Winter Concentration Areas (WCAs): Surface disturbing and/or disruptive activities in sage-grouse WCAs are prohibited from December 1–March 14 to protect core populations of sage-grouse that use these winter concentration habitats. While the bulk of winter and late brood rearing habitat necessary to support core area populations is available within core population areas, it may be necessary to protect additional areas of winter concentration that are not located within the current core area boundaries. Appropriate seasonal timing restrictions and habitat protection measures must be considered and evaluated where WCAs or important late brood-rearing areas are identified as supporting populations of Greater Sage-Grouse that attend leks within core.

Surface Disturbance and Disruptive Activities:
Surface disturbing and disruptive activities are defined in the WY BLM Guidance for Use of Standardized Surface Use Definitions (WY IB 2007-029). For actions other than those taken for human health and safety, regulatory compliance or emergency, BLM FOs must determine if any activity proposed in sage-grouse nesting, brood-rearing or WCA habitat is "disruptive" by determining if the activity would require people and/or the structure or activity to be present in these habitats for a duration of more than 1 hour during any one 24 hour period during the applicable season in a site-specific area. Disruptive activity restrictions are not applicable to mandatory actions including those required to ensure compliance with existing permits, 43 CFR §3162.1(a) and 43 CFR §3162.5-1(a) and (c), or activities meeting any of the definitions of casual use as found in the Code of Federal Regulations.

Density and Disturbance:

Inside Sage-Grouse Core Areas:
For authorization of new proposed actions within sage-grouse core areas, including where there are valid existing rights, FOs must consider an alternative that would limit activities to an average of no more than one oil and gas and/or mining location per 640 acres and no more than 5 percent habitat disturbance (related to all programs or applicable sources of "disturbance" – see Disturbance Density Calculation Tool (DDCT) Manual within the core areas using the DDCT. Exempted activities not subject to the disturbance limits will not require use of the DDCT, but their associated disturbance will be captured (i.e., toward the 5 percent threshold) and will count toward the disturbance limits for non-exempted actions. Include results of the tool in the record when conducting site-specific or project-level documentation of National Environmental Policy Act (NEPA) compliance as appropriate.

The overall goal of the core area strategy as it relates to density and disturbance measures is to limit the fragmentation or loss of sagebrush habitats that support core populations. The BLM will consider and evaluate measures that limit or reduce the density of oil and gas or mining activities to no more than an average of 1 location per 640 acres; and to limit all surface disturbance (any program area) to no more than 5 percent of the core landscape using the DDCT. The consolidation and minimization of disruptive human influences and infrastructure is a basic strategy in limiting wildlife habitat fragmentation and habitat disturbance. The effort to consolidate or minimize fragmentation and disturbance must be considered regardless of whether proposed activities are located inside or outside of Sage-Grouse core or connectivity areas (see Attachment 3) and regardless of land ownership patterns.

Inside Greater Sage-Grouse core areas the density and disturbance goals include:
- The maintenance of sagebrush communities by maintaining or reducing the density of disturbance locations and disruptive activities on the landscape; or
- To not exceed an average of one oil and gas or mining location per 640 acres within the DDCT area identified using the DDCT, and total surface disturbance including existing disturbance and any proposed activity disturbance within the DDCT area should not exceed 5 percent disturbance of core sage-grouse habitats (See Policy Statement 4).

Inside Greater Sage-Grouse connectivity areas the disturbance goals include:
- To not exceed 5 percent habitat disturbance (up to 32 acres) per 640 acres using the DDCT process. For authorization of any proposed action within sage-grouse connectivity areas, including where there are valid existing rights, FOs must consider an alternative that would limit habitat disturbance to no more than 5 percent (up to 32 acres) per 640 acres of suitable sage-grouse habitat within connectivity areas in site-specific or project-level documentation of NEPA compliance.

The overall goal of the core population area strategy within connectivity areas is to minimize habitat loss within these areas sufficient to maintain high probability of lek persistence such that

conservation of population linkage for genetic transfer between sage-grouse populations in Wyoming and those within Montana and the Dakotas is achieved.

Activities excepted by the State plan from the conductance of a DDCT calculation: Although the following land uses and land management practices must consider and evaluate provisions that support the goals of the core area strategy, including appropriate sage-grouse management protection and conservation measures (*i.e.*, seasonal timing, applicable spatial restrictions, etc.), they will not be subject to, nor require use of the DDCT in order to be consistent with this policy or the State's core population area strategy and EO.

- Herbicide use on or within existing well pads, roads, pipelines and powerline rights-of-way.
- Insecticide application using spot treatments for Grasshopper/Mormon cricket control or where aerial treatments follow accepted Reduced Agent-Area Treatments (RAATS) protocol and other common avoidance measures/protocols as appropriate and/or necessary.
- Existing public road maintenance activities (new roads and/or upgrading of existing roads will be subject to consideration of DDCT and results).
- Emergency response or actions specifically taken to avoid an emergency.
- Agricultural livestock reservoirs, water pipelines and protected spring developments.
- Fences (necessary construction and maintenance actions, seasonal restriction, relocation and/or marking of fences with high potential for strike mortality). Seasonal removals or adaptive modifications should be considered prior to any approval or construction of new fences in sage-grouse core area habitats.
- Cultural resource pedestrian surveys.
- All actions taken to comply with other existing statutes, regulations or terms of an existing permit.
- Actions taken to comply with new or existing livestock grazing authorizations.

Exceptions to lease stipulations, Conditions of Approval (COAs), and terms and conditions (T&Cs), etc. will continue to be considered on a case-by-case basis consistent with approved Resource Management Plans (RMPs) and other BLM policy and regulations as they relate to exceptions. Adequate pre-planning can reduce or eliminate the need for exceptions to sage-grouse protections or restrictions in many cases. When considering exceptions to timing, distance, disturbance and density restrictions applied to oil and gas activities, BLM WY FOs will coordinate with the WGFD in accordance with Appendix 5G of the Umbrella MOU (WGFD and USDI BLM 1990, as updated) and the coordination diagram for interactions between BLM WY and the WGFD specific to this IM (Attachment 4). All necessary timing, distance, disturbance and density restrictions will be considered across all FOs within appropriate NEPA compliance documentation for new projects under consideration. BLM WY FOs may vary somewhat in their application of these restrictions when that variance is based on locally collected scientific data and information, and such information is included in project-specific NEPA analysis (including analysis and rationale that support existing Records of Decision). Additionally, variance or determinations that do not apply the measures located in this policy IM may be necessary where BLM is required to comply with other non-discretionary statutes and regulations (*i.e.*, valid existing rights, oil and gas "drainage", etc.).

Policy Statement 3: Conservation Objectives and Mitigation

Through this policy IM, BLM WY will include site-specific, measurable conservation objectives for the management of core sage-grouse habitats are included in all new project NEPA documents (internal and external proposals). Documentation will include a discussion on the collection of baseline data and an outline for post-project monitoring that will be conducted if a proposal is ultimately approved. FOs are directed to coordinate with WGFD and to utilize LWG plans and other sources of information to guide development of additional conservation objectives for localized management of sage-grouse habitats. BLM WY FOs will work within multiple programs, such as the hazardous fuels, fire management, range, and wildlife programs, to accomplish sage-grouse habitat conservation objectives that would be consistent with the core population area management strategy.

BLM WY FOs will continue to work with project proponents, partners, and stakeholders to implement direct mitigation (e.g. relocating disturbance, timing and distance restrictions, etc.), utilize BMPs, and consider off-site compensatory mitigation as appropriate. Information sources to consider when identifying additional measures to reduce impacts include, but are not limited to, the BLM WY Mitigation Guidelines for Surface-Disturbing and Disruptive Activities (USDI BLM 1990) and the BLM Offsite Mitigation policy (USDI BLM 2008), and the National BLM Sage-Grouse Habitat Conservation Strategy (USDI BLM 2004). Reclamation of surface disturbance within Sage-Grouse core areas will include consideration of methods to assist in the restoration or augmentation of appropriate functional sage-grouse seasonal habitats. These measures will be in accordance with the BLM Wyoming Reclamation Policy (USDI BLM 2009b) and further guidance and information on these practices is anticipated in 2014 or earlier, with the signing of the RMP Amendments for Greater Sage-Grouse management. BLM WY will recognize the population management goals set by the WGFD when considering new or additional mitigation strategies throughout the NEPA process. The BLM's goal inside sage-grouse core areas is to maintain or enhance seasonal habitats thereby providing support for sage-grouse population management objectives of the State. Outside sage-grouse core areas, the BLM's goal is to sustain important habitats that support core populations and to maintain lek persistence over the long term in sufficient proportions of the sage-grouse population to facilitate movement and genetic transfer between core populations, including those found in adjacent States. Within sage-grouse connectivity habitats identified by the Governor's EO (2011-5), the BLM's goal is to maintain or enhance seasonal habitats in support of the connectivity population management objectives of the State.

This policy does not preclude the development and immediate implementation of new, or innovative mitigation, or other conservation measures that would also be expected to reduce activity/project impacts to sage-grouse or their habitats. New measures applied for sage-grouse will be coordinated as necessary with the WGFD. All recommendations, mitigation and conservation measures will be considered in site-specific documentation of NEPA compliance. As appropriate, these measures may be incorporated into COAs of permits, plans of development, and/or other use authorizations.

Policy Statement 4: Project Locations and Analyses

BLM WY regularly conducts wildlife habitat evaluations in response to applications and proposed activities in coordination with an interdisciplinary team. Evaluations involve a review of baseline data from office-based sources including, but not limited to, aerial photography, satellite imagery and sage-grouse demographic data which may refer to activities which pose potential threats to sage-grouse habitat. Evaluations typically include field visits to identify where impacts can be reduced by protecting seasonal habitats, especially leks, nesting, early brood-rearing, and WCAs. During these habitat evaluations, other vegetation communities not generally used by sage-grouse can be identified as potential sites in which to relocate certain projects with proposed surface disturbance or disruptive activity. In order to claim that the overall relocation results in having no substantive impacts on sage-grouse, the "patch" of non-habitat would need to be quite large and activities would have to be further than 0.6mi from the edge of suitable habitat. This same principle would apply in the case of timing restrictions/limitations. In any case, relocation into least sensitive habitats or vegetation types would still be appropriate. Sage-grouse habitat indicators that may be useful to consider when identifying conservation measures may include existing disturbance, habitat availability, patch size, currently approved or proposed fragmentation of existing habitats, patch connectivity, patch dynamics (*i.e.*, seral stages of vegetation), habitat edge characteristics and corridors potentially used for seasonal migration. The interdisciplinary team will consider and weigh potential impacts on other resources, such as cultural resources, soils and water to determine siting within the least environmentally sensitive area. In all cases, direct, indirect and cumulative impacts of proposed action on sage-grouse, other wildlife and all other impacted resources must be described regardless of distance from the project or whether inside or outside sage-grouse core areas.

Disturbance Density Calculation Tool (DDCT) Review:
For activity proposals within core areas, the effort to establish compliance with this IM and support of the State's strategy and EO will be to evaluate habitat disturbance (*i.e.*, percent of lost habitat within core) and then determine density of disruptive activities (oil and gas and mining locations) by using a quantitative disturbance and density calculation called the DDCT. The DDCT utilizes a GIS platform to conduct this review. Within the DDCT process, where habitat assessment information is comprehensive enough to measure, unsuitable habitats including those associated with disturbances occurring within the DDCT area may be excluded in the disturbance calculations as described in Attachment 5. Impacts and habitat evaluations under NEPA should continue to be analyzed and described for all populations to extend out to the distances and locations appropriate to the population which is likely to be affected. To conduct a project-level review of disturbance and density using the DDCT, there is a detailed, step-by-step DDCT Process Manual in Attachment 5 of this IM. Updates and additional information will be made available as the strategy is implemented and updates to the DDCT Manual are expected to occur over time.

The remaining portion of Policy Statement 4 addresses BLM WY program activities that may occur within sage-grouse seasonal habitats and have varying degrees of impact to the health and

connectivity of the sage-steppe communities therein. There is a focus on minimizing impacts and improving the health of sagebrush habitats for sage-grouse and other sagebrush obligates in core areas.

Existing Activities:
The State's strategy and this policy IM recognize and acknowledge that certain activities related to valid existing rights (oil and gas leases and mining operations), agricultural grazing activities and other existing activities will continue to occur within core areas. It is also acknowledged that existing operations and activities may have localized impacts on Greater Sage-Grouse. To offset these potential impacts, the mapping of core areas included more habitat than that which is strictly necessary for long-term conservation of the sage-grouse within the State of Wyoming (Wyoming EO 2011-5, provision No. 14). Consideration of existing activities (e.g., existing permits and developments already in place) will be expected to continue. Any expansion or new individual development proposals that require new BLM permits or decisions will remain a case-by-case determination of the BLM AO and conservation measures must be considered and evaluated before making new decisions.

New Activity Proposals:
The BLM's goal for any new activity or development proposal within core areas is to provide consistent support for population management objectives of the State. Activities would be consistent with the strategy where it can be sufficiently demonstrated that no declines to core populations would be expected as a result of the proposed action. Published research suggests that impacts to sage-grouse leks associated primarily with infrastructure and energy development are discernible at a distance of at least 4 miles and that many leks within this radius have been extirpated as a direct result of development (Walker et al. 2007, Walker 2008). Research also suggests that an evaluation of habitats and sage-grouse populations that attend leks within an 11-mile radius from the project boundary in the context of "large" projects may be appropriate in order to consider all seasonal habitats that may be affected for birds that use the habitats associated with the proposal during some portion of the life-cycle of seasonally migratory sage-grouse (Connelly et al. 2000).

Based on this information, the potential for direct and indirect impacts to sage-grouse within core areas shall be evaluated at minimum, out to 4 miles from relatively small individual proposed actions. Effects analyses may extend out 11 miles or more from the project boundary for large-scale projects depending on local knowledge and information regarding the site-specific population. The evaluation of "large" or "small" projects is not related to the disturbance density calculation or DDCT. This determination of size will be based on the distance at which an appropriate effects analysis under NEPA should be conducted unless pertinent data and information indicates a greater distance would be appropriate.

For the purpose of illustrating the implementation of the "large" or "small" determination within this policy statement, examples of relatively small actions may include but are not limited to, minor exploratory natural gas well drilling proposals, individual rights-of-way (including below ground linear projects), vegetation treatments conducted in accordance with the sagebrush treatment protocols (See Integrated Vegetation Management below, and Attachment 6 – WGFD

Protocols for Treating Sagebrush to be Consistent with Wyoming Executive Order 2011-5), wind energy site testing and sage-grouse monitoring projects. Examples of large-scale actions may include, but are not limited to, oil and gas field developments, wind energy farm/field development projects, large interstate transmission power lines and vegetation treatments that eliminate functional habitat for sage-grouse. In all cases, these distances are only a suggested distance for evaluation and project specific distances for evaluation can be modified based upon available data and information. Additionally, in the event that these measures are all adopted in a final proposal, this does not mean that the proposed activity would be automatically approved. BLM must evaluate proposed actions on a case-by-case basis while meeting its obligations under NEPA, FLPMA, and other applicable laws.

Noise:
BLM WY FOs will work with proponents to limit project related noise where it would be expected to reduce functionality of habitats that support core area populations. BLM will evaluate the potential for limitation of new noise sources on a case-by-case basis as appropriate. BLM's near-term goal is to continue to limit noise sources that would be expected to negatively impact core area sage-grouse populations and to continue to support the establishment of ambient baseline noise levels for occupied core area leks. As additional research and information emerges, specific new limitations appropriate to the type of projects being considered will be evaluated and appropriate limitations will be implemented where necessary to minimize potential for noise impacts on core sage-grouse population behavioral cycles.

Integrated Vegetation Management
For vegetation treatments in sagebrush within core areas, refer to Attachment 6 – WGFD Protocols for Treating Sagebrush to Benefit Sage-Grouse (WGFD 2011, as updated). These recommended protocols will be used in determining whether proposed treatment constitutes a "disturbance" that will contribute toward the 5 percent threshold for habitat maintenance or not. Additionally, these protocols will be used to determine whether the proposed treatment configuration would be expected to have neutral or beneficial impacts for core populations or if they represent additional habitat loss or fragmentation. Treatments to enhance sagebrush/grasslands habitat for sage-grouse will be evaluated based upon habitat quality and the functionality/use of treated habitats post-treatment.

BLM will work collaboratively with partners at the State and local level to maintain and enhance sage-grouse habitats in a manner consistent with the core population area strategy for conservation.

Wildfire Emergency Stabilization (ES) and Burned Area Rehabilitation (BAR)
BLM will work collaboratively with partners at the Federal, State, and local level to maintain and enhance sage-grouse habitats in a manner consistent with the core population area strategy for conservation. Conduct DDCT reviews in coordination with the WGFD - Habitat Protection Program located in Cheyenne at the WGFD headquarters. Areas within core are high priority for restoration of sage-grouse habitat beyond immediate response.

Wildfire Suppression and Fuels Management

Wildfire suppression efforts in core areas should be emphasized, recognizing that other local, regional, and national suppression priorities may take precedence. Public and firefighter safety remains the number one priority for all fire management activities. BLM WY will recognize and implement the measures found in WO IM No. 2011-138 (Sage-Grouse Conservation Related to Wildland Fire and Fuels Management), or successor guidance, regarding suppression operations and fuels management which is consistent with the State plan. For fuels management, BLM WY will consider multiple tools for fuels reduction in subject NEPA compliance documentation before electing to implement prescribed fire in sage-grouse core areas. Avoid the use of prescribed fire in areas of Wyoming big sagebrush and/or within areas of less than 12 inches of annual precipitation.

Rights-of-Way (ROW), (e.g. Powerline Transmission, Wind Energy Projects)

Powerline Transmission:

In conducting review of powerline transmission proposals, the use of the Framework for Sage-Grouse Impacts Analysis for Interstate Transmission Lines is necessary. The framework for analysis focuses on the evaluation of direct and indirect impacts to sage-grouse specific to large interstate transmission lines, as well as direct loss of birds that may occur and finally, mitigation (which includes the use of habitat equivalency analysis or HEA). Secondarily, a DDCT will be required for all areas of core habitat that would be crossed by transmission if proposals or alternatives are identified outside the State's preferred corridors for transmission (see EO 2011-5; Statement 15; pg. 4). The results of the DDCT would be used to evaluate opportunities to: minimize density of disturbance within core areas that are outside the State's preferred disturbance corridor, as identified in the Wyoming Governor's Executive Order 2011-5; and to identify opportunities to restore and/or enhance important sage-grouse habitat as a part of project-related mitigation. The site-specific habitat evaluation of a DDCT will enable BLM to: (a) demonstrate compliance with the Greater Sage-Grouse Habitat Management Policy on Wyoming BLM Administered Public Lands including Federal Mineral Estate (IM WY-2012-019); and (b) demonstrate consistency with the Greater Sage-Grouse Core Area Protection, Wyoming Governor's Executive Order 2011-5 which requires use of designated corridors to traverse core areas. For clarity, the DDCT is not, by itself, an analysis of impacts from proposed transmission on BLM-administered properties for the purposes of NEPA and thus, BLM WY FOs are directed to observe the Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines.

Wind Energy:

It is the policy of BLM WY to consider, based on site specific analysis, deferral of approval of new applications and proposals for wind power development inside Greater Sage-Grouse core areas until the WY RMP updates have been finalized (*i.e.*, on-going RMP revision or on-going amendments for Greater Sage-Grouse management), unless it can be sufficiently demonstrated that the development activity would not result in declines of core sage-grouse populations. Sufficient demonstration of "no declines" should be coordinated with the WGFD and U.S. Fish and Wildlife Service. BLM WY will continue to contribute and support research and monitoring efforts to study the various environmental consequences of wind energy development on Greater Sage-Grouse or their habitats.

Leasable Minerals:

Energy Development and Valid Existing Rights:

Many sage-grouse seasonal habitats within and outside of core areas are encumbered by valid existing rights, such as mineral leases or existing rights-of-way. Fluid mineral leases often will include less stringent lease stipulations than the timing, distance, and density requirements identified for consideration in this policy. BLM WY FOs will work with project proponents in these situations to promote measurable sage-grouse conservation objectives such as but not limited to, consolidation of project related infrastructure to reduce habitat fragmentation and loss and to promote effective conservation of seasonal habitats and connectivity areas that support population management objectives set by the State. BLM WY FOs will continue to work with project proponents (including those from within the BLM) to site their projects in locations that meet the purpose and need for their project, but have been determined to contain the least sensitive habitats and resources whether inside or outside of core areas. Valid existing rights will be recognized and respected. In some cases, the goals of this strategy may not be met but, it remains the objective of the BLM to limit habitat loss and fragmentation within core areas.

Solid Mineral Leases (Coal, Oil Shale and Non-energy):

For all new coal and non-coal leasing applications, BLM will assess the potential impacts to sage-grouse through the NEPA process and as applicable identify mitigation to minimize habitat loss, fragmentation and direct and indirect effects to Greater Sage-Grouse and its habitat. The State regulatory agency would apply any BLM identified mitigation attached to the final lease document, as well as protective measures consistent with the State Policy for solid leasable minerals mining actions at the permitting stage. For solid non-energy leasable minerals, the BLM has regulatory authority to approve surface disturbing activities on Federal land only. In Wyoming, the State Department of Environmental Quality also has the regulatory authority to approve surface disturbing activities associated with Federal and non-Federal non-energy solid leasable mineral operations. Wyoming Department of Environmental Quality (DEQ) is the regulatory authority on non-Federal surface disturbing activities and is best suited to determine if development of a DDCT is required for permitting and may also impose restrictions that are not described for evaluation by BLM in this BLM WY policy IM.

Fluid Mineral Leasing Screen

In review of parcels nominated for lease of Federal fluid minerals in Wyoming, FOs are directed to utilize the following lease screen instruction.

Evaluate all proposed lease parcels by answering the following questions (Sage-Grouse Lease Screen - Attachment 7):

1. Is the parcel wholly or partially inside a Sage-Grouse Core Area? YES or NO?
   - If YES, then move to question 2.
   - If NO, then recommend the parcel or portion of parcel outside core, be offered for lease sale after attaching Lease Notice No. 3, Stipulation - Controlled Surface Use for Threatened, Endangered, and Sensitive Species, and also attach all other land-use plan derived stipulations, as appropriate.

* Note that specialists must continue to use the most up to date GIS information and layers that reflect any changes in core areas or their boundaries.

2. Is the parcel part of at least eleven square miles of contiguous, manageable, Federal fluid mineral estate? YES or NO?

- If YES, then move to question 3A by referring the parcel to the State Office Reservoir Management Group (RMG) for preliminary review regarding potential drainage and/or whether the parcel is part of an oil and gas unit.
- If NO, then move to question 3B.

* Note: This component of the screen will assist BLM in identifying opportunities where BLM can conserve large contiguous blocks of manageable, unleased habitats for Greater Sage-Grouse within core areas. Many factors will be considered in determining manageability such as land and mineral ownership patterns, lease or land ownership arrangement, expiration date of adjacent leases and any existing development capable of production or disturbances that would affect or influence habitat functionality. Include a review of any adjacent fee and State lands as practicable.

3.A. Did the BLM WY RMG identify the parcel as having any potential drainage issues, or is the parcel part of an oil and gas unit? YES or NO?

- If YES, then recommend the parcel or portions be offered for lease sale after attaching Lease Notice No. 3, Stipulation - Controlled Surface Use for Threatened, Endangered, and Sensitive Species, and also attach all other land-use plan derived stipulations, as appropriate.
- If NO, then recommend parcel for deferral.

* Note: For all nominated parcels that meet all of the criteria, the FO may recommend deferral for sage-grouse habitat conservation. Deferred parcel areas will remain deferred from leasing until conservation planning and management potential can be evaluated in the context of a Land Use Planning action (*i.e.*, revision, maintenance, or amendment). This approach will ensure appropriate conservation measures and strategy can be effectively applied within core areas.

3.B. Is the parcel partially or entirely within 0.6-mi. of an occupied core area sage-grouse lek? YES or NO?

- If YES, move to question 4.
- If NO, the recommend that the parcel be offered for lease sale after attaching Lease Notice No. 3, Stipulation - Controlled Surface Use for Threatened, Endangered, and Sensitive Species, and also attach all other land-use plan derived stipulations, as appropriate.

4. Is parcel entirely within 0.6 mile? YES or NO?

- If YES, move to question 3A for review by RMG for potential drainage issues and possible deferral.
- If NO, then the parcel must be divided using geographic coordinate database (GCDB) aliquot parts to determine the approximately 40-acre portions of parcel touching or within the 0.6 mile buffer of the occupied lek.

a. For the portions entirely outside the 0.6mi lek buffer, recommend they be offered for lease sale after attaching Lease Notice No. 3, Stipulation - Controlled Surface Use for Threatened, Endangered, and Sensitive Species, and also attach all other land-use plan derived stipulations, as appropriate.

b. For portions touching or within the 0.6 mile buffer of the lek, move to question 3A.

Grazing Management:
Properly managed livestock grazing activities and sage-grouse conservation are compatible. According to the U.S. FWS's March 2010 listing determination for Greater Sage-Grouse, the influence of livestock grazing on sage-grouse habitats varies across the range of the species. This variability of potential impacts is one factor used in determining the appropriate administrative level to prescribe proper livestock grazing management practices that would maintain or enhance localized habitat conditions for sage-grouse. It is the policy of BLM WY to promote proper livestock grazing management practices that maintain or enhance desired sage-grouse habitat conditions. In order to ensure the necessary implementation of these types of practices and protections, this policy IM directs FOs to implement the following practices for all on-going and proposed permits for livestock grazing authorizations and activities in the context of the Wyoming Governor's core population area strategy for Greater Sage-Grouse. These measures have been adapted from and are in conformance with WO IM 2012-043 for grazing management guidance.

Ongoing Authorization Activities

- If periods of drought occur, where appropriate, the AO will evaluate the season of use and stocking rate and adjust through coordination with grazing permittee/lessee and annual billings processes.
- Continue to coordinate with other Federal agencies, State agencies, and non-Federal partners. Leverage funding to implement habitat projects and implement the recent Memorandum of Understanding between the BLM, NRCS, FWS, and USFS maintain or enhance core habitats through grazing practices.
- Continue to prioritize oversight and effectiveness monitoring of grazing activities to ensure compliance with permit conditions and that progress is being made on achieving WY land health standards.
- Continue to evaluate existing range improvements (e.g., fences, watering facilities) associated with grazing management operations for impacts on Greater Sage-Grouse and its habitat.
- Livestock trailing that is authorized through crossing permits under Section 123 of H.R. 2055-228 and 43 CFR 4130.6-3 will include a trailing plan that is designed to avoid sensitive areas and/or time periods for sage-grouse. The plan will include specific routes and timeframes for trailing.

Proposed Authorizations/Activities – Permit/Lease Renewal/Issuance

- When several small or isolated allotments occur within a watershed or delineated geographic area, strive to evaluate all of the allotments together. Prioritize this larger geographic area against other core areas for processing permits/leases for renewal.
- Coordinate BMPs and vegetative objectives with NRCS for consistent application across jurisdictions where the BLM and NRCS have the greatest opportunities to benefit Greater Sage-Grouse, particularly as it applies to the NRCS's National Sage-Grouse Initiative (http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/farmbill/initiatives/and cid=steldevb1027671).

- Evaluate opportunities to coordinate management plans and strategies on multiple allotments where coordination under a single management plan/strategy would result in enhancing Greater Sage-Grouse populations or its habitat as determined in coordination with the State wildlife agency.
- Where current livestock grazing management has been identified as a causal factor in not meeting Land Health Standards (43 CFR 4180), use the process in WO-IM-2009-007, Process for Evaluating Status of Land Health and Making Determinations of Causal Factors When WY Land Health Standards Are Not Achieved, to identify appropriate actions.
- Evaluate progress towards meeting standards that may affect Greater Sage-Grouse or its habitat prior to authorizing grazing on an allotment that was not achieving land health standards in the last renewal cycle, and livestock was a significant causal factor. Where available, use current monitoring data to identify any trends (e.g., progress) toward meeting the standards. Where monitoring data are not available or are inadequate to determine whether progress is being made toward achieving WY Land Health Standards. An interdisciplinary team should be deployed as practicable to conduct a new land health assessment in coordination with the grazing permittee/lessee. The NEPA analysis for the permit/lease renewal must address a range of reasonable alternatives including alternatives that maintain or enhance Greater Sage-Grouse habitat.
- If livestock grazing was the cause of not achieving land health standards that have potential to impact Greater Sage-Grouse or its habitat in the last permit renewal cycle, an interdisciplinary team should be deployed as practicable to conduct a new land health evaluation to determine if the allotment is making progress and if livestock grazing remains a causal factor.
- Plan and authorize livestock grazing and associated range improvement projects on BLM lands in a way that maintains and/or improves Greater Sage-Grouse and its habitat. Analyze through a reasonable range of alternatives any direct, indirect, and cumulative effects of grazing on Greater Sage-Grouse and its habitats through the NEPA process:
    - Incorporate available site information collected using the Sage-Grouse Habitat Assessment Framework and utilize these data when evaluating existing resource conditions and to develop any necessary resource solutions.
    - Incorporate management practices that will provide for maintenance and/or enhancement of sage-grouse habitats, including specific attention to maintenance of desired understories of sagebrush plant communities. When developing objectives for residual cover and species diversity, identify the ecological site(s) within the planning area and refer to the appropriate Ecological Site Description(s).
    - In determining appropriate management actions that will be considered, refer to the document, "Grazing Influence, Management, and Objective Development in Wyoming's Greater Sage-Grouse Habitat" (Cagney et al. 2010) for guidance. This peer reviewed document is the result of a collaborative effort in Wyoming to ensure proper livestock grazing practices with sage-grouse habitats. It is the culmination of efforts to gather and integrate current knowledge and practices regarding livestock grazing in respect to important sage-grouse habitats within Wyoming. The information and discussion materials found within this document

will provide resource professionals in BLM WY in planning livestock grazing strategies that meet the objectives of the Wyoming policy and strategy. Additional instruction for use and implementation of this document is described in Attachment 8 - Management of Livestock Grazing in Sage-Grouse Habitats on Lands Administered by the Bureau of Land Management in Wyoming.

- Evaluate and implement grazing practices that promote the growth and persistence of native shrubs, grasses, and forbs. Grazing practices include kind and numbers of livestock, distribution, seasons of use, and other livestock management practices needed to meet both livestock management and Greater Sage-Grouse habitat objectives.
- Evaluate the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. Address potential for modification of those structural range improvements identified as posing a risk during the renewal process.
- Balance grazing between riparian habitats and upland habitats to promote the production and availability of beneficial forbs to Greater Sage-Grouse in meadows, mesic habitats, and riparian pastures for Greater Sage-Grouse use during nesting and brood-rearing while maintaining upland conditions and functions. Consider changes to season-of-use in riparian/wetland areas before or after the summer growing season.

• To ensure that the NEPA analysis for permit/lease renewal has a range of reasonable alternatives:

- Include at least one alternative that would implement a deferred or rest-rotation grazing system, if one is not already in place and the size of the allotment warrants it.
- Include a reasonable range of alternatives (e.g., no grazing or a significantly reduced grazing alternative, current grazing alternative, increased grazing alternative, etc.) to compare the impacts of livestock grazing on Greater Sage-Grouse habitat and land health from the proposed action.
    - If land treatments and/or range improvements are the primary action for achieving land health standards for Greater Sage-Grouse habitat maintenance or enhancement, clearly display the effects of such actions in the alternatives analyzed.

Fence Construction:

As stated above, fence proposals are subject to necessary provisions that support the goals of the core area strategy and consideration of necessary impact minimization and mitigation measures that avoid sage-grouse conflicts (*i.e.*, seasonal timing or spatial restriction, etc.). Evaluate the need for proposed fences, especially within 1.25 miles of occupied core area leks (Stephens 2010). Consider deferral of fence construction unless the objective is to maintain or enhance Greater Sage-Grouse habitats, maintain or enhance land health, promote successful reclamation, protect human health or safety or provide resource protection. Fence construction proposals will not require the development of a DDCT.

Where fence construction is authorized then, where appropriate, apply mitigation (e.g., timing limitations for construction/maintenance, proper siting outside scientifically supported buffer

zones, marking, or adjustment to post and pole construction of fences, etc.) to minimize or eliminate potential impacts to grouse, as determined in coordination with WGFD.

Consider and evaluate opportunities to modify or increase visibility of fences that are identified as posing a high risk of collision for sage-grouse. Prioritize evaluations of fences within 1.25 miles of occupied leks within core areas.

Water Developments:
See Policy Statement 7 below.

Special Recreation Permits (SRP) and Recreation Sites:
BLM will work collaboratively with partners at the Federal, State and local level to maintain and enhance sage-grouse habitats in a manner consistent with the core population area strategy for conservation. New proposals for SRPs or recreation site would be subject to "new activity proposals" as discussed above.

Travel Management:
For new road proposals, consider an alternative that would locate new primary and secondary roads greater than 1.9 mi from the perimeter of occupied sage-grouse leks inside core areas. Additionally, for new proposals, consider and evaluate an alternative that would locate new tertiary roads greater than 0.6 mile from the perimeter of occupied leks.

Construct new roads to a minimum design standard needed for proposed activity.

Locatable Mineral Activities:
Existing Notices and Approved Plans of Operations under 43 CFR 3809: For projects that overlap core areas, operators may be requested to submit modifications to the accepted notice or approved plan of operations so that the operations minimally impact core area habitats. The AO may convey to the operator suggested conservation measures, based upon the notice or plan level operations and the geographic area of those operations [also called the project area which is defined in CFR 3809.5]. These suggested conservation measures include measures that support the overall goals and objectives of the core population area strategy, though measures listed for evaluation in Policy Statement 2 of this IM may not be reasonable or applicable to the BLM's determination of whether the proposed operations will cause unnecessary or undue degradation under 43 CFR 3809.5. The request containing the suggested conservation measures must make clear that the operator's compliance is not mandatory.

Notices or Plans of Operation, or modifications thereto, submitted following the issuance of this guidance: As part of the 15 day completeness review of notices [or modifications thereto] and 30 day completeness review of plans of operations [or modifications thereto], the proposed project area(s) where exploration, development, mining, access and reclamation would take place should be reviewed for overlap of sage-grouse core areas in the corporate GIS database. If there is overlap, the BLM AO may notify the operator of ways that they may minimize impacts to core area habitats and request the operator to amend its notice or plan to include such measures. The request to amend the submitted notice or plan of operations must make clear that the operator's

compliance is not mandatory and that including such measures is not a requirement for completeness of either the notice or a plan of operations, nor is it a condition of acceptance of the notice or approval of the plan of operations.

Saleable Minerals:
Where valid existing rights exist, work with permit holders to develop mutually agreeable actions such as siting/design of infrastructure or timing that will avoid or minimize effects to core populations and habitats.

For processing new permits, refer to "New Activity Proposals" above where consideration and evaluation of measures in Policy Statement 2 of this IM would be necessary.

Grasshopper/Mormon Cricket Control and Management:
FOs may implement treatments within sage-grouse core areas where outbreaks of grasshopper or Mormon cricket populations are expected to rise above economic levels. Treatments must be conducted only following reduced agent-area treatments (RAATS) protocols. BLM will work collaboratively with partners at the Federal, State, and local levels to maintain and enhance sage-grouse habitats in a manner consistent with the core population area strategy for conservation. FOs are directed to utilize http://www.blm.gov/wy/st/en/info/NEPA/documents/ghopper.html as a resource for updated information when conducting analysis of grasshopper and Mormon cricket control in sage-grouse habitats.

Wild Horse and Burro Management:
FOs will prioritize the management of wild horse populations in core areas to within established Appropriate Management Levels (AML). In accordance with National direction, wild horse herd management areas within the State's core areas should be considered for priority removal of excess horses, except where removals are necessary in non-core population areas to prevent catastrophic environmental issues, including herd health impacts.

Realty Actions – (e.g. Land Exchanges, Transfers, and Sales):
BLM WY will consider, based on site specific analysis, deferring final action on public land disposals within core areas where such authorizations or approvals could result in a net loss of core sage-grouse habitat until the RMP amendments or revisions are completed. Evaluation of lands identified as suitable for disposal in current RMPs will be conducted through the RMP amendment or revision process.

Vegetation and Resource Monitoring:
See Policy Statements 3 and 9 for guidance and information regarding objectives and importance of monitoring.

Policy Statement 5: Resource Management Plans (RMPs)

For ongoing and future RMP revisions, follow Section 1.3.1 of BLM's National Sage-Grouse Habitat Conservation Strategy (USDI BLM 2004a) as well as WO IM No. 2012-044, BLM

National Greater Sage-Grouse Land Use Planning Strategy, for sagebrush habitat conservation in BLM RMPs.

As WY BLM RMPs undergo revision, amendment, or modification, BLM FOs will identify any areas that would be considered under at least one alternative as unavailable for oil and gas leasing or wind energy development, ROW exclusions, etc., as appropriate. As part of this consideration FOs are encouraged to consider when existing leases are set to expire. BLM will also review the recommended management practices and sage-grouse conservation measures from section 1.4.1 of BLM's National Sage-Grouse Habitat Conservation Strategy (USDI BLM 2004a), the Wyoming Greater Sage-Grouse Conservation Plan, LWG plans and recommendations, peer reviewed research, and other available information, to the extent possible, for public lands and the Federal mineral estates.

Observe and analyze the objectives for maintenance and improvement of sage-grouse habitats that support population management objectives set by the State of Wyoming. The objectives and associated management practices will be designed to limit habitat loss, degradation, simplification, and fragmentation (US EPA 1993).

BLM WY FOs will develop plans addressing RMP objectives and to monitor sage-grouse habitats in order to assess effectiveness of conservation measures that will be applied in achieving the long-term conservation of sage-grouse habitats. All BLM authorized activities located in sage-grouse habitats will require appropriate sage-grouse conservation measures.

BLM WY RMP revisions and/or amendments will follow all applicable principles laid out in WO IM No. 2012-044 and analyze appropriate sage grouse habitat conservation regulatory mechanisms in at least one alternative of the RMP/EIS.

BLM WY RMP revisions and/or amendments will develop specific exception criteria for sage-grouse restrictions and application of greater or lesser restrictions for short or long-term activities. Exception, waiver, or modification evaluation factors may include, but are not limited to, localized population conditions, relative quality or condition of the habitat, presence/absence of sage-grouse or their sign, presence of other activities in the area, importance for migration or genetic connectivity, duration and timing of the proposed activity, local topography, severity and forecast of weather, beneficial aspects of the project for sage-grouse habitats, including possible reclamation activities, and cover or forage availability.

Consider landscape scale conservation strategies that may include special management of seasonal habitats and linkage zones. Use program-specific BMPs such as, but not limited to, temporary set-asides, phased development and/or off-site mitigation if offered by the proponent, sage-grouse habitat reclamation objectives, buried power lines, and other efforts that reduce or consolidate surface-disturbing and disruptive activities in these strategies.

Policy Statement 6: Lek Data

The official Wyoming sage-grouse lek database is maintained by the WGFD in accordance with Appendix 4B of the Umbrella Memorandum of Understanding (MOU) between the WGFD and BLM (WGFD and USDI BLM 1990).

Use of WGFD lek data in conducting DDCT review is required.

BLM WY FO specialists and local WGFD personnel will meet at least annually to locally coordinate and review the accuracy of data and incorporate the most up-to-date information as necessary. Scheduling of these annual coordination meetings is up to the individual FOs with their local WGFD counterparts. For data to be included in the WGFD database, it must be collected using techniques and accuracy standards agreed upon by WGFD and BLM. Annual lek surveys and lek counts will be coordinated between WGFD and the BLM to reduce duplicated efforts and minimize disturbance in accordance with the Umbrella MOU.

Policy Statement 7: West Nile Virus

Artificial water impoundments will be managed to the extent of BLM's authority for the prevention and/or spread of West Nile virus (WNv) where the virus poses a threat to sage-grouse. This may include but is not limited to: (a) the use of larvicides and adulticides to treat waterbodies; (b) overbuilding ponds to create non-vegetated, muddy shorelines; (c) building steep shorelines to reduce shallow water and emergent aquatic vegetation; (d) maintaining the water level below rooted vegetation; (e) avoiding flooding terrestrial vegetation in flat terrain or low lying areas; (f) constructing dams or impoundments that restrict seepage or overflow; (g) lining the channel where discharge water flows into the pond with crushed rock, or use a horizontal pipe to discharge inflow directly into existing open water; (h) lining the overflow spillway with crushed rock and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation; and (i) restricting access of ponds to livestock and wildlife (Doherty 2007).

Field Offices should consider alternate means to manage produced waters that could present additional vectors for WNv. Such remedies may include re-injection under an approved Underground Injection Control (UIC) permit, transfer to single/centralized facility, etc.

Policy Statement 7 regarding WNv does not apply to naturally occurring waters.

Impoundments for wildlife and/or livestock use should be designed to reduce the potential to produce vectors for WNv where the virus may pose a threat to sage-grouse.

Policy Statement 8: Use of Dogs

Based on current research and consultation of experts, BLM WY cannot consider any technique other than radio telemetry to be effective for detecting individual nesting sage-grouse. Field Offices are not to utilize or accept domestic dogs as the sole mechanism for conducting site

clearances for provision of exception for activities to occur within sage-grouse nesting habitat during the nesting season. BLM WY FOs are directed to carefully consider the impacts of disturbing sage-grouse during this crucial season and the potential for mortality of birds before approving any use of this methodology. Further, given the knowledge that detection of nesting grouse is so unlikely, BLM WY FOs must consider whether any exceptions to this important seasonal protection can be granted at all within the context of your own RMP's existing analysis of the criteria for exception. The use of well-trained dogs and experienced handlers for conducting clearances of winter concentration areas is permissible only when conducted with simultaneous verification of bird presence by visual observation of sage-grouse or their sign. This policy is in compliance with the WY BLM policy (USDI BLM 2009c) which does not allow employees to transport dogs in Government vehicles.

Policy Statement 9: Monitoring Effectiveness

It is extremely important that the directives contained in this IM are monitored to determine the effectiveness of their implementation until RMPs are updated. BLM WY FOs are to establish monitoring protocols that will be incorporated into individual project approvals as appropriate and necessary. Small or in-house projects within core areas will also have a monitoring plan for sage-grouse incorporated in the approval document.

Policy Statement 10: Deviations from the Policy and Strategy

This statewide policy is intended to provide consistent sage-grouse habitat management directives on BLM administered public lands including Federal mineral estate in Wyoming. Because Wyoming is a diverse State, there may be occasional circumstances which could justify deviation from the policies stated herein. FOs may vary in the implementation of this policy IM **where locally collected scientific data and information supported by comprehensive and objective NEPA analysis of a proposed action presents compelling justification for deviation**. In all cases, prior to actions where deviations from policy may take place, FOs will coordinate with WGFD counterparts and advise the Deputy State Director for Resources Policy and Management (WY 930) and the Deputy State Director for Minerals and Lands (WY 920) through the District Office of their intent to take such actions. The purpose of such notification and interaction is to ensure State Office awareness of the number and type of such actions, and not to request advance WY BLM State Office approval for such actions.

Timeframe: Effective immediately.

Budget Impact: There may be a significant effect on budgets.

Background:

In March 2010, the FWS published its finding on the petition for the Greater Sage-Grouse to be listed as Threatened or Endangered. The finding was that the species is "warranted, but precluded." The inadequacy of regulatory mechanisms was identified as one of the major factors in the FWS's finding on Greater Sage-Grouse. The FWS has identified the principal regulatory

mechanism for the BLM as protective measures embedded in land use plans. The BLM is identifying sage-grouse conservation measures for consideration through the planning process, with a target decision date of September 2014. The goal of the overall planning effort is to conserve and manage habitats necessary to sustain Greater Sage-Grouse populations and reduce the likelihood of listing under the Endangered Species Act.

In July 2011, the BLM announced the National Greater Sage-Grouse Planning Strategy which provides a framework for establishing adequate regulatory mechanisms (conservation measures) in applicable BLM LUPs throughout the range of the Greater Sage-Grouse. BLM WY will be working to incorporate the Wyoming Core Strategy into LUPs throughout the State and this IM will assist in preserving decision space that may be needed in the selection of potential alternatives.

Manual or Handbook Sections Affected: No manual or handbook sections are affected.

Coordination: This IM was coordinated among the BLM Washington D.C. Directorate, WY BLM Field Offices, other BLM State Offices, the Wyoming Office of Governor Mead and the Wyoming Game and Fish Department.

Contacts: Chris Keefe, Wildlife Biologist, 307-775-6101, and Buddy Green, Deputy State Director for Resources Policy and Management, 307-775-6113.

Signed By:	Authenticated By:
Donald A. Simpson	Sherry Dixon
State Director	Secretary

9 Attachments:

1 – Wyoming Sage-Grouse Definitions (4 pp)
2 – Seasonal Sage-grouse Habitat Component Descriptions (2 pp)
3 – Wyoming Core Areas Map ver. 3 (1 p)
4 – Coordination with Wyoming Game and Fish - Diagram (1 p)
5 – DDCT Process Manual (31 pp)
6 – Wyoming Game and Fish Department Protocols for Treating Sagebrush to be Consistent with Wyoming Executive Order 2011-5; Greater Sage-Grouse Core Area Protection (5 pp)
7 – BLM Wyoming Sage-Grouse Fluid Mineral Lease Screen (1 p)
8 – Management of Livestock Grazing in Sage-Grouse Habitats on Lands Administered by the Bureau of Land Management in Wyoming (4 pp)
9 – References (3 pp)

Distribution

Director (230), Room 204, LS	1 (w/o atchs)
CF	1(w/atchs)

ATTACHMENT 1

Wyoming Sage-Grouse Definitions:
(Updated 09/15/2011)

The following definitions have been adopted for the purposes of collecting and reporting sage-grouse data. See the sage-grouse chapter of the Wyoming Game and Fish Department's Handbook of Biological Techniques for additional technical details and methods.

Lek - A traditional courtship display area attended by male sage-grouse in or adjacent to sagebrush dominated habitat. A lek is designated based on observations of two or more male sage-grouse engaged in courtship displays. Before adding the suspected lek to the database, it must be confirmed by an additional observation made during the appropriate time of day, during the strutting season. Sign of strutting activity (tracks, droppings, feathers) can also be used to confirm a suspected lek. Sub-dominant males may display on itinerant (temporary) strutting areas during population peaks. Such areas usually fail to become established leks. Therefore, a site where small numbers of males (<5) are observed strutting should be confirmed active for two years before adding the site to the lek database.

Satellite Lek – A relatively small lek (usually less than 15 males) that develops within about 500 meters of a large lek during years of relatively high grouse numbers. Locations of satellite leks should be encompassed within lek perimeter boundaries. Birds counted on satellite leks should be added to those counted on the primary lek for reporting purposes.

Lek Perimeter – The outer perimeter of a lek and any associated satellites. Perimeters should be mapped by experienced observers using established protocols for all leks with larger leks receiving higher priority. Perimeters may vary over time as population levels or habitat and weather conditions change. However, changes to mapped perimeters should occur infrequently and only if grouse use consistently (2+ years) demonstrates the existing perimeter to be inaccurate. A point **within** the lek perimeter must be recorded or calculated as the identifying location for the lek. The point may be the geographic center of the perimeter polygon as calculated though a GIS exercise or a GPS point reflecting the center of breeding activity as typically witnessed on the lek.

Lek Complex - A lek or group of leks within 2.5 km (1.5 mi) of each other between which male sage-grouse may interchange from one day to the next.

Lek Count - A census technique that documents the actual number of male sage-grouse observed attending a lek complex. The following criteria are designed to assure counts are done consistently and accurately, enabling valid comparisons to be made among data sets. Additional technical criteria are available from the WGFD.

i) Conduct lek counts at 7-10 day intervals over a 3-4 week period after the peak of mating activity. Although mating typically peaks in early April in Wyoming, the number of males counted on a lek is usually greatest in late April or early May when attendance by yearling males increases.
ii) Conduct lek counts only from the ground. Aerial counts are not accurate and are not comparable to ground counts.
iii) Conduct counts from ½ hour before sunrise to 1 hour after.
iv) Count attendance at each lek a minimum of three times annually during the breeding season.

v) Conduct counts only when wind speeds are less than 15 kph (~10 mph) and no precipitation is falling.

- All leks within a complex should be counted on the same morning.

Lek Count Route – A lek route is a census of a group of leks that are relatively close and represent part or all of a single breeding population/sub-population. Leks should be counted on routes to facilitate repetition by other observers, increase the likelihood of recording satellite leks, and account for shifts in breeding birds if they occur. Lek routes should be established so that all leks along the route can be counted within 1.5 hours following the criteria listed under "Lek Count."

Lek Survey - Ideally, all sage-grouse leks would be counted annually. However, some breeding habitat is inaccessible during spring because of mud and snow, or the location of a lek is so remote it cannot be routinely counted. In other situations, topography or vegetation may prevent an accurate count from any vantage point. In addition, time and budget constraints often limit the number of leks that can be visited. Where lek counts are not feasible for any of these reasons, surveys are the only reliable means to monitor population trends. Lek surveys are designed principally to determine whether leks are active or inactive, requiring as few as one visit to a lek. Obtaining accurate counts of the numbers of males attending is not essential. Lek surveys involve substantially less effort and time than lek counts. They can also be done from a fixed-wing aircraft or helicopter. Lek surveys can be conducted from the initiation of strutting in early March until early-mid May, depending on the site and spring weather.

Annual status – Lek status is assessed annually based on the following definitions:

- **Active** – Any lek that has been attended by male sage-grouse during the strutting season. Acceptable documentation of grouse presence includes observation of birds using the site or signs of strutting activity.
- **Inactive** – Any lek where sufficient data suggests that there was no strutting activity throughout a strutting season. Absence of strutting grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: (1) an absence of birds on the lek during at least 2 ground surveys separated by at least 7 days. These surveys must be conducted under ideal conditions (April 1-May 7), no precipitation, light or no wind, ½ hour before to 1 hour after sunrise) or,(2) a ground check of the exact known lek site late in the strutting season (after April 15) that fails to find any sign (droppings/feathers) of strutting activity. Data collected by aerial surveys may not be used to designate inactive status.
- **Unknown** – Leks for which status as active or inactive has not been documented during the course of a strutting season. Except for those leks not scheduled for checks in a particular year, use of this status should be rare. Leks should be checked with enough visits to determine whether it is active or not. It is better to have two good checks every other year and confirm it "inactive" than to check it once every year, not see birds, but remain in "unknown" status.

Management status - Based on its annual status, a lek is assigned to one of the following categories for management purposes:

- **Occupied lek** – A lek that has been active during at least one strutting season within the prior ten years. Occupied leks are protected through prescribed management actions during surface disturbing activities.

- **Unoccupied lek** –There are two types of unoccupied leks, "destroyed" and "abandoned." Unoccupied leks are not protected during surface disturbing activities.

- **Destroyed lek** – A formerly active lek site and surrounding sagebrush habitat that has been destroyed and is no longer suitable for sage-grouse breeding. A lek site that has been strip-mined, paved, converted to cropland or undergone other long-term habitat type conversion is considered destroyed. Destroyed leks are not monitored unless the site has been reclaimed to suitable sage-grouse habitat.

- **Abandoned lek** – A lek in otherwise suitable habitat that has not been active during a period of 10 consecutive years. To be designated abandoned, a lek must be "inactive" (see above criteria) in at least four non-consecutive strutting seasons spanning the ten years. The site of an "abandoned" lek should be surveyed at least once every ten years to determine whether it has been re-occupied by sage-grouse.

- **Undetermined lek** – Any lek that has not been documented active in the last ten years, but survey information is insufficient to designate the lek as unoccupied. Undetermined leks are not protected through prescribed management actions during surface disturbing activities until sufficient documentation is obtained to confirm the lek is occupied. Use of this status should be rare (see "unknown" above).

Winter Concentration Area - During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds. Suitable winter habitat requires sagebrush above snow. Sage-grouse tend to select wintering sites where sagebrush is 10-14 inches above the snow. Sagebrush canopy cover utilized by sage-grouse above the snow may range from 10 to 30 percent. Foraging areas tend to be on flat to generally southwest facing slopes or on ridges where sagebrush height may be less than 10 inches but the snow is routinely blown clear by wind. When these conditions are met, sage-grouse typically gain weight over winter. In most cases winter is not considered limiting to sage-grouse. Under severe winter conditions grouse will often be restricted to tall stands of sagebrush often located on deeper soils in or near drainage basins. Under these conditions winter habitat may be limiting. On a landscape scale, winter habitats should allow sage-grouse access to sagebrush under all snow conditions.

Large numbers of sage-grouse have been documented to persistently use some specific areas which are characterized by the habitat features outlined above. These areas should be delineated as "winter concentration areas." Winter concentration areas do not include all winter habitats used by sage-grouse, nor are they limited to narrowly defined "severe winter relief" habitats. Delineation of these concentration areas is based on determination of the presence of winter habitat characteristics confirmed by repeated observations and sign of large numbers of sage-grouse. The definition of "large" is dependent on whether the overall population is large or small. In core population areas frequent observations of groups of 50+ sage-grouse meet the definition while in marginal populations group size may be 25+. Consultation and coordination with the WGFD is required when delineating winter concentration areas.

The following simplified definitions are derived from the Governor's EO 2011-5 and the WAFWA – Sage-Grouse Habitat Assessment Framework

Suitable Sage-Grouse Habitat (Wyoming Executive Order) – is within the mapped occupied range of the species and maintains *greater than 5 percent canopy* sagebrush cover or sagebrush escape cover (i.e., >10% canopy) is within 60 meters of wet meadow, alfalfa or other suitable forbs areas. Areas below the 5 percent sagebrush canopy cover, and outside of the wet meadow example, would be considered "unsuitable" for greater sage-grouse.

Suitable Habitat (Habitat Assessment Framework or HAF) – is categorized in multiple quality-based descriptions, including marginal and suitable.

- Marginal habitats are described as maintaining 5 to 15 percent sagebrush canopy cover.
- Suitable habitats are described as maintaining 15 to 25 percent sagebrush canopy cover.

Where sagebrush canopy covers would be above or below these percentages, the habitat would be categorized as "unsuitable".

The following definitions are derived from the EPA habitat evaluation guidance (US EPA 1993):

Habitat Destruction (Loss/Conversion) – The ultimate form of a habitat impact. The destruction of a natural ecosystem through its conversion to another land use. In each conversion, the original natural characteristics of the land are eliminated, while the associated habitat values are modified to varying degrees.

Habitat Fragmentation (Breakdown Partitioning) – A form of habitat impact which often only destroys part of a habitat, leaving other portions of the habitat intact. Depending on the scale of concern, many instances of local habitat destruction are better thought of as habitat fragmentation, or partitioning. Such fragmentation can be the principal cause of loss of "area-sensitive" species (e.g., grizzly bears, sage-grouse, etc.), and is the most serious threat to biological diversity.

ATTACHMENT 2

SAGE-GROUSE SEASONAL HABITAT COMPONENT DESCRIPTIONS

To effectively manage for sage-grouse and their habitat it is necessary to have a basic understanding of general sage-grouse biology and habitat needs.

The following seasonal use periods and habitat components are important to sage-grouse and contribute to their productivity and conservation. Breeding habitats have been identified as limiting factors in sage-grouse populations across their range. Winter habitats have been identified as a limiting factor in portions of their range when sage-grouse are unable to have access to sagebrush under a variety of snow conditions. The following habitat descriptions are a composite characterization of sage-grouse seasonal use areas found across Wyoming as presented in the Wyoming Sage-grouse Conservation Plan (WGFD 2003). These descriptions are most useful in providing an overall, contextual view of typical sage-grouse seasonal habitats in Wyoming, a State of very diverse ecosystems. Important sage-grouse seasonal habitats and use areas can vary from one part of the State to another. The regional sage-grouse plans prepared by the local sage-grouse working groups (LWG) provide a more specific description of the seasonal habitats and use areas for each region of the State.

The following are descriptions of breeding and winter habitat components which are based on definitions entitled "Wyoming Sage-grouse Definitions" developed and adopted by the WGFD, and others (Attachment 1).

BREEDING HABITATS:
Breeding habitats are composed of leks, nesting and early brood-rearing habitats.

Leks - A lek is typically an open area surrounded by potential nesting habitat. The common feature of leks is that they have less shrub and herbaceous cover than surrounding habitats. The sagebrush cover that surrounds a lek provides important hiding cover from predators for both the male sage-grouse and particularly hens while attending a lek. Sagebrush cover immediately adjacent to a lek may or may not meet the following definition of productive, high quality nesting habitat.

Nesting/Early Brood-Rearing Habitat - Nesting habitat for sage-grouse in Wyoming is generally described as sagebrush stands having canopy cover 15 to 30 percent and shrub heights of 11 to 32 inches (40-80 cm). Grasses and forbs with height (6 inches (15 cm) or greater) and shrub canopy cover (greater than 15 percent) provides important cover and food for sage-grouse using these habitats. Early brood-rearing habitat generally has 10 to 25 percent sagebrush canopy cover and has slightly higher canopy cover of grasses and forbs than nesting habitat. Early brood-rearing habitat is generally used by sage-grouse hens with chicks when the chicks range in age from newly hatched up to 21 days of age.

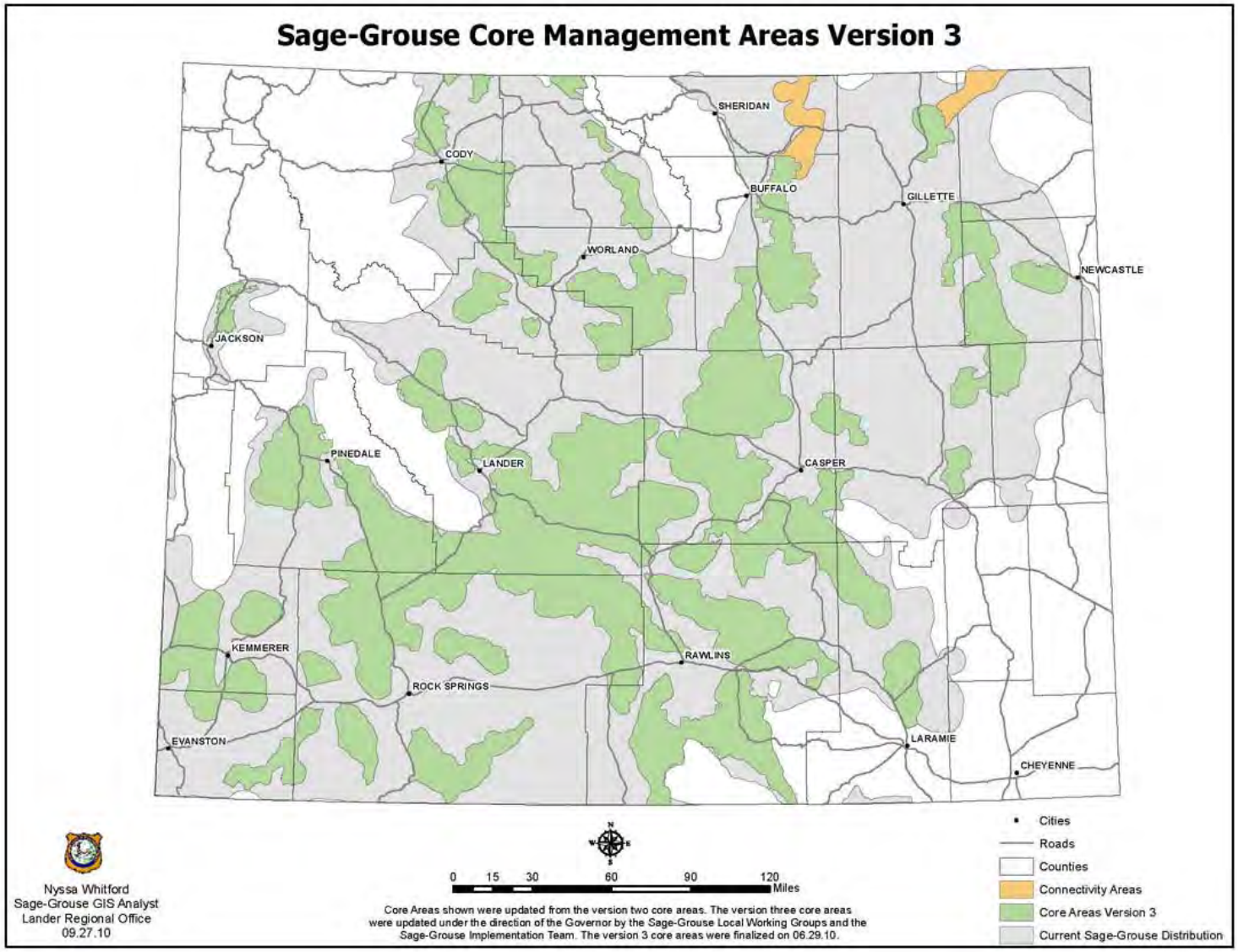
Research conducted on sage-grouse nesting activities range-wide has established that incubating hens normally leave the nest twice a day for 20 to 45 minutes during the early morning and late afternoon to feed (Holloran 2005). Activities or actions that cause hens to leave the nest more frequently or for longer periods increase the likelihood of nest failure. Studies since 1977 indicate that many populations of sage-grouse contained birds nesting much further than 2 miles from the lek of breeding. Studies conducted in Wyoming from 1994 to 2003 indicate 45 percent of sage-grouse hens

nest within 1.86 miles (3 km) of the lek, 64 percent nest within 3.1 miles (5 km), and 74 percent of nests are located within 4 miles (6.5 km) of the lek (Holloran and Anderson 2005, Holloran et al. 2007). Nest locations are independent of lek location, and are based on availability of suitable nesting habitat. Not all sagebrush habitats within these 2 to 4 mile radius distances may be suitable as nesting habitat or other seasonal habitats for sage-grouse.

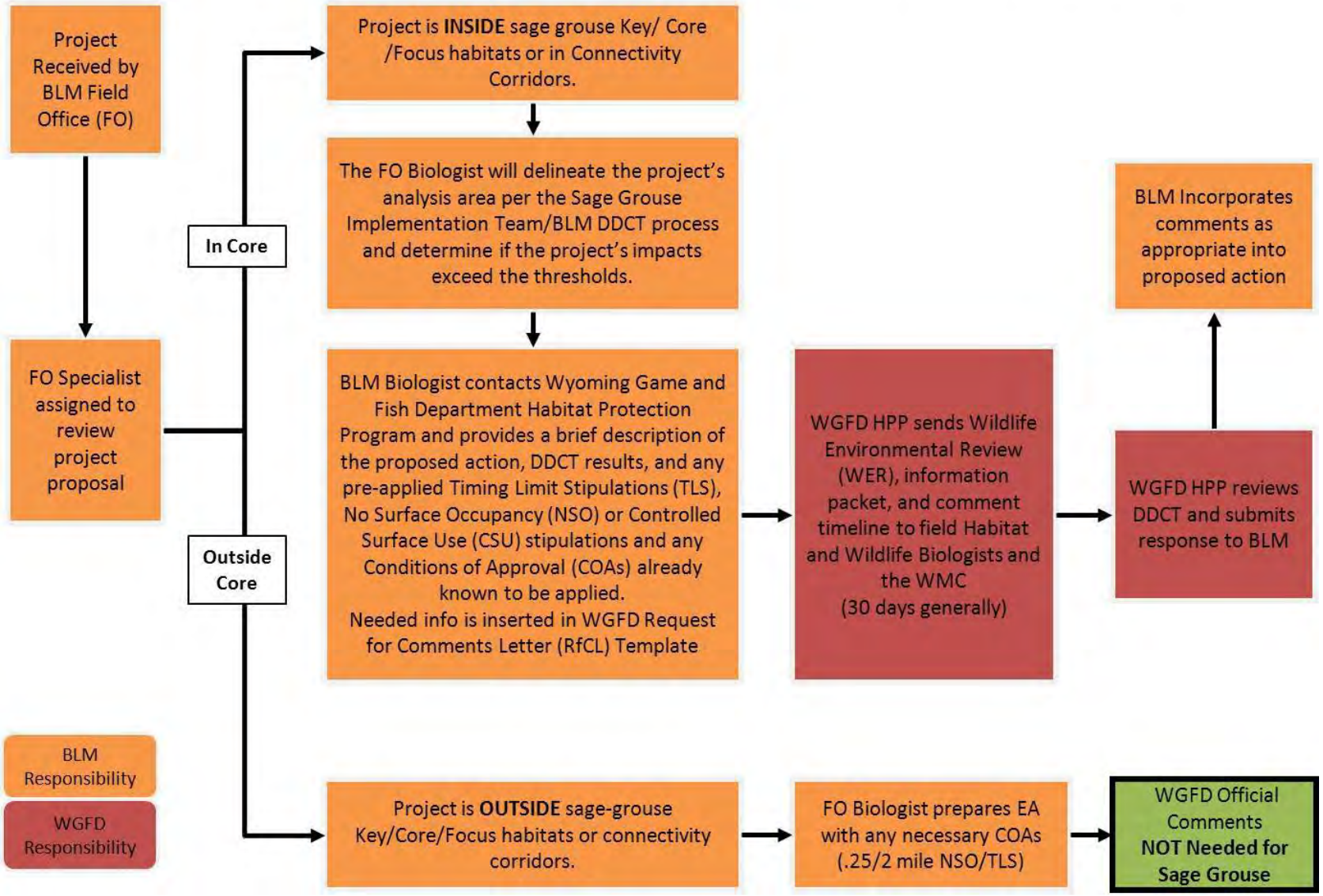
WINTER HABITAT:
During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds. Suitable winter habitat requires sagebrush above snow. Sage-grouse tend to select wintering sites where sagebrush is 10-14 inches (25 -36 cm) above the snow. Sagebrush canopy cover utilized by sage-grouse above the snow may range from 10 to 30 percent. Foraging areas tend to be on flat to generally southwest facing slopes or in areas where sagebrush height may be less than 10 inches (25 cm) but the snow is routinely blown clear by wind. When these conditions are met, sage-grouse typically gain weight over winter. In most cases, winter conditions are not considered limiting to sage-grouse in Wyoming. Under severe winter weather conditions sage-grouse will often be restricted to tall stands of sagebrush usually located on deeper soils in or near drainages. Under these severe winter conditions, winter habitat may be limiting. On a landscape scale, sage-grouse winter habitats should allow sage-grouse access to sagebrush under all snow conditions.

Large numbers of sage-grouse have been documented to consistently use some specific areas which are characterized by the habitat features outlined above. These areas are "winter concentration areas." Not all winter habitats used by sage-grouse, or "severe winter relief" habitats (a survival range), serve as winter concentration areas. Delineation of these concentration areas is based on determination of the presence of winter habitat characteristics confirmed by repeated observations and/or sign of large numbers of sage-grouse. The definition of "large" is dependent on whether the overall population is large or small. In core population areas frequent observations of groups of 50+ sage-grouse meet the definition, while in marginal populations group size may be 25.

Attachment 3



Attachment 4 -- BLM/WGFD Coordination Procedure for BLM IM No. WY 2012-012



Attachment 5

Revised 7.13.11

Density and Disturbance Calculation Tool (DDCT) Manual

A DDCT will be completed for all applicable projects as outlined in the Sage-Grouse Executive Order 2011-5 (EO) occurring within sage-grouse core areas or connectivity areas.

This manual covers:

- What is a DDCT and why it is needed
- Data needed to run a DDCT
- How to run a DDCT step by step using the model developed by BLM, the preferred method*
- How to report your results
- How to add the model to ArcToolbox
- How to delineate a DDCT step by step without the BLM model
- Density calculation process for linear features
- Anthropogenic disturbances
- How to handle pre 8.1.2008 units

This manual also contains additional information for projects not specifically addressed in the EO. The State of Wyoming and the BLM are using the DDCT process to evaluate and manage the total disturbance (existing, permitted, and proposed) within the State's Sage-Grouse Core Areas (Version 3). The DDCT process will be conducted by federal land management agencies for proposals on federal land and by project proponents on State or private land.

TERM	Disturbance	Disruptive Activity
ALSO REFERRED TO AS	"surface or vegetation disturbance" "direct habitat disturbance"	"anthropogenic disturbance activity" "indirect habitat disturbance"
EXECUTIVE ORDER LIMIT	5% of DDCT Area	Average of 1 per 640 acres within DDCT area
DDCT CALCULATION	disturbance calculation	density calculation

What is a DDCT and why is it needed (See the Governor's Sage-Grouse Executive Order 2011-5 http://gf.state.wy.us/wildlife/wildlife_management/sagegrouse/Sage_Grouse_EO_2011_5.pdf)

All activities will be evaluated within the context of maximum allowable disturbance (physically disturbed habitat percentages, location, and number of oil and gas and mining disruptions) of suitable sage-grouse habitat (See Appendix I for the definition of suitable sage-grouse habitat and disturbance of suitable sage-grouse habitat) within the area affected by the project. The maximum disturbance allowed will be analyzed via a Density/Disturbance Calculation Tool (DDCT) process conducted by the federal land management agency on federal land and the project proponent on non-federal (private, state) land.

1. Density/Disturbance Calculation Tool (DDCT) application: Determine all occupied leks within core population

areas that may be affected by the project by placing a four-mile boundary around the project boundary (as defined by the proposed area of physical disturbance related to the project). All occupied leks located within the four--mile boundary and within core population areas will be considered affected by the project.

2. A four-mile boundary will then be placed around the perimeter of each affected occupied lek. The core population area within the boundary of affected occupied leks and the four-mile boundary around the project boundary creates the DDCT area for each individual project. Disturbance will be analyzed for the DDCT area as a whole and for each individual affected occupied lek within the DDCT area. Any portion of the DDCT area occurring outside of core area will be removed from the analysis.
3. If the DDCT includes mapped habitat that does not meet the suitable or transitional habitat definitions per the EO, the unsuitable (by definition not disturbance) will not be included in the DDCT calculation.
4. If there are no occupied leks within the four-mile boundary around the project boundary, the DDCT area will be that portion of the four-mile project boundary within a core population area.

Data needed to run a DDCT:

Some of the data listed below will be available on the WGFD ftp site ((ftp://gf.state.wy.us/) User name: ftp_piaa and Password: piaa123). Please check the ftp site first or refer to the agency and/or web address for individual data sources.

Proposed surface disturbance or project boundary: This is the area that is being proposed for disturbance. This file must be a polygon file or a complete line file that can be converted into a polygon. The project proponent must provide this. To use the model provided by BLM add a Disrupt and a Disturb field to the attribute table of this file and populate the fields with a value of one. Examples of project boundaries and an altered attribute table are provided at the end of this document.

Most recent occupied leks/perimeter: Available from the Wyoming Game and Fish Department on the ftp_piaa site. This file is a hybrid of occupied lek perimeters and occupied lek points, buffered by 5 feet. This was done to make sure that all occupied leks were represented by polygons.

Sage-Grouse Core Areas Version 3: Available from the Wyoming Game and Fish Department webpage and the ftp_piaa site. (http://gf.state.wy.us/wildlife/wildlife_management/sagegrouse/index.asp).

Sage-Grouse Connectivity Areas: Available from the Wyoming Game and Fish Department webpage and the ftp_piaa site. (http://gf.state.wy.us/wildlife/wildlife_management/sagegrouse/index.asp).

Land Ownership: The most recent land ownership file can be found on the Wyoming BLM website (http://www.blm.gov/wy/st/en/resources/public_room/gis/datagis.html) under the PLSS/Ownership heading.

NAIP (National Agricultural Imagery Program) imagery: Used for detecting additional disturbance. True Color images are available in seamless statewide coverage from the following ArcGIS Server site: http://gis.apfo.usda.gov/arcgis/services.

To install this ArcServer click the add data button>from the look in menu navigate to GIS Server (toward the bottom)>Add ArcGIS Server> use GIS Services>Next>Enter http://gis.apfo.usda.gov/arcgis/services in to the internet server box> Finish.

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To use the images from the above server click the add data button >navigate to GIS Servers> arcgis on gis.apfo.usda.gov>NAIP>Wyoming_2009_1m_NC

Current surface disturbance file: To use the model provided by BLM, download the blank surface disturbance geodatabase (SurfDist.gdb) and digitize, or load, all current surface disturbances within this geodatabase. Make sure to populate all Disrupt and Disturb cells with a value of 1. These fields are used to calculate the 5% threshold (Disturb) and the 1 average disruption per 640 acres (Disrupt). If a disturbance is determined not to be a disruption then the value can be changed to zero and it will not be counted in the 1 average disruption per 640 acres count. Also, DO NOT rename the SurfDist.gdb or the SurfaceDist feature class within the geodatabase. The model will not run if either of these files are renamed. Some of this data will have to be head's up digitized at a minimum 1:5000 scale from the 2009 NAIP aerial photography images.

Surface disturbance includes but is not limited to roads, well pads, mining operations, cropland, buildings, some vegetation treatments, wind turbines, and pipelines. Remember to clip all disturbances to the final DDCT boundary. To use the model provided by BLM all surface disturbance will have to be within the SurfDist geodatabase. Visual examples of disturbances and the SurfDist attribute table are provided at the end of this document.

Other useful files may include but are not limited to:

Note: Surface disturbance digitized by BLM accounts for all surface disturbances. It may be necessary to examine this file and change the Disturb field value to 0 on features that would not be applicable in the DDCT (e.g. alfalfa field used by grouse, successfully reclaimed development). Surface disturbances must be anthropogenic in nature, except for wildfire not meeting transitional standards, to count toward the disturbance calculations.

Roads: Capture any road greater than or equal to 10ft wide that does not have a noticeable strip of vegetation down the middle. Roads less than 10ft wide that are clearly discernable as improved should also be captured. The Wyoming Department of Transportation (WYDOT) has a good road file for maintained roads. This file will help to identify where some of the roads are located in the DDCT. Smaller or new roads may still have to be digitized. The WYDOT file can be used to buffer state highways by 34ft, county roads by 28ft, and interstates by 38ft each direction. This file is updated annually and can be downloaded from the WYGISC website (http://www.uwyo.edu/wygisc/data/index.html). The most accurate way to capture the footprint of the road disturbance is to digitize it. BLM offices are also a good source of road data.

Oil and Gas Wells: The current well file can be obtained from the Wyoming Oil and Gas Conservation Commission (WOGCC) website (http://wogcc.state.wy.us). Once on the WOGCC webpage click Down Load. Scroll to the bottom of the list, select the Well Header file and click the bucking bronco icon to the left to start downloading. The "WH" file is comprised of active wells and the "PA" file is comprised of plugged and abandoned wells. WOGCC also has an ArcIMS Server site that can be installed similar to the NAIP site, see above. The address for that server is http://wogccms.statewy.us. Clip the wells to the DDCT boundary and digitize each well pad to determine the area disturbed.

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Oil and Gas Unit Boundaries: The most current oil and gas unit file can be viewed from the WOGCC website (http://wogccms.state.wy.us). This web address can also be used in ArcMap to add an ArcIMS Server site. This file is updated quarterly. Please see the Additional Information section for more information on units.

Mining: Use the mining plan permit boundaries to digitize actual mining disturbance off the NAIP imagery. Mining files can be downloaded from the DEQ website (http://deq.state.wy.us/lqd). Scroll down the page to the CHIA - Cumulative Hydrologic Impact Assessments heading. These files are updated annually, usually in February. For questions or concerns please contact Chad Kopplin with DEQ (307.777.6470 or ckoppl@wyo.gov).

Cropland: Digitize all cropland. If the cropland is determined to be sage grouse habitat it can be coded as 0 in the SurfDist.gdb file.

Buildings: This also includes ranches and developed subdivisions. If there is disturbance around dwellings that would prohibit all sage-grouse use then digitize the entire disturbance. If the building is only used intermittently digitize the actual building footprint.

Vegetation Treatments: Contact WGFD or the land management agency to determine if vegetation treatment data are available for defined transitional habitat (EO Appendix I).

Transmission Lines: Digitize the Right-Of-Way (ROW) for the transmission lines. Overhead transmission line corridors (115kV and new corridors as described in the EO) are not to be included in density calculations but will be considered for disturbance calculations (ROW width X length).

Pipelines: Digitize the disturbance of the pipeline scar. Pipelines regardless of width/distance are not to be considered toward the density calculations. Pipelines will contribute towards the disturbance calculation until the area is successfully reclaimed (EO) .

Suitable Sage Grouse Habitat : All acreage within core areas are considered suitable habitat unless the habitat within the DDCT has been mapped per the EO standards.

Additional Information:

Anthropogenic Disturbances: The average of 1 per 640 acres threshold applies only to oil and gas and mining activities.

Disturbance Calculation Process for Linear Features: The impacts of linear disturbances are varied. The following are suggestions for dealing with linear features:

1. Non-2 track roads would contribute towards disturbance calculations. The actual footprint should be digitized.
2. Overhead transmission line corridors (115kV and new corridors as described in the EO) would contribute towards disturbance calculations (ROW width X Length).
3. Pipelines regardless of width/distance would contribute towards the disturbance calculation until the area is reclaimed with perennial grasses and forbs.

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Units (prior to 8.1.2008) located within a new project DDCT: When dealing with situations where the DDCT encounters a prior to 8.1.2008 unit, the BLM field manager will need to work collaboratively with both the unit holders and the project proponents to determine the actual disturbance necessary to successfully meet the project goals of both. It is imperative that each of these situations are addressed with flexibility and a solid understanding of the local landscape:

1. New Development inside Units: The key to planning development in units within core areas is to create the least amount of disturbance to suitable habitat. A unit is not automatically considered an approved activity; however, there is an expectation that development of the unit will occur. Each situation will need to be handled case-by-case and information such as development plans and reservoir characteristics will play into the BLM's decision on how to manage density and disturbance. In many cases this will best be accomplished by concentrating activity within existing (prior to 8.1.2008) unit boundaries. Disturbance and density calculations may exceed the thresholds for a DDCT because development is being concentrated in a pre 8.1.2008 unit.

2. New Development outside Units: Within existing (prior to 8.1.2008) recognized federal oil and gas units, drilling and spacing units, and other recognized developments, coordination will be a key element for the BLM, the existing unit holder, and any new project proponent inside or outside the unit. A unit will often have an approved plan of development that contemplates a shorter time period than the life of the project, so available information may only show a portion of the entire development. When projects outside the unit may cause the disturbance/disruption thresholds to be exceeded, the unit holder will need to share their full plan development with the BLM. For those circumstances where a full plan of development may never reach levels anticipated at the outset of the project it is important to determine the realistic future disturbance in order to facilitate other development activities.

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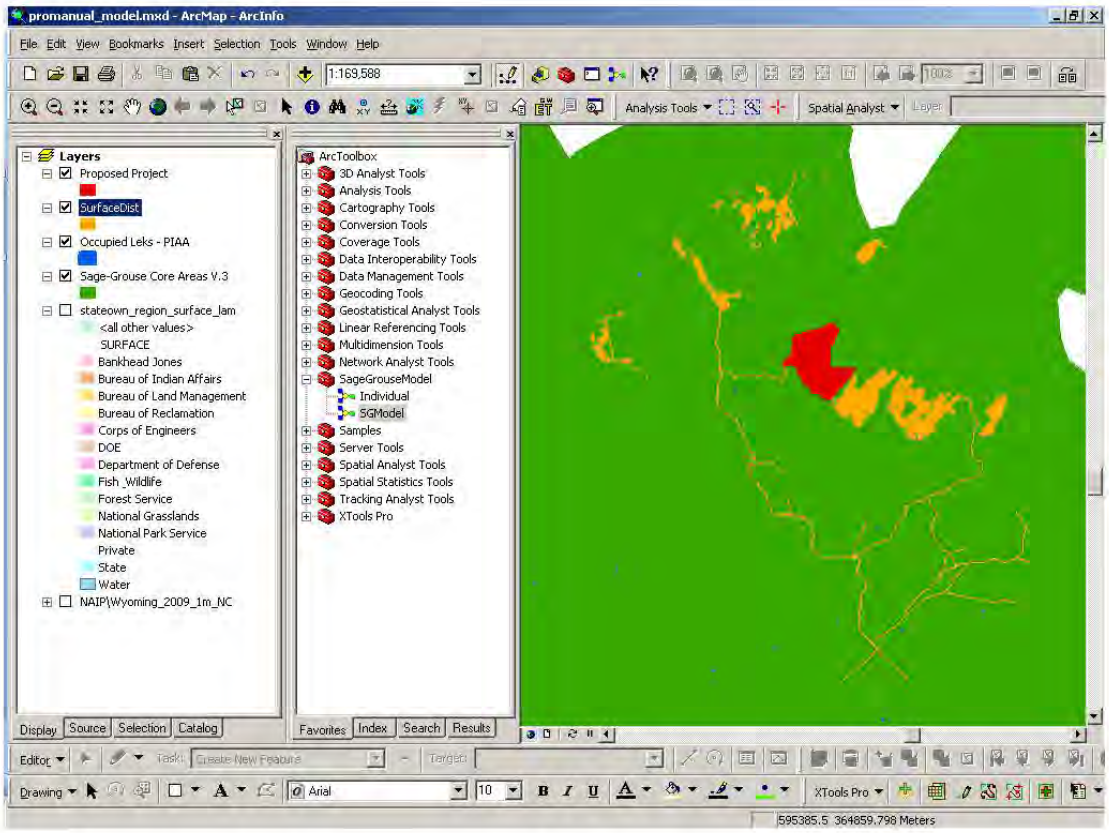
How to Run the DDCT using the Model Provided by BLM (only compatible with ArcInfo ArcGIS license):

Note: For instructions on installing the model please see the end of this document.

1. Make sure the SageGrouseModel toolbox has been added to ArcToolbox.
2. Add the proposed project boundary, sage-grouse version 3 core areas, occupied leks/ perimeter file, state surface ownership, and surfacedist feature class from the surfdist geodatabase to ArcMap. (Add data button>navigate to where those listed files are stored)



3. Open the attribute table of the proposed disturbance file. Add a Disrupt and a Disturb field to the attribute table, short integer type (Options>Add Field, repeat for Disturb field). Populate both fields with a value of 1 (Right click on column heading>Field Calculator>Enter 1 in the calculations box>Click OK, repeat for Disturb field). Creating and populating these fields will insure the model will count the proposed disturbance against the 5% disturbance calculation and the 1/640 disruption count.

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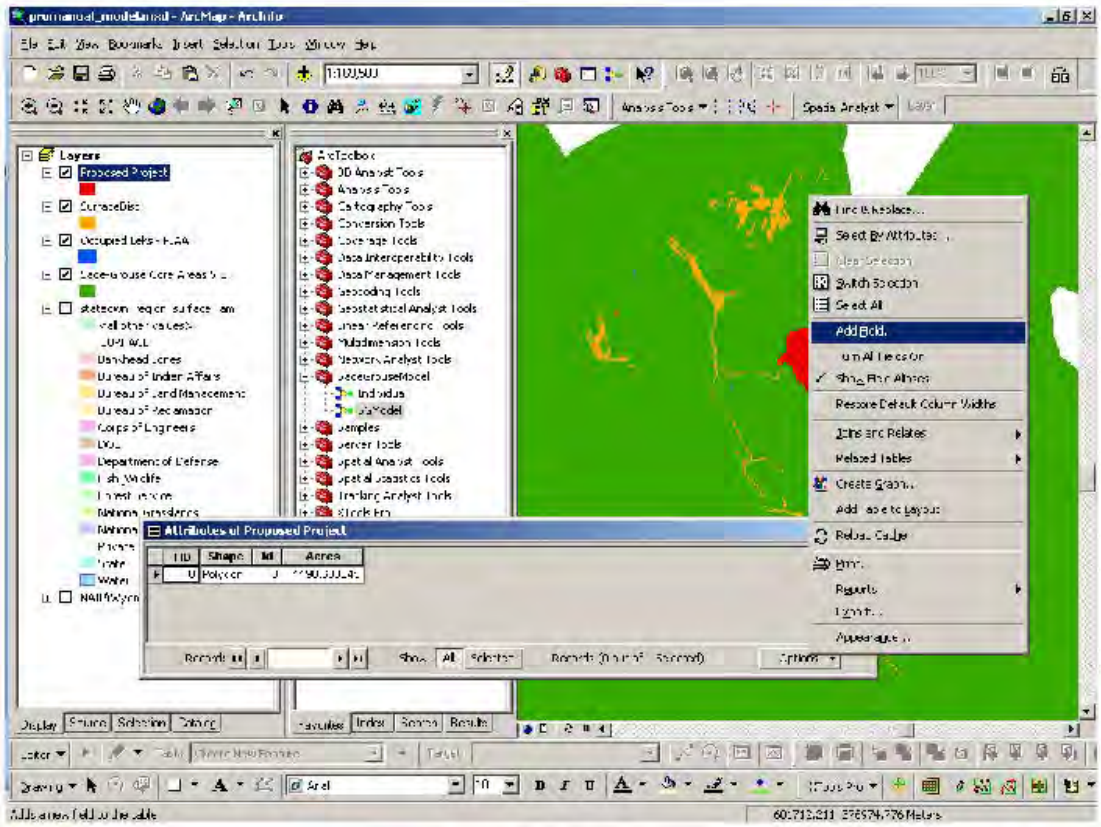

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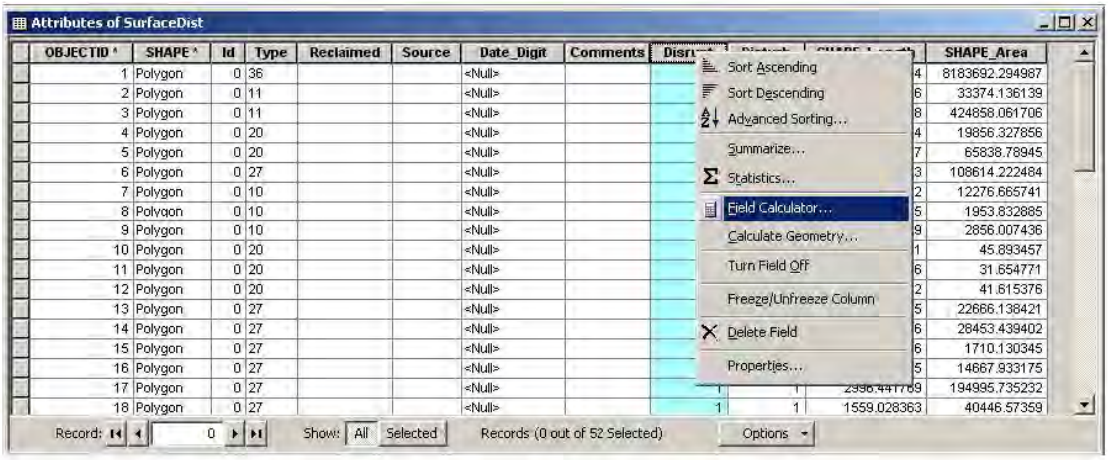
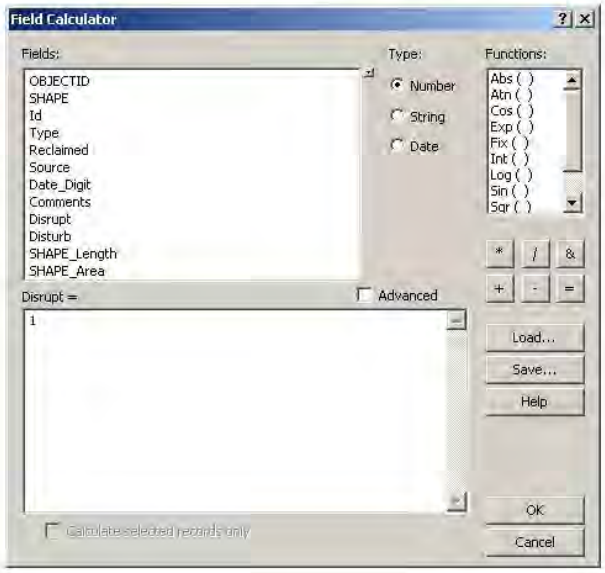
4. Open the attribute table of the SurfaceDist feature class and ensure the SurfaceDist Disrupt and Disturb fields are populated with 1's and 0's (Right click on column heading>Field Calculator>Enter 1 or 0 in the calculations box>Click OK, repeat for Disturb field) according to the type of disturbance. If a feature is not deemed a disruption or disturbance the value can be changed to 0 later and the model rerun to get accurate values. [1]





[1] Oil and gas and mining activities are the only disruptions that count towards the 1/640 density calculation

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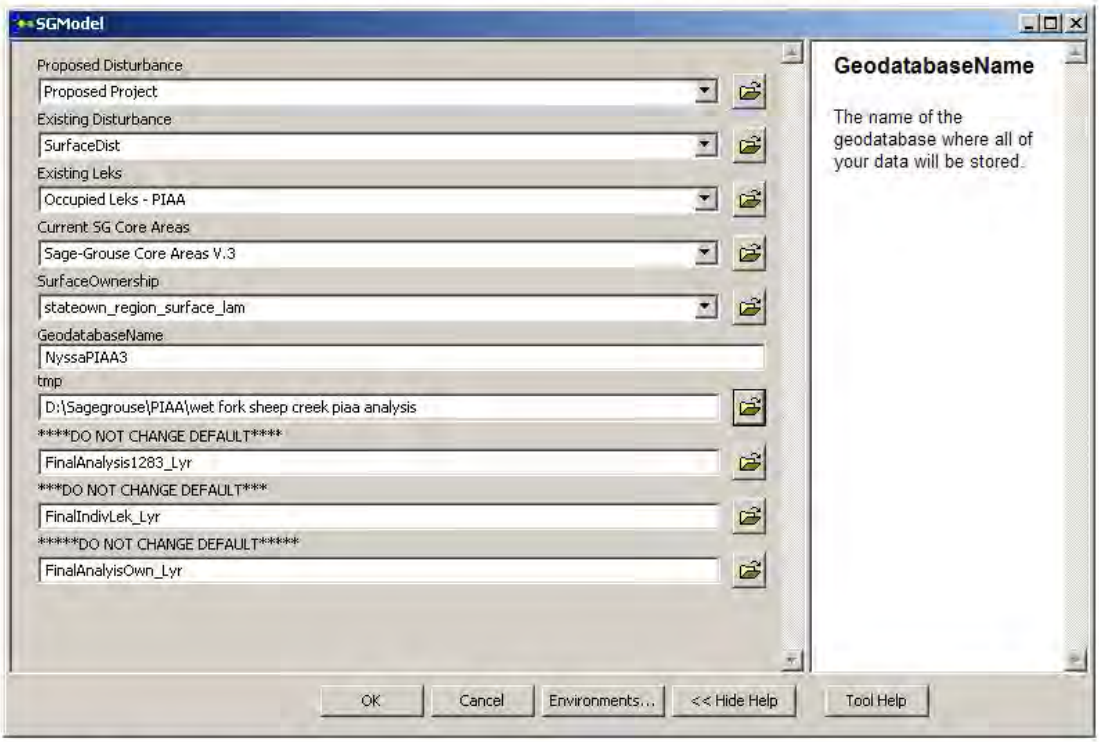
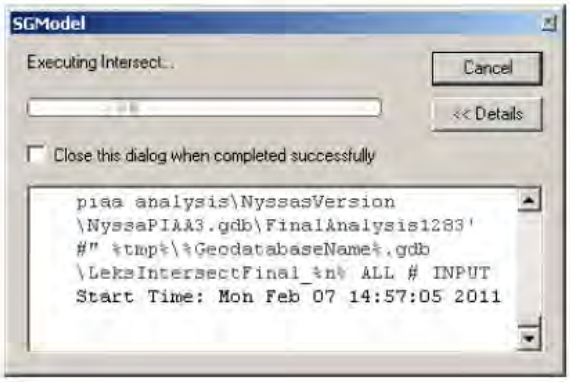
5. Double click on the "SGModel" tool.
6. Fill in the appropriate fields in the pop up box using the five files already added to ArcMap.

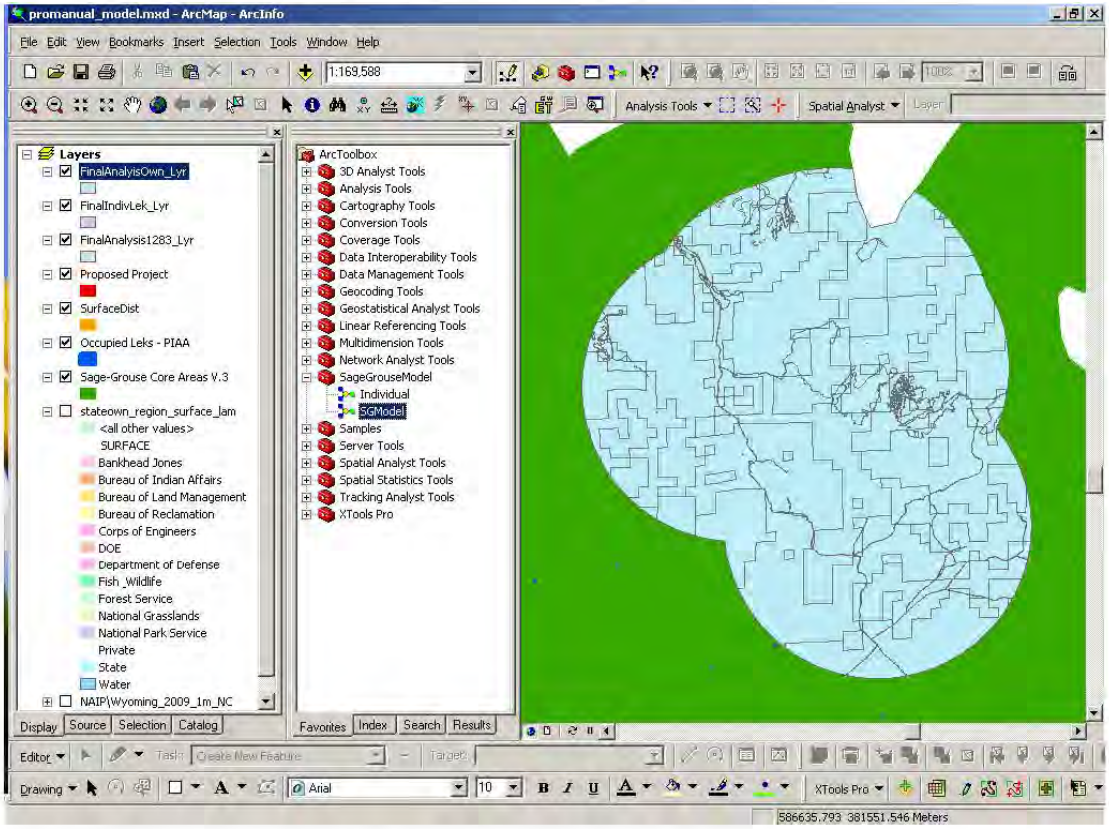


7. Designate a location to save the model outputs.
8. Click OK to run the model. The model could take up to 15 minutes to run.



DDCT Process Manual

9. Click Close when the model has completed. Three files should have been added to ArcMap, FinalIndivLek_Lyr, FinalAnalysis1283_Lyr, and FinalOwn1283_Lyr. These are the final model outputs. To see all the model outputs navigate to where the model was stored in Step 7 and add the desired files to ArcMap.



10. Make sure all current surface disturbances have been captured within the SurfDist geodatabase. Add the NAIP imagery to ArcMap. Scan the NAIP imagery at 1:5000 scale to determine that the current surface disturbance file captured all surface disturbance. Digitize any left out surface disturbance and then rerun the model starting from Step 1. Remember, if the model is rerun to rename the first set of model outputs (FinalAnalysis1283_Lyr and FinalIndivLek_Lyr) or the model will not run again. If the entire surface disturbance has been captured skip to next step.
11. Look in the attribute table of FinalAnalysis1283_Lyr to see what percentage of surface disturbance the DDCT has reached. If there are display issues with the acreage calculation please refer to the "How to Add the Model to ArcToolbox" section of this manual.

DDCT Process Manual

Attributes of FinalAnalysis1283_Lyr

OBJECTID *	Shape *	Final	Acres	Total_1	Percent
1	Polygon	Disturbed	3427.19587	Total	4.816679
2	Polygon	Undisturbed	67725.476022	Total	95.183321

Record: 0 Show: All Selected Records (0 out of 2

12. Open the attribute table for the FinalIndivLek_Lyr file and check to see what the percent disturbance is for each lek within the DDCT boundary.

Attributes of FinalIndivLek_Lyr

OBJECTID *	Shape *	Disturb	Acres	Final	LekID	Lek_1	Percent
1	Polygon	<Null>	1603.497397	Disturbed	27-Mud Springs 3	Lek 0	4.96296
2	Polygon	<Null>	30705.796536	Undisturbed	27-Mud Springs 3	Lek 0	95.03704
3	Polygon	<Null>	1993.585757	Disturbed	27-Old Highway	Lek 1	6.170952
4	Polygon	<Null>	30312.383651	Undisturbed	27-Old Highway	Lek 1	93.829048

Record: 0 Show: All Selected Records (0 out of 4 Selected) Option

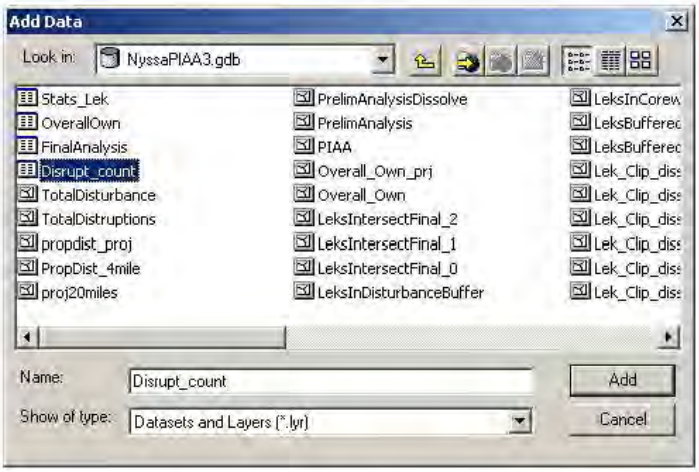
13. Open the attribute table for the FinalAnalysisOwn_Lyr and check to see what percentage of disturbance is occurring on each surface ownership type. This is especially important to BLM to highlight how much of the disturbance is within agency control.

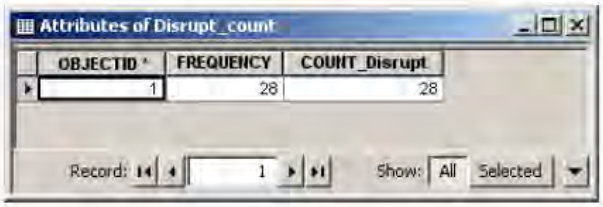
Attributes of FinalAnalysisOwn_Lyr

OBJECTID *	Shape *	Final	SURFACE	Shape_Length	Shape_Area	Acres	Total_1	SUM_Acres	Percent
1	Polygon	Disturbed	Bureau of Land Management	62785.787904	2527400.782047	624.53406	Total	71097.463332	0.87842
2	Polygon	Disturbed	Private	166733.661704	6906254.404264	1654.67388	Total	71097.463332	2.327332
3	Polygon	Disturbed	State	103070.743102	5750203.031594	1422.300254	Total	71097.463332	2.00061
4	Polygon	Undisturbed	Bureau of Land Management	298059.16501	97536776.171086	24176.391402	Total	71097.463332	34.004577
5	Polygon	Undisturbed	Private	442270.334763	115917696.671531	28643.82155	Total	71097.463332	40.268106
6	Polygon	Undisturbed	State	267357.077227	58985835.930242	14575.559186	Total	71097.463332	20.500955

Record: 1 Show: All Selected Records (0 out of 6 Selected) Options

14. Navigate to where the output DDCT geodatabase was stored in Step 7. Add the table Disrupt_count to ArcMap. Open this table to see the count of disruptions within the DDCT. Use this number to check whether the DDCT is exceeding the 1 average disruption per 640 acres threshold.





How to Report Your DDCT Results to the Appropriate Permitting Agency:

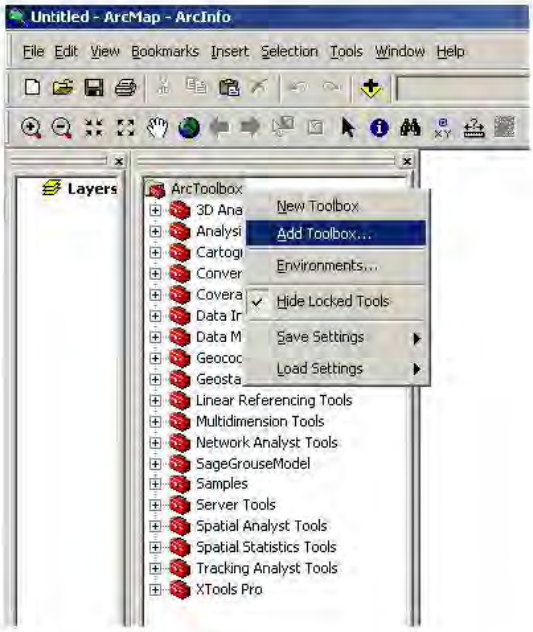
Provide a map of the DDCT results including: the DDCT boundary, sage-grouse core areas, core area occupied leks and perimeters, proposed project boundary, and current surface disturbance clearly labeled. Also, include DDCT figures (disturbance, density, etc), comments on the project, and the output DDCT geodatabase.

Revised 7.13.11

How to Add the Model to ArcToolbox:

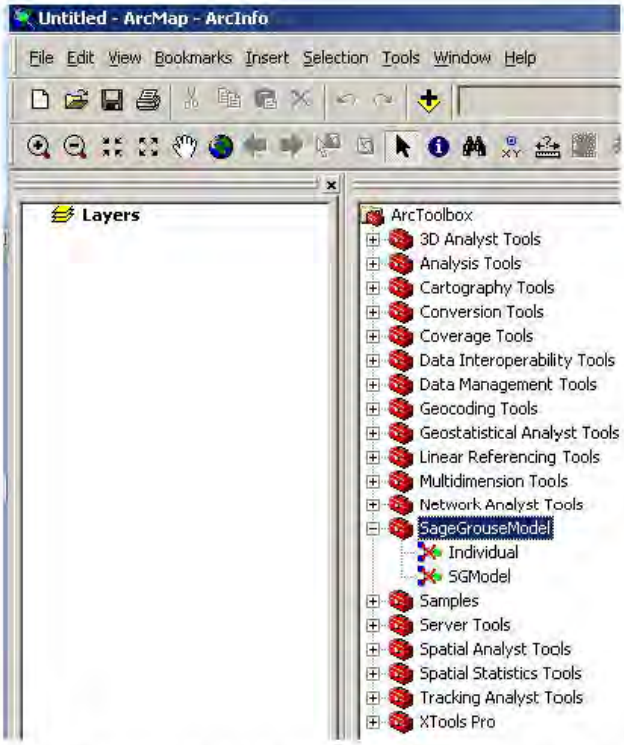
You must know where the model is stored on your computer to complete these steps.

1. Open ArcMap
2. Display the ArcToolbox Window (Click on the red toolbox icon on standard toolbar).
3. Right click on ArcToolbox (top of window) and select Add Toolbox.

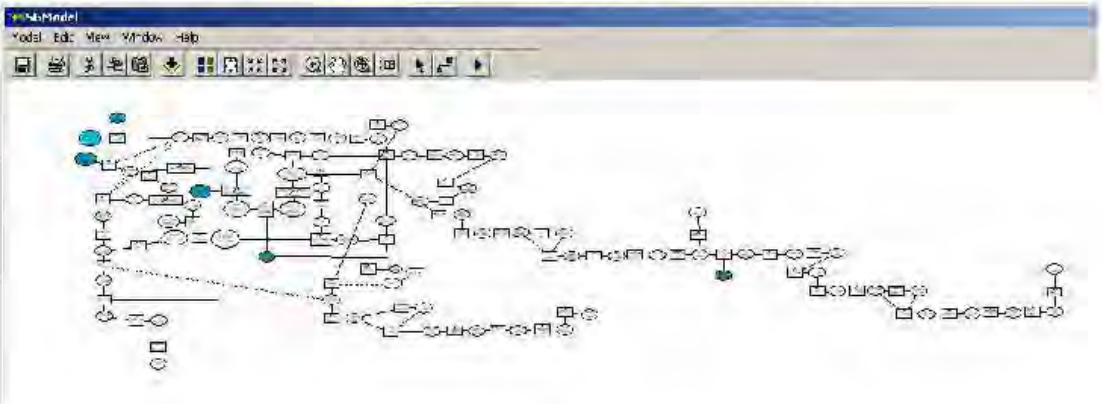


4. Navigate to where the SageGrouseModel Toolbox is stored, select it and click Open.
5. After the toolbox is added right click ArcToolbox again and select Save Settings to Default. This will insure the model is available every time ArcMap is opened.
6. Expand the SageGrouseModel toolbox by clicking on the + next to it.

DDCT Process Manual



7. There will be two models, SGModel and Individual; SGModel will have a red X through the icon. To fix the red X and make the model run complete the following steps:
    a. Right click on the SGModel and select Edit.
    b. Look for the Create File GDB box. It will be a white box with a red X, located in the upper left hand corner of the model and highlighted with a red circle below. Double Click it.



c. Navigate to the Data Management Workspace toolbox and add the "Create File GDB" Tool (should be located at C:\program files\ArcGIS\ArcToolbox\Toolboxes\Data Management Tools\Workspace\Create File GDB).
d. Save the model and close it.

8. The red X through the model icon should be gone and the models are ready to run.

DDCT Process Manual

How to Delineate a DDCT Step by Step:

If you run the model provided by BLM then you will not have to delineate a DDCT step by step. It is important to understand the concepts and actions the model is completing. This process is outlined in Attachment B of the Executive Order.

1. Buffer the proposed disturbance area or project boundary by 4 miles. (ArcToolbox>Analysis Tools>Proximity>Buffer)
2. Clip the project boundary buffer created in Step 1 to the sage-grouse core areas. (ArcToolbox>Analysis Tools>Extract>Clip)
3. Use the clipped project boundary created in Step 2 to select all occupied core area sage-grouse occupied leks/perimeters occurring within that 4 mile buffer. (Select by Location > Select features from occupied leks/perimeters that are within created buffer)
4. Buffer all occupied leks/perimeters captured in Step 3 by 4 miles. (ArcToolbox>Analysis Tools>Proximity>Buffer)
5. Clip the occupied lek/perimeter buffer to the sage-grouse core areas. (ArcToolbox>Analysis Tools>Extract>Clip)
6. Union the clipped project area buffer and the clipped occupied lek/perimeters buffer together. (ArcToolbox>Analysis Tools>Overlay>Union)
7. Dissolve the above Union into a polygon. This polygon represents the DDCT area. (ArcToolbox>Data Management Tools>Generalization>Dissolve)
8. Locate all existing disturbance within the DDCT. After analyzing all the available disturbance files scan the entire DDCT with the 2009 True Color NAIP imagery in the background at a 1:5000 scale. Digitize all disturbances that have not been captured, or appear inaccurate, in the SurfDist geodatabase, available on the ftp_piaa site. Turn on Editing> Task is Create New Feature> Use the Sketch Tool (looks like a pencil) to digitize disturbance. Make sure to use the SurfDist geodatabase as it will help standardize data collection for a statewide disturbance file. Make sure none of the disturbance polygons overlap; this will over calculate the disturbed acres. Dissolve all disturbance files and/or all polygons within that file together after the digitizing to eliminate this problem.
9. Clip the disturbance file to the DDCT boundary. (ArcToolbox>Analysis Tools>Extract>Clip)
10. Calculate the acreage for the surface disturbance file, the DDCT, and the proposed project boundary. (X-Tools Pro>Table Operations>Calculate Acres)
11. Add the total disturbed acres and the total acres of the project boundary together and compare to 5% of the DDCT acres.
12. Count the number of disruptions in the DDCT and verify that it does not exceed the average of 1 disruption per 640 acres threshold.
13. To conduct the optional individual occupied lek analysis, retrieve the occupied lek/perimeter buffer file that was clipped to the sage-grouse core areas in step 5. Use this file to clip each occupied lek buffer to the surface disturbance and proposed disturbance files. Calculate acreage figures based on those clips to evaluate to individual impacts to the occupied leks within the DDCT boundary selected in step 3. This analysis is only used to derive alternatives and has no bearing on the overall outcome of the 5% disturbance threshold and the 1 average disruption per 640 acres threshold.
14. Report results by providing a map of the DDCT analysis with the DDCT boundary, sage-grouse core areas, occupied core area occupied leks and perimeters, proposed project boundary, and current surface disturbance clearly labeled. Also, include DDCT figures, comments on the project, and the file outputs from performing the DDCT analysis.

DDCT Process Manual

Examples of Proposed Project Boundaries:

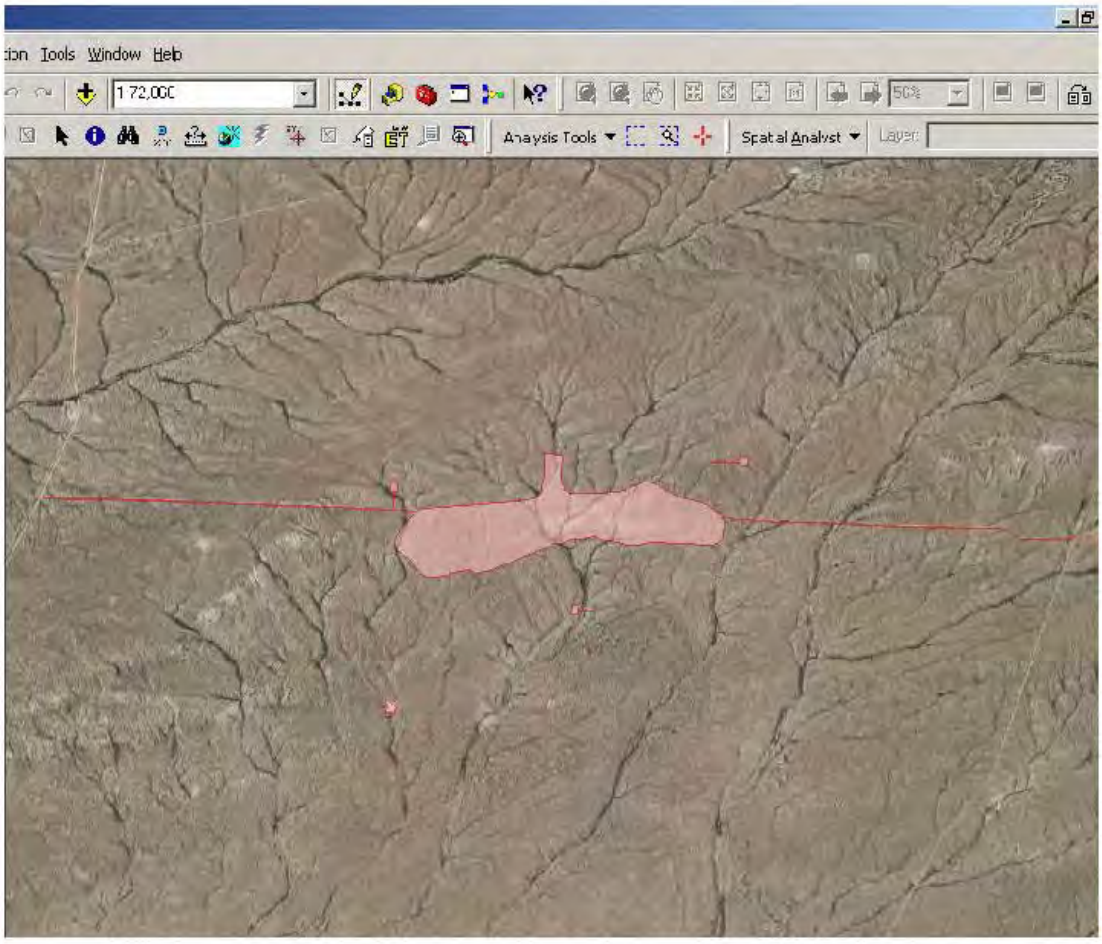
Attribute table with Disrupt and Disturb fields populated with a value of 1.

Attributes of proposed surface disturbance

FID	Shape	Id	Acres	Disrupt	Disturb
0	Polygon	0	496.995301	1	1
1	Polygon	0	514.077481	1	1

Record: 1 Show: All Selected Records (0 out

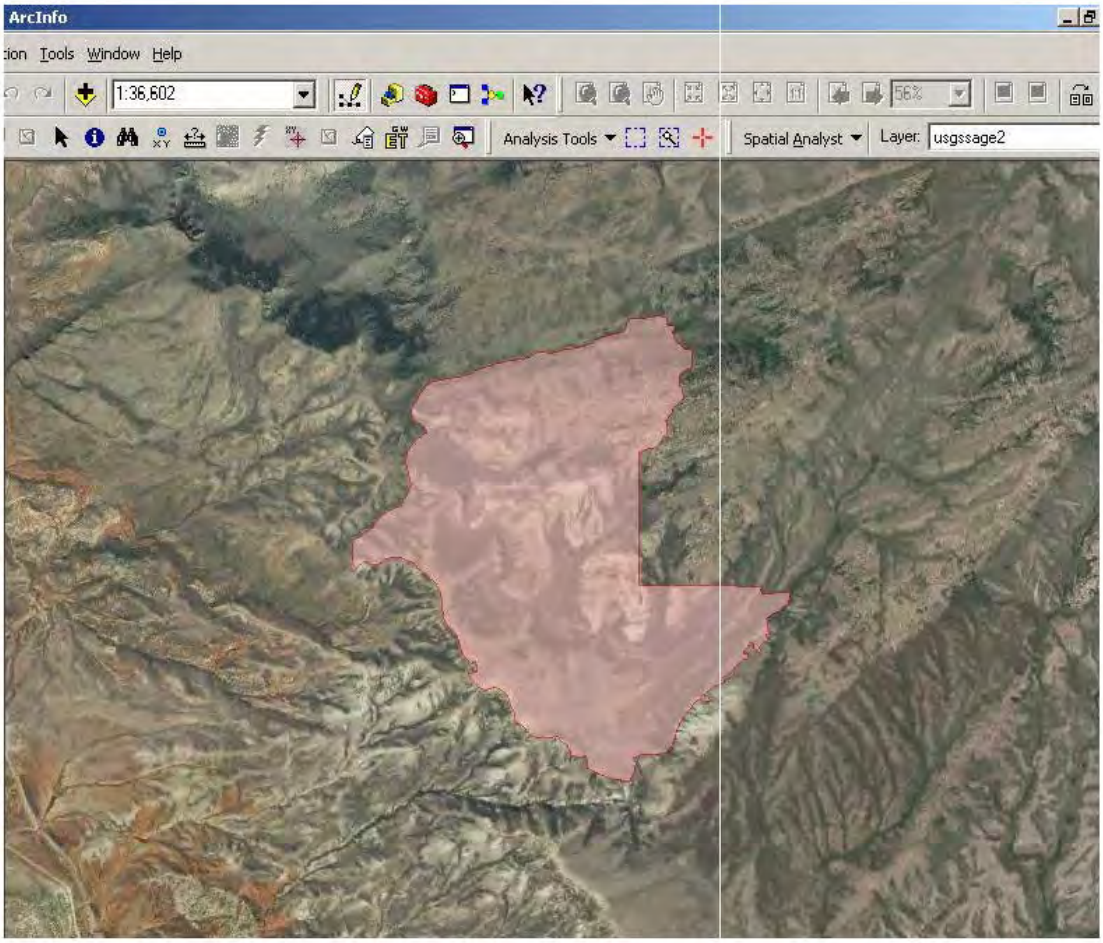
Mine:



DDCT Process Manual

Examples of Proposed Project Boundaries:

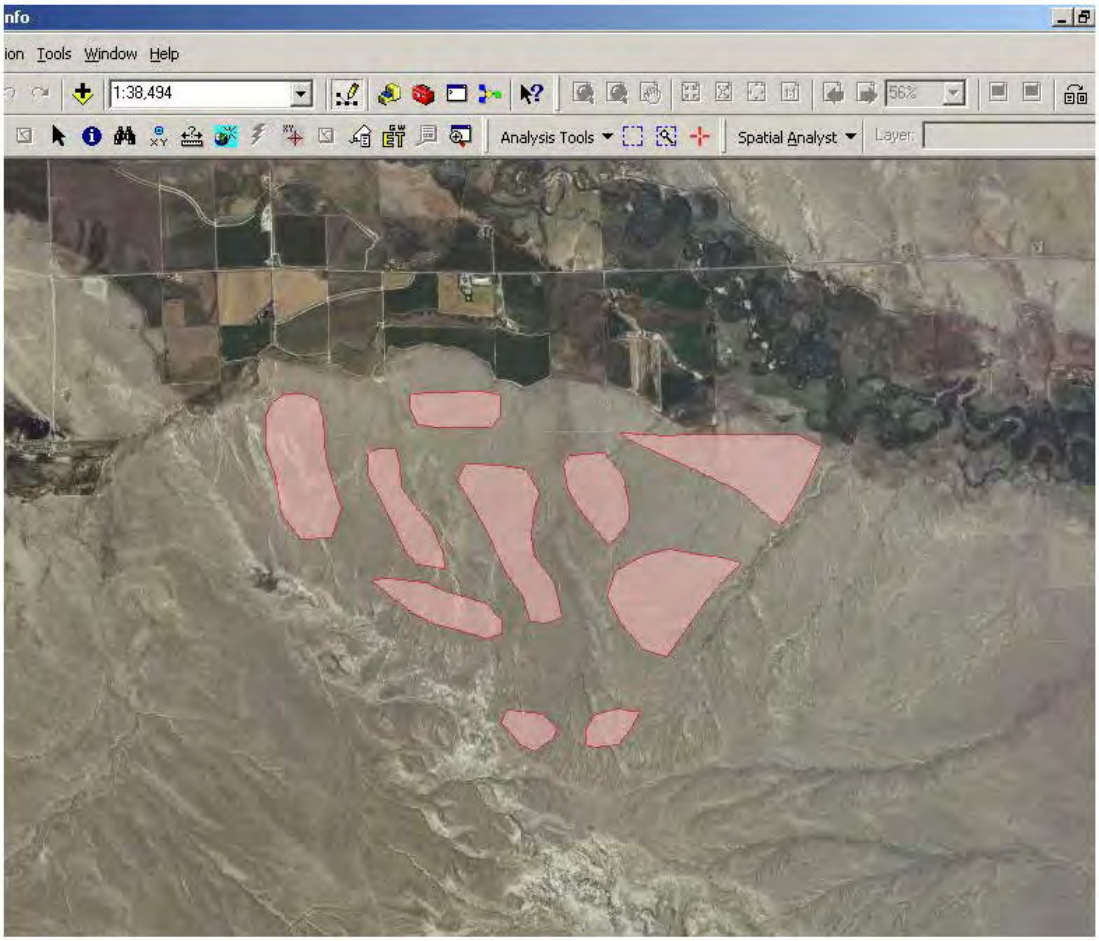
Burn Vegetation Treatment:



DDCT Process Manual

Examples of Proposed Project Boundaries:

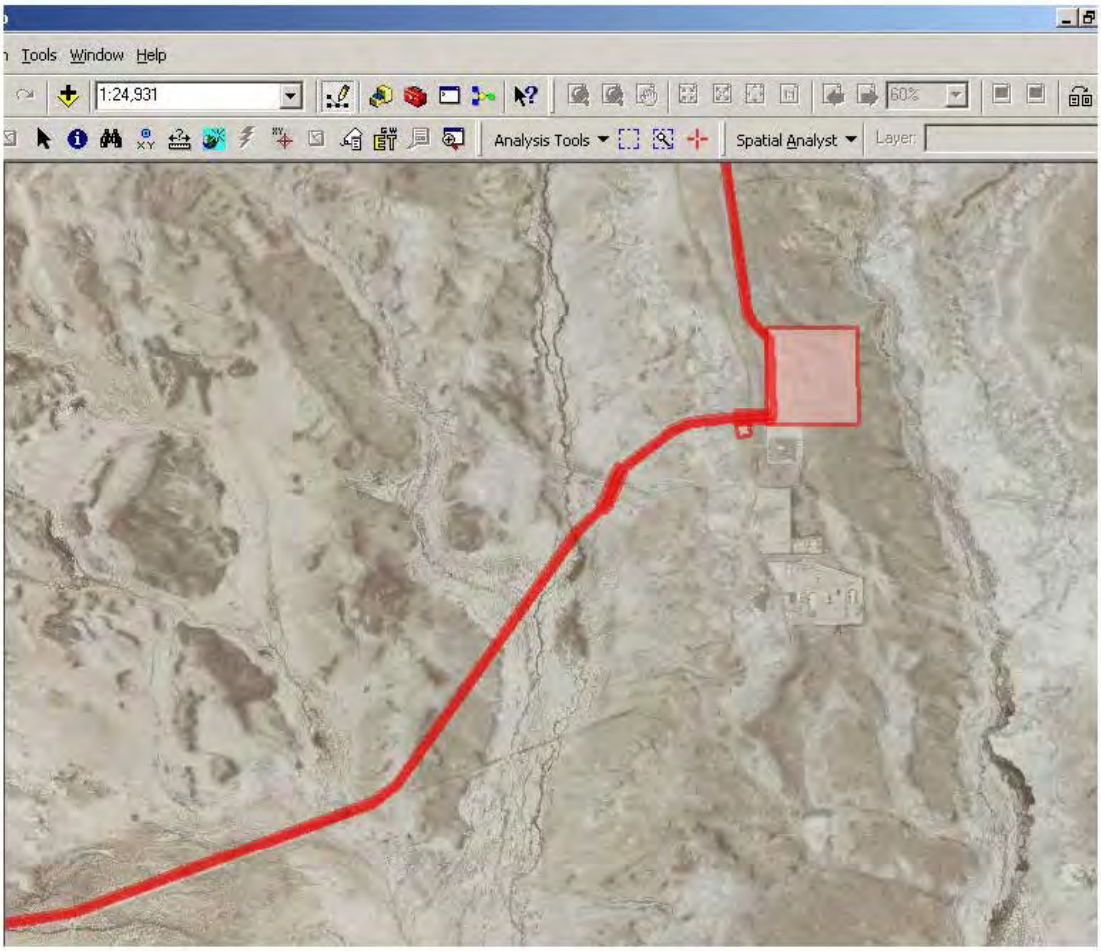
Mowing Vegetation Treatment:



DDCT Process Manual

Examples of Proposed Project Boundaries:

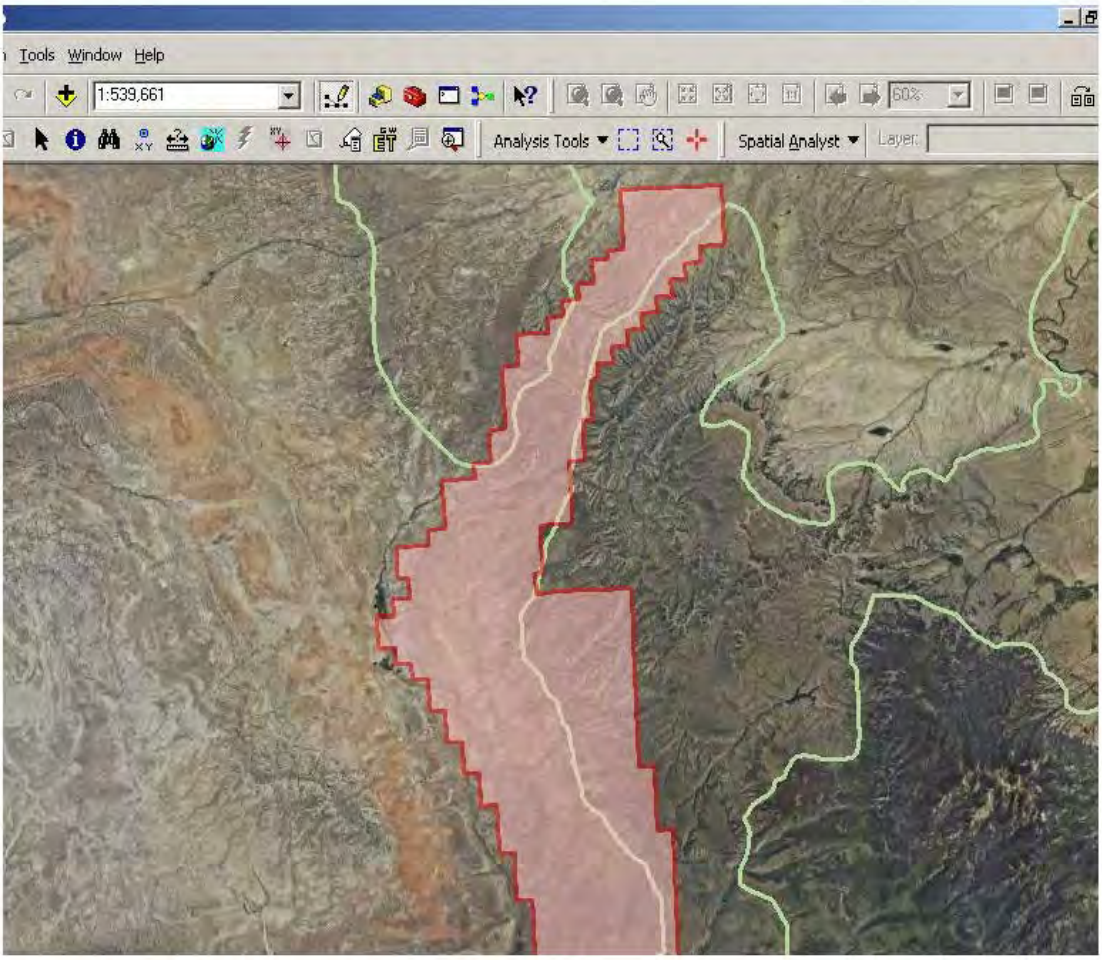
Pipeline Section:



DDCT Process Manual

Examples of Proposed Project Boundaries:

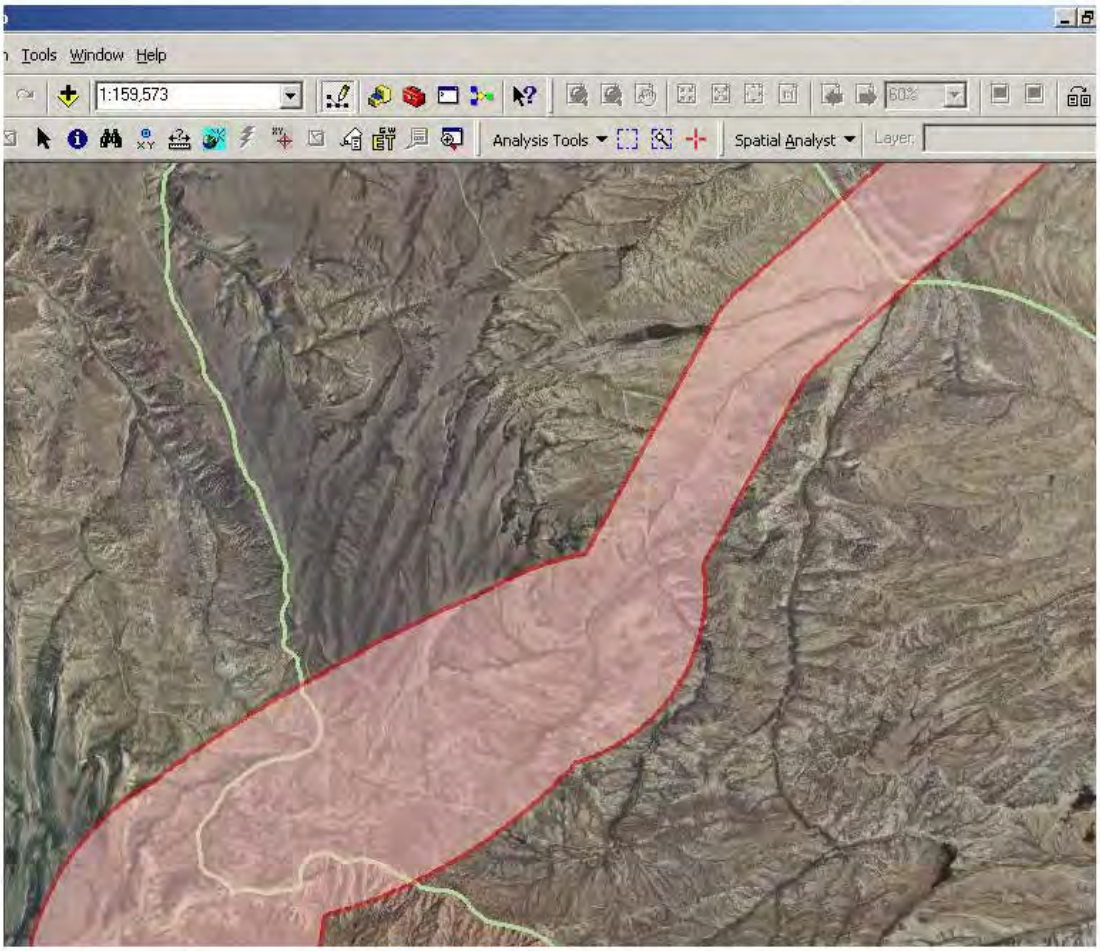
Oil and Gas Field:



DDCT Process Manual

Examples of Proposed Project Boundaries:

Transmission Line Scoping Polygon (if specific disturbance plan provided use that boundary):



DDCT Process Manual

Examples of Existing Disturbance: SurfDist geodatabase filled out attribute table:

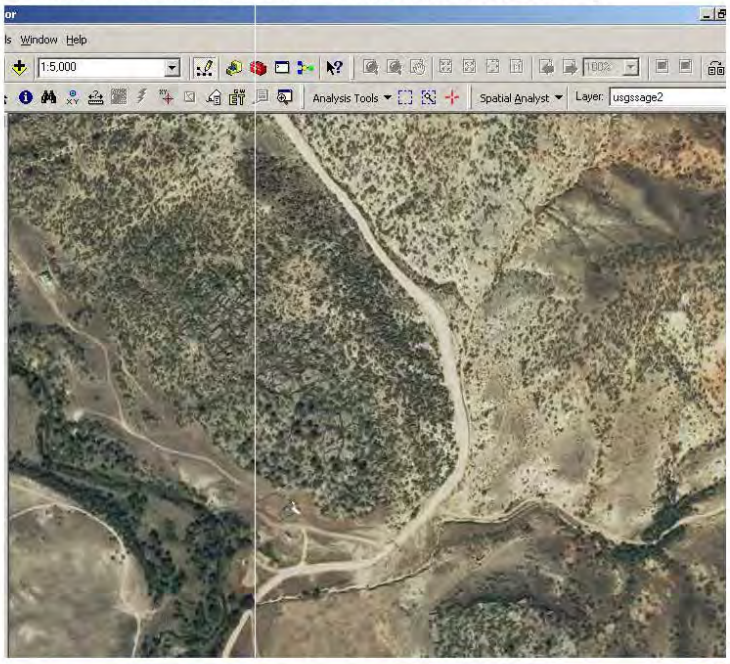
Attributes of SurfaceDist

OBJECTID *	SHAPE *	Id	Type	Reclaimed	Source	Date_Digit	Comments	Disrupt	Disturb	SHAPE_Length	SHAPE_Area
8	Polygon	0	10			<Null>		0	1	747.618465	1953.832885
1	Polygon	0	36			<Null>		1	1	99860.067474	8183692.294987
2	Polygon	0	11			<Null>		1	1	3936.958426	33374.136139
3	Polygon	0	11			<Null>		1	1	49743.634678	424858.061706
4	Polygon	0	20			<Null>		1	1	564.79964	19856.327856
5	Polygon	0	20			<Null>		1	1	1025.413337	65838.78945
6	Polygon	0	27			<Null>		1	1	2185.776963	108614.222484
7	Polygon	0	10			<Null>		1	1	3869.891612	12276.665741
9	Polygon	0	10			<Null>		1	1	1144.754759	2856.007436
10	Polygon	0	20			<Null>		1	1	27.660291	45.893457
11	Polygon	0	20			<Null>		1	1	22.795706	31.654771
12	Polygon	0	20			<Null>		1	1	27.526922	41.615376
13	Polygon	0	27			<Null>		1	1	725.737085	22666.138421
14	Polygon	0	27			<Null>		1	1	1028.926146	28453.439402
15	Polygon	0	27			<Null>		1	1	177.627156	1710.130345
16	Polygon	0	27			<Null>		1	1	596.699555	14667.933175
17	Polygon	0	27			<Null>		1	1	2996.441769	194995.735232
18	Polygon	0	27			<Null>		1	1	1559.028363	40446.57359
19	Polygon	0	27			<Null>		1	1	3281.158198	277376.039948
20	Polygon	0	10			<Null>		1	1	2708.42623	8891.481605
21	Polygon	0	10			<Null>		1	1	2299.12306	8346.938912
23	Polygon	0	10			<Null>		1	1	1398.638066	4132.167842
24	Polygon	0	27			<Null>		1	1	2018.829534	117668.390758
25	Polygon	0	10			<Null>		1	1	1263.520922	5308.11559
26	Polygon	0	27			<Null>		1	1	1157.260819	33367.345466
27	Polygon	0	27			<Null>		1	1	823.73695	30965.385098
28	Polygon	0	27			<Null>		1	1	2921.244548	162950.314061
29	Polygon	0	10			<Null>		1	1	934.712849	2345.276161
30	Polygon	0	20			<Null>		1	1	43.392568	116.835049
31	Polygon	0	20			<Null>		1	1	39.816611	95.576483
32	Polygon	0	20			<Null>		1	1	23.037121	32.339487
33	Polygon	0	10			<Null>		1	1	7960.455351	21557.754959
34	Polygon	0	10			<Null>		1	1	4915.59656	24942.614781
35	Polygon	0	10			<Null>		1	1	1110.869438	3671.50133
36	Polygon	0	10			<Null>		1	1	1486.805057	4999.87839
37	Polygon	0	20			<Null>		1	1	42.996247	114.681361
38	Polygon	0	20			<Null>		1	1	54.076848	174.27918
39	Polygon	0	20			<Null>		1	1	77.827705	351.559177
40	Polygon	0	20			<Null>		1	1	25.775756	40.567655
41	Polygon	0	10			<Null>		1	1	25000.162698	78632.142017
42	Polygon	0	20			<Null>		1	1	54.274612	182.683737
43	Polygon	0	10			<Null>		1	1	3212.876879	12635.36727
44	Polygon	0	26			<Null>		1	1	869.430227	16264.211978

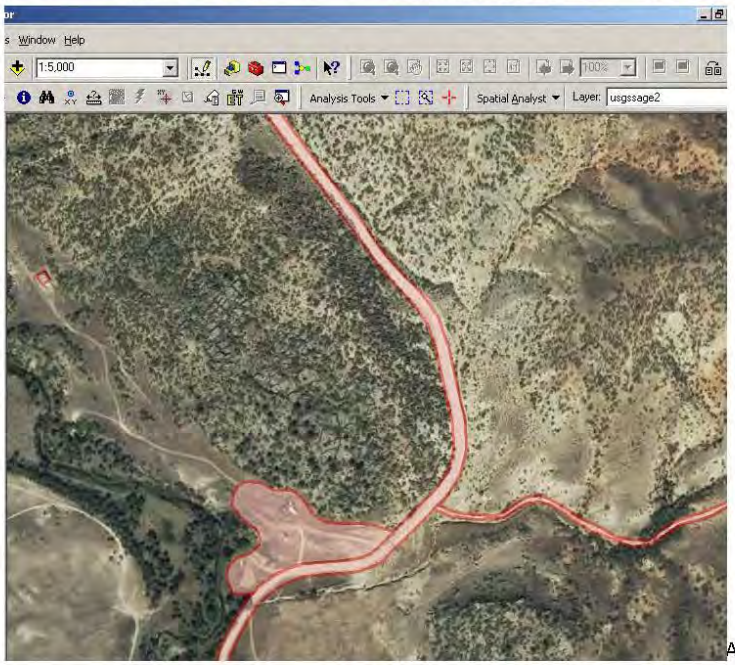
Record: 1 Show: All Selected Records (0 out of 52 Selected) Options

DDCT Process Manual

Examples of Existing Disturbance: Ranch, road, and building:



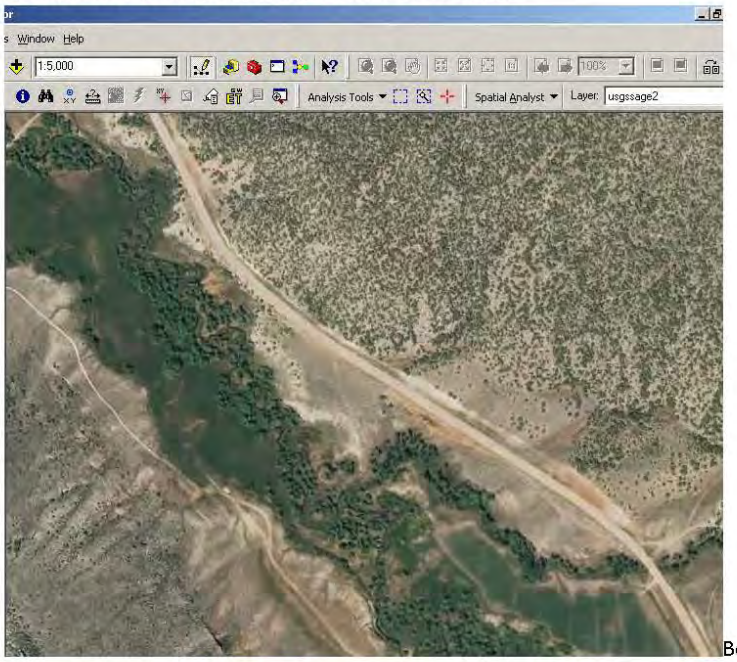
Before



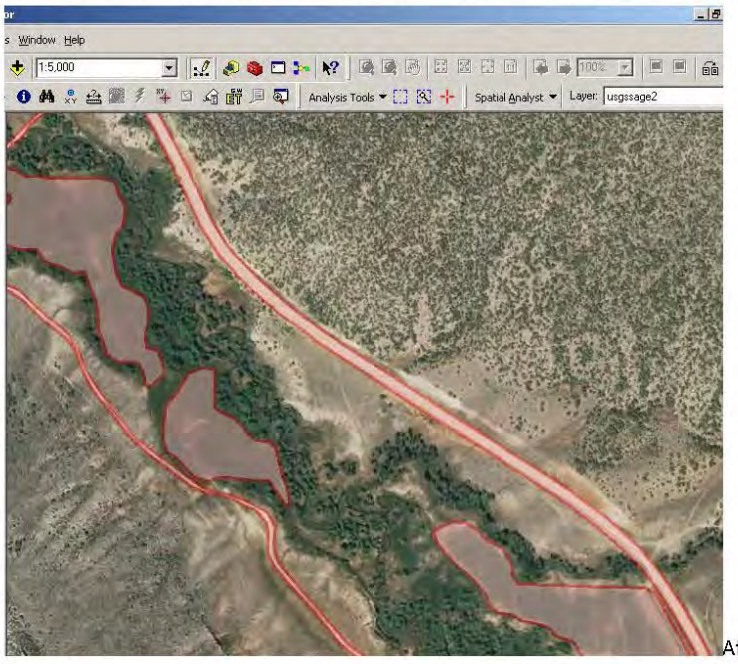
After

DDCT Process Manual

Examples of Existing Disturbance: Road and cropland:



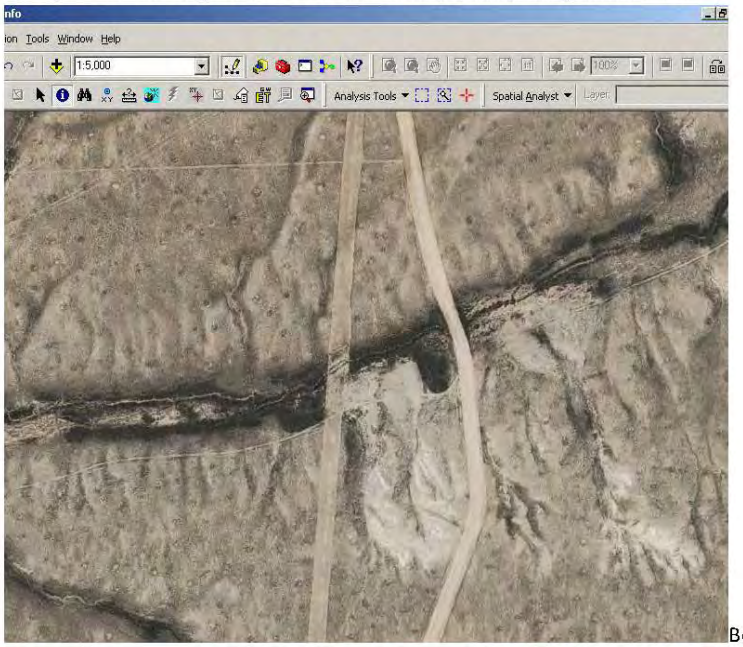
Before



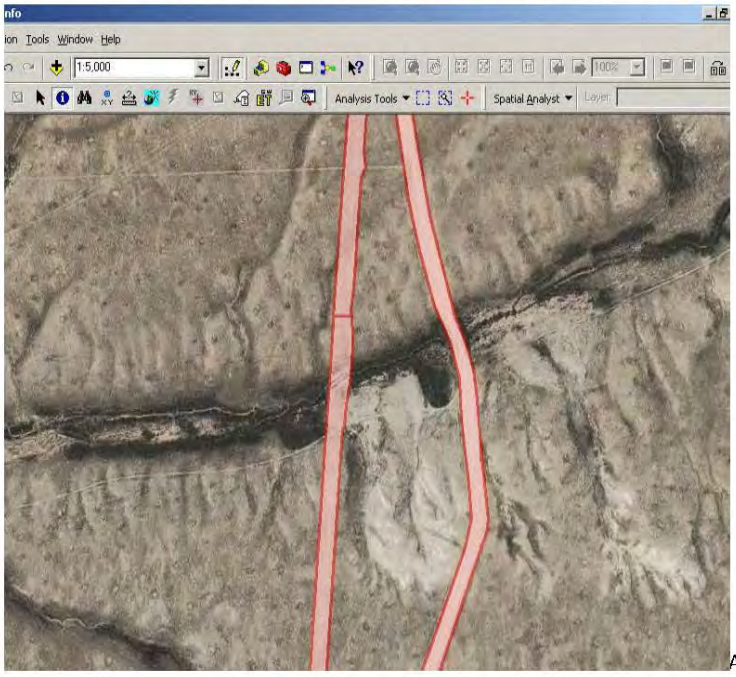
After

DDCT Process Manual

Examples of Existing Disturbance: Road and pipeline/utility corridor scar:



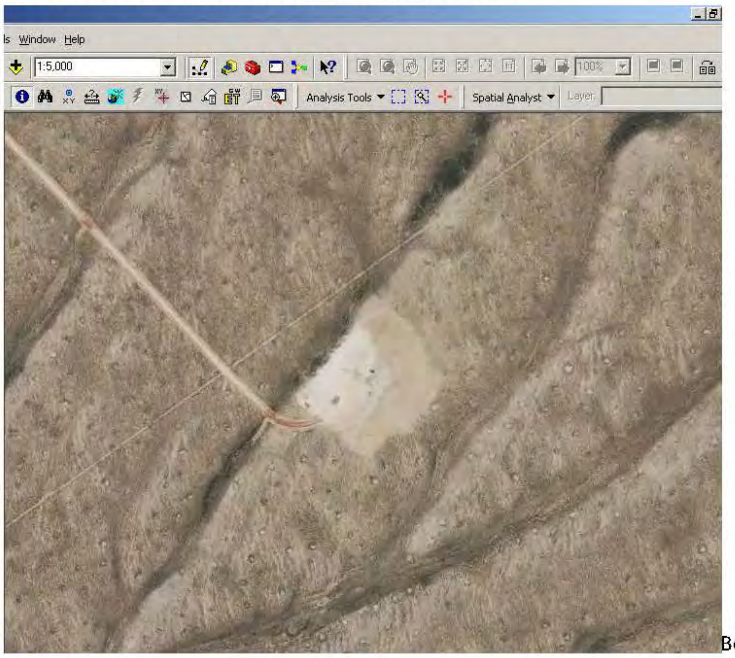
Before



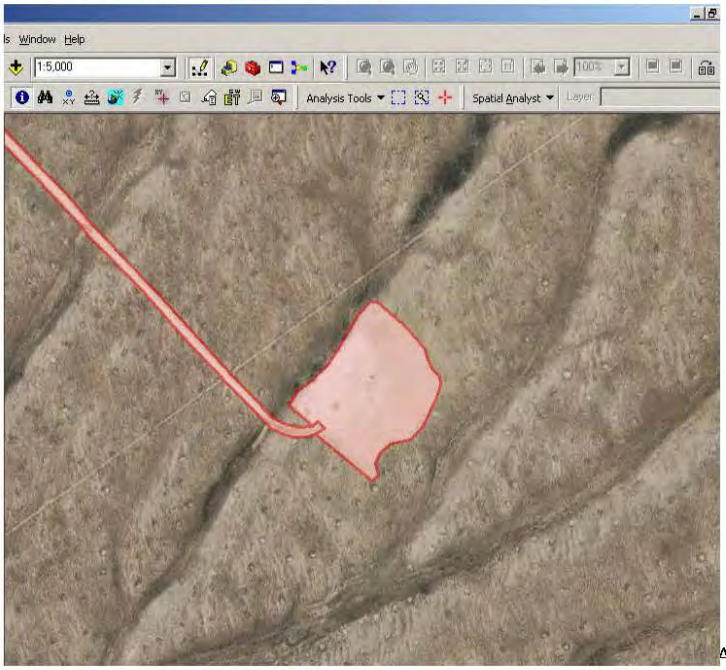
After

DDCT Process Manual

Examples of Existing Disturbance: Well pad and road:



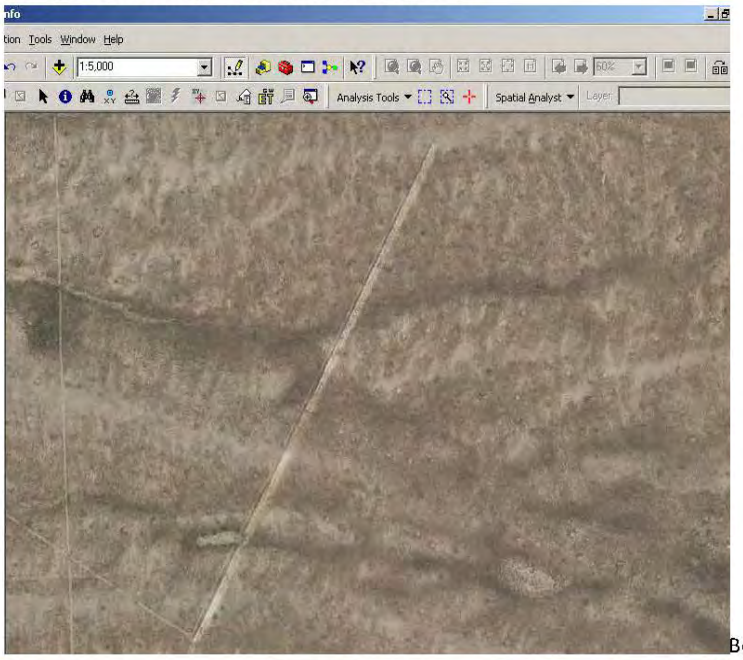
Before



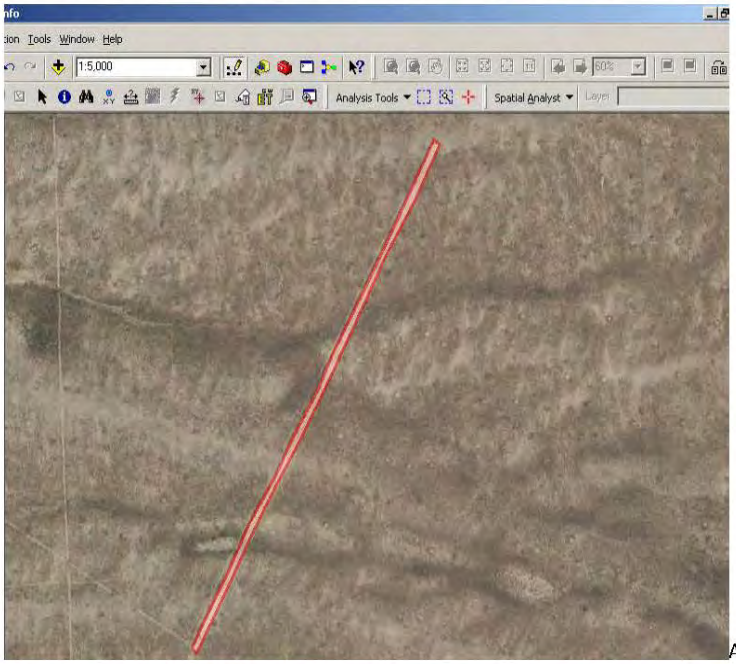
After

DDCT Process Manual

Examples of Existing Disturbance: Landing Strip:



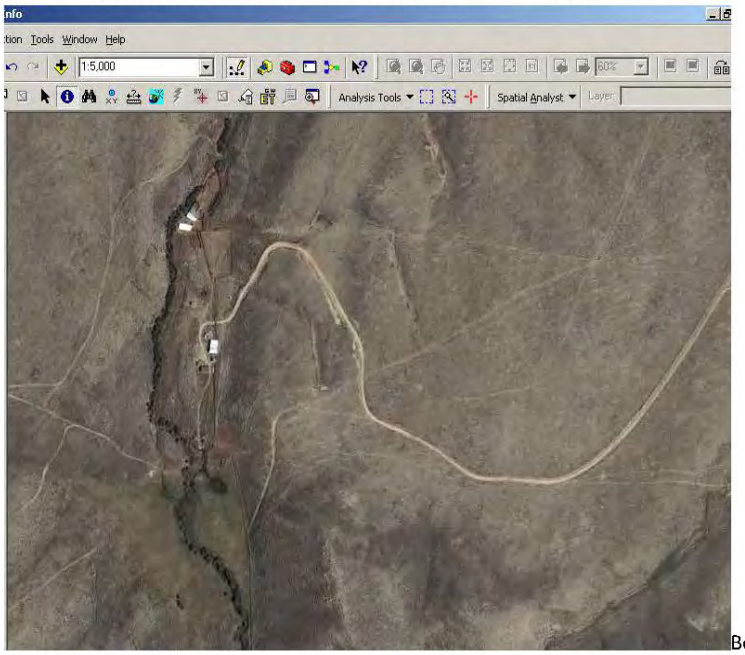
Before



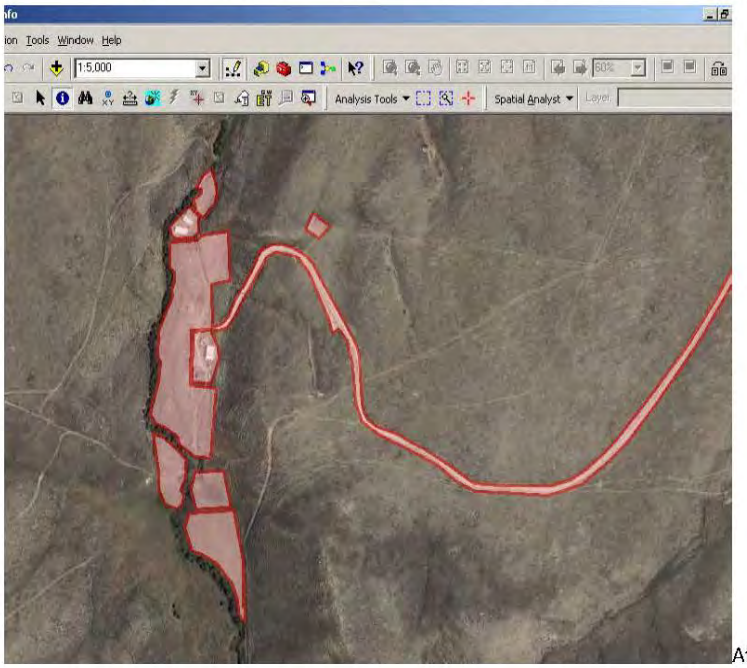
After

DDCT Process Manual

Examples of Existing Disturbance: Ranch and assorted disturbance:



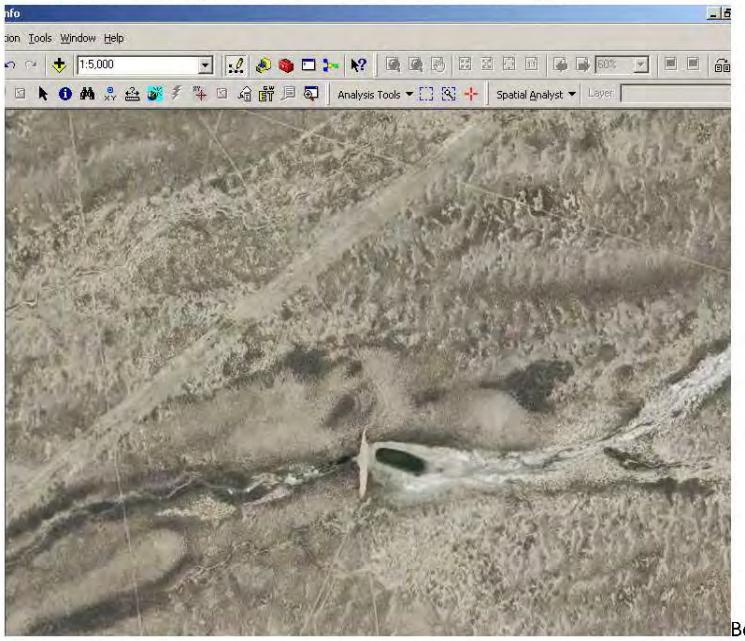
Before



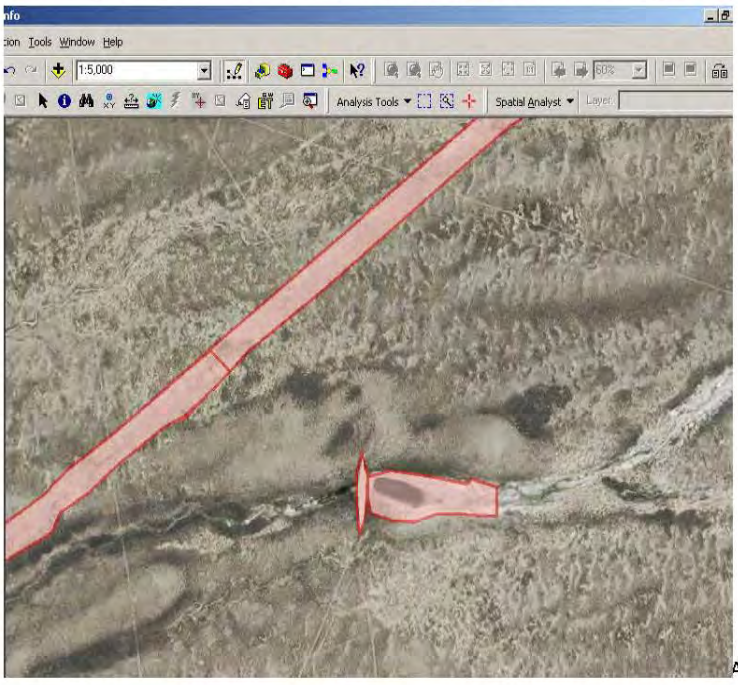
After

DDCT Process Manual

Examples of Existing Disturbance: Pipeline and watering hole:



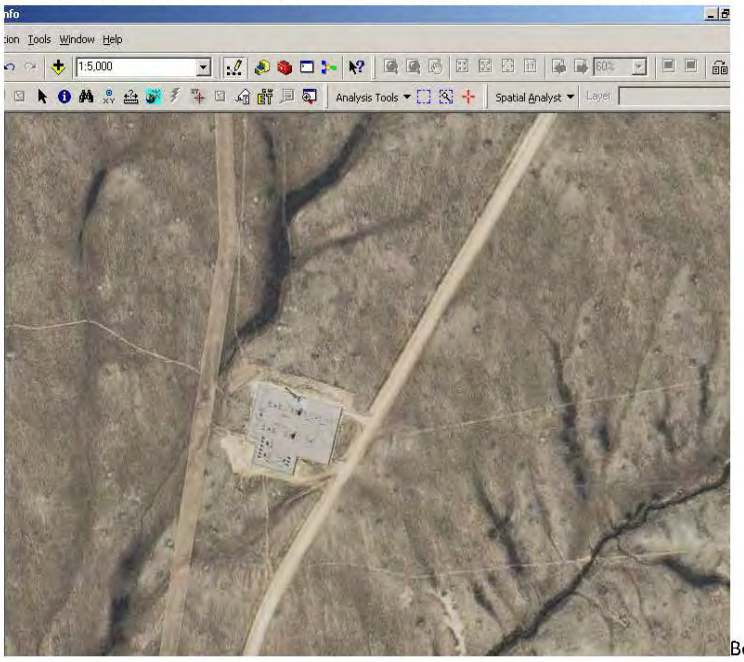
Before



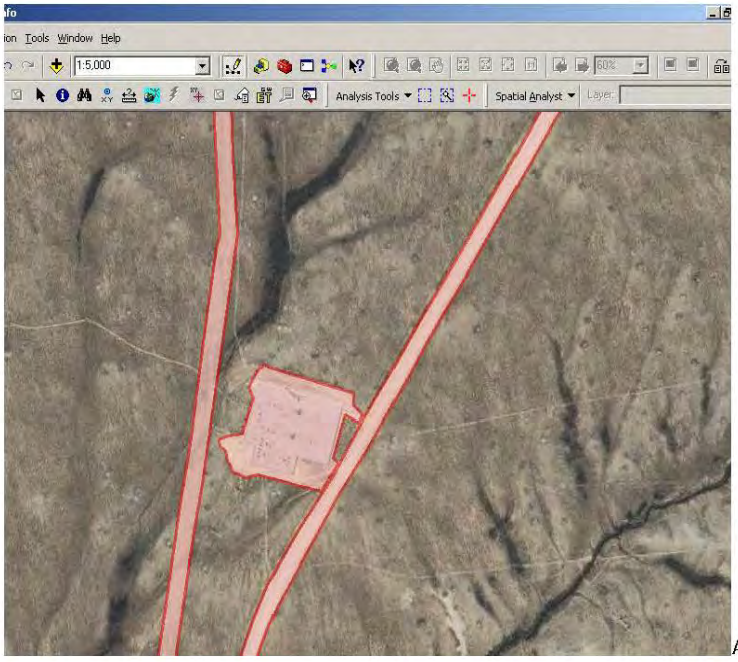
After

DDCT Process Manual

Examples of Existing Disturbance: Pipeline, road, and electrical infrastructure:



Before



After

Attachment 6

WYOMING GAME AND FISH DEPARTMENT PROTOCOLS FOR TREATING SAGEBRUSH TO BE CONSISTENT WITH WYOMING EXECUTIVE ORDER 2011-5; GREATER SAGE-GROUSE CORE AREA PROTECTION
(7/8/2011)

Sagebrush treatments have been implemented or proposed with the assumption of benefiting sage-grouse. Research, monitoring and anecdotal observations suggest that treatments can result in beneficial, benign or harmful impacts to sage-grouse habitat depending on many known and unknown factors.

These protocols are to be used to guide the development of Wyoming Game and Fish Department (WGFD) sponsored or supported sagebrush treatments. The purpose of these protocols is to provide a framework for WGFD projects to ensure that they are consistent with sage-grouse core area and non-core area stipulations. This framework will not answer all questions associated with treatments. It is assumed that these protocols may be revisited as new science becomes available. Communication with the WGFD Director's Office or sage-grouse coordinator will be necessary for many situations.

Core Area Treatments:

The following sagebrush treatment protocols are designed to ensure future habitat treatments conform to the provisions of Executive Order 2011-5, to conserve sage-grouse and prevent population declines in core habitat areas. Treatments that will NOT reduce sagebrush canopy cover to less than 15% are NOT subject to the Density/Disturbance Calculation Tool (DDCT) step prescribed below. However, such treatment proposals should still follow the other steps outlined in order to determine and document purpose and need, appropriately apply stipulations and monitor results. In northeast Wyoming core areas (Figure 1), treatments that will result in sagebrush canopy cover being reduced to less than 15% should not be conducted.

1. Determine and document the purpose and need for the treatment (adapted from Wyoming Interagency Vegetation Committee 2002):

    A. Evaluate the juxtaposition, extent, importance and value of the sagebrush patch in the landscape (is this the only patch of sagebrush in the landscape?).
    B. Identify the sagebrush species/subspecies/variety and assess the ecological site potential and treatment effects.
    C. Determine the associated vegetation composition and condition (e.g. composition of desirable and non-desirable species and their response to treatment) and their contribution to wildlife habitat.
    D. Assess site potential and resilience of the site to recover.
    E. Assess other existing site influences (e.g., current grazing use, presence of noxious/exotic plant infestations, cumulative impacts, etc.).
    F. Evaluate past management history of the site.
    G. Establish post-treatment vegetation management objectives tiered to the management plan for the site.

H. Create a baseline for short-term/long-term post-treatment monitoring of the site.

2. If there is justified purpose and need, then utilize the Density/Disturbance Calculation Tool (DDCT) outlined in Executive Order 2011-5 and conduct the prescribed analysis.
   A. If the cumulative disturbance, including the proposed treatment, is less than 5% of suitable sage-grouse habitat as defined in the Executive Order, the project may proceed.
      i. Recognize any treatment reducing sagebrush canopy cover to less than 15% will be considered disturbance for future disturbance calculations (adapted from Connelly et al. 2000a, Stiver et al. 2010).
      ii. A project plan must be developed that considers, evaluates and appropriately applies the following stipulations:
         1. No treatment should occur within 0.6-mile of any occupied lek that results in less than 15% sagebrush canopy cover unless:
            a. The proposed treatment is necessary to maintain the viability of the lek such as removing conifers or sagebrush encroaching on the lek site.
         2. Treatment implementation should not occur within 4-miles of any occupied lek from March 15 – June 30 (Wyoming Game and Fish Dept. 2010).
         3. Treatment implementation should not occur in designated and/or mapped sage-grouse winter concentration areas from November 15 – March 14 (Wyoming Game and Fish Dept. 2010).
         4. Avoid the use of fire to treat sagebrush in less than 12-inch precipitation zones (Beck et al 2009, Connelly et al 2000b, WAFWA, 2009).
         5. Control and monitor noxious and/or invasive vegetation post-treatment.
         6. Rest the treated area from grazing for two full growing seasons unless vegetation recovery dictates otherwise.

   B. If the cumulative disturbance, including the proposed treatment, within the DDCT boundary, is greater than 5% of the suitable sage-grouse habitat and the goal of the treatment is to reduce sagebrush canopy cover to less than 15%, the project shall NOT proceed except when:
      i. Acreage of treatment is reduced so cumulative disturbance does not exceed 5% of suitable habitat.
      ii. The treatment is configured such that all treated habitat is within 60 meters of sagebrush habitat (adapted from Danvir 2002, Slater 2003, Wyoming Game and Fish Department 2003, Dahlgren et al. 2006) with 10% or greater canopy cover (Connelly et al. 2000a) and no more than 20% of

suitable sage-grouse habitat in the DDCT boundary is treated in this manner (adapted from Connelly et al. 2000a).

3. Refer to the BLM/WAFWA Sage-grouse Habitat Assessment Framework (HAF) when conducting habitat evaluations to determine the need to treat sagebrush to enhance sage-grouse habitat and when devising standardized monitoring protocols to assess the effectiveness of treatments (Stiver et al. 2010).

4. In stands with less than 15% sagebrush cover pretreatment, any proposed treatment should be designed to maintain or improve sagebrush habitat (within the limits of the ecological site).

Non-Core Area Treatments:

As is the case with industrial development outside of Core Areas, there will be greater flexibility to conduct sagebrush treatments outside of Core Areas. There can be more emphasis placed upon the habitat needs of species other than sage-grouse.

1. Determine and document the purpose and need for the treatment (adapted from Wyoming Interagency Vegetation Committee 2002):

    A. Evaluate the juxtaposition, extent, importance and value of this sagebrush patch in the landscape (is this the only patch of sagebrush in the landscape?).
    B. Identify the sagebrush species/subspecies/variety and understand the ecology and treatment effects.
    C. Determine the associated vegetation composition and condition (e.g. composition of desirable and non-desirable species and their response to treatment) and their effects on wildlife habitat.
    D. Consider site potential and resilience of the site to recover.
    E. Assess the existence of other potential site influences (e.g., current grazing use, presence of noxious/exotic plant infestations, cumulative impacts, etc.).
    F. Evaluate past management history of the site.
    G. Establish post-treatment vegetation management objectives tiered to the future management plan.
    H. Create a baseline for short-term/long-term post-treatment monitoring of the site.

2. Conduct the treatment.

3. Rest the treated area from grazing for two full growing seasons unless vegetation recovery dictates otherwise.

4. Monitor post treatment habitat conditions and grazing/browsing by ungulates to determine success.

5. Monitor and control noxious and/or invasive vegetation post-treatment.

Protocol Exceptions:

Exceptions for treatments in Core Areas will be considered only if it can be demonstrated by previous research the activity will not cause declines in sage-grouse populations. The demonstration must be based on monitoring data collected and analyzed with accepted scientific based techniques.

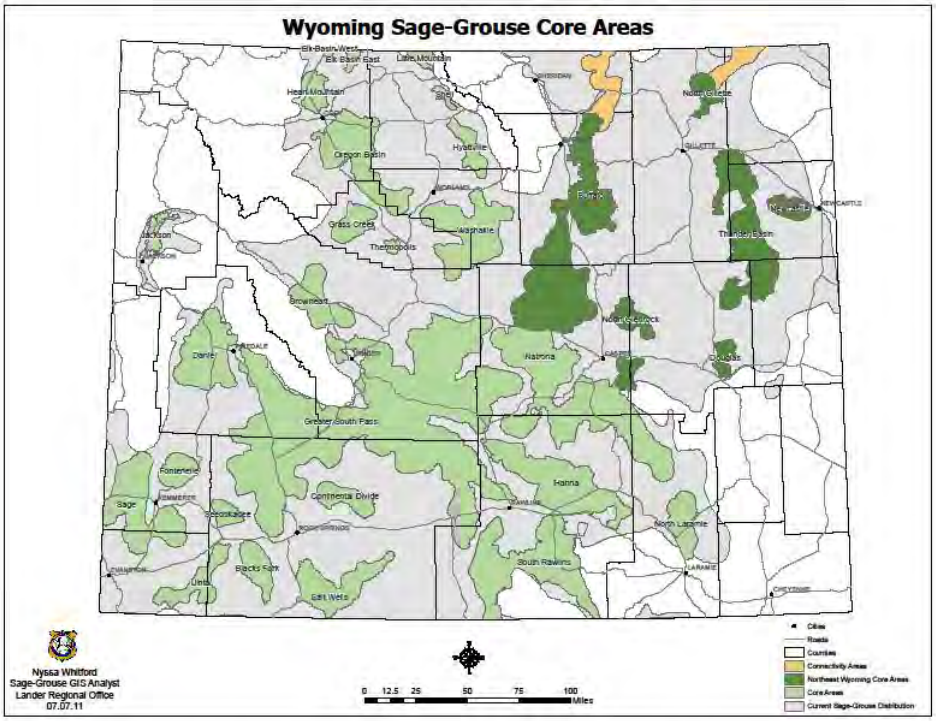


Figure 1. Wyoming sage-grouse core areas with northeast core areas differentiated.

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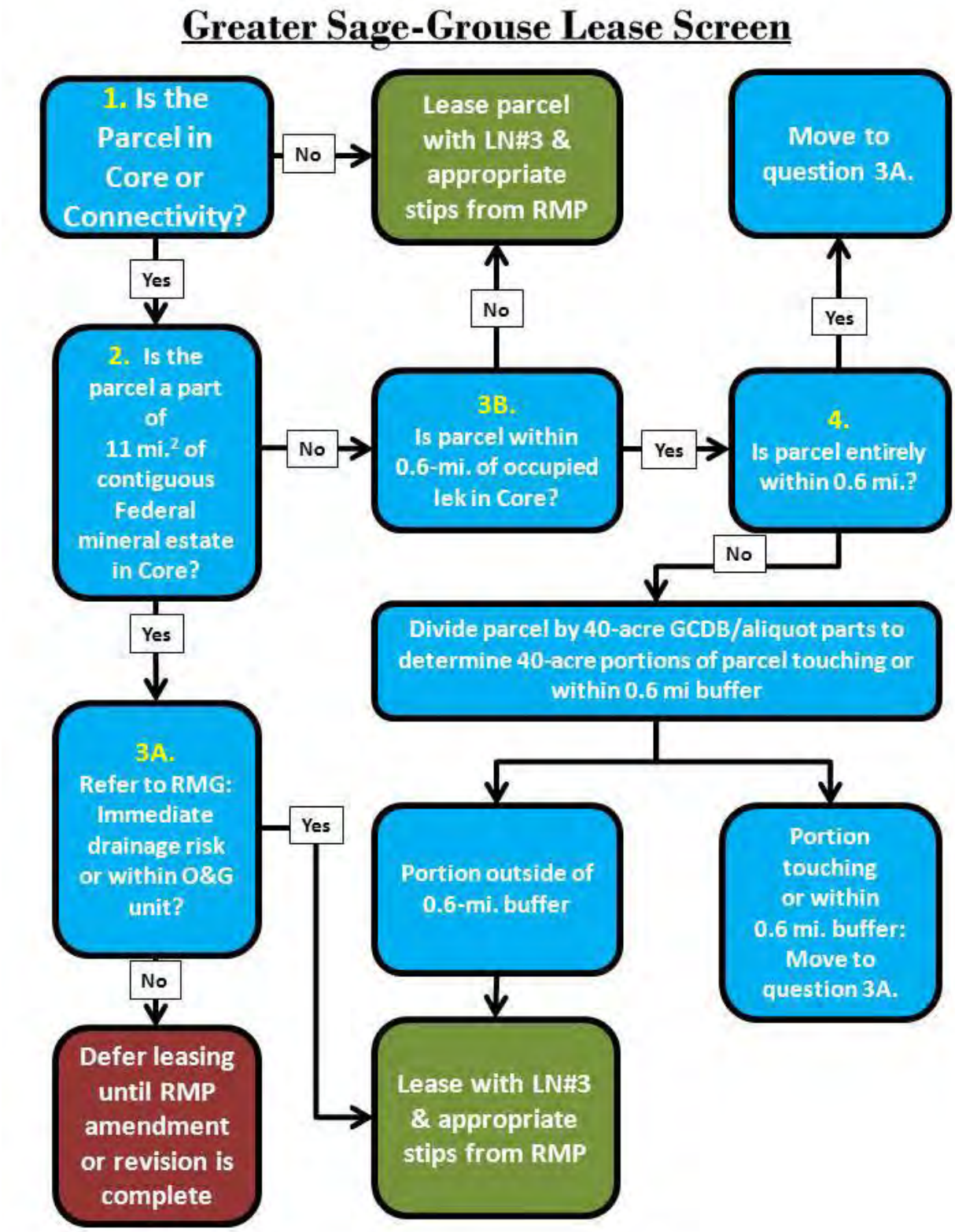
Attachment 7



ATTACHMENT 8 –

Management of Livestock Grazing in Sage-Grouse Habitats on Lands Administered by the Bureau of Land Management in Wyoming
January 25, 2012

This policy addresses the need for guidance on management of livestock grazing to achieve sage-grouse habitat objectives on lands administered by the Bureau of Land Management (BLM) in Wyoming. It provides a basic framework for using Ecological Site Descriptions (ESD) and their State-and-Transition (S&T) models to identify grazing practices that are compatible with those objectives. It also provides concepts for annual management of residual cover to maintain or promote desirable plant communities and sage-grouse habitats.

This policy was written using information in the publication, "Grazing Influence, Objective Development, and Management in Wyoming's Greater Sage-Grouse Habitat" (Cagney et al., 2010). It is very important to read and understand that document in its context in order to effectively implement this policy. The intent is for District and Field Offices to apply the concepts in that document but in a manner that accommodates for biotic and abiotic differences between planning areas. As a result, this policy was written to provide a basic and broad approach that can be further refined as needed at the field level.

Please be aware that the Bureau is near completion of the Interagency Ecological Site Handbook for Rangelands. Part of the handbook's purpose is to implement a standardized system to define and describe rangeland ecological sites that are more efficient and defensible. Some ESD terms and concepts used in this policy (e.g. community phases) were therefore taken from that draft handbook when applicable, instead of the Cagney et al. (2010) publication, to provide a more consistent approach within Bureau guidance.

Steps for Application of Ecological Site Descriptions

1. Assess availability of soil surveys, Ecological Site Descriptions (ESD), and State-and-Transition (S&T) model data for the planning area. If data is lacking, do not proceed further and work on mapping soils and/or developing ESDs and S&T models.

2. Identify the predominant ESDs within the planning area that have states within the S&T model that provide sage grouse Seasonal Habitat Components (i.e., Across the Landscape, Lekking, Nesting, Early Brood-Rearing, Late Brood Rearing, Fall, Winter, and/or Migration). Include less common ESDs only if they play a significant role for sage grouse habitat in the planning area.

3. Identify the current state and community phase if available in the S&T model of the selected ESDs and include the acreage it encompasses within the planning area.

4. Identify the Seasonal Habitat Component(s) that the current state and its community phase provide for sage-grouse and whether it meets the desired habitat objective(s).

5. If there are multiple Seasonal Habitat Components for a state and its community phase, identify the one or ones that will be the focus, around which to develop a grazing

management strategy. Assess the capability and potential to manage for those sage-grouse Seasonal Habitat Components.

6. Where a less than optimal state and community phase exists for sage grouse, identify the management approach that needed for a transition/restoration pathway to a more desirable state or community phase within that state.

7. In the S&T model identify transition(s), restoration pathway(s), and/or community pathway(s) under various grazing strategies, disturbances (e.g. fire), or other activities. Consider the timing, intensity, duration, frequency, and sequence of the grazing activity and how that impacts the identified states and/or community phases within each state. A description of both long- and short-term impacts should be included. Consider other affects as well (e.g., drought, insects, non-livestock grazing/browsing, plant disease, climate/weather, and etc.) that would affect the grazing strategies if they have not already been identified in the S&T model.

8. When designing grazing management strategies for multiple identified states and community phases in a planning area, prioritize those that are at risk of transitioning to an undesirable state/community phase for sage-grouse.

9. Cross-reference your sage-grouse habitat management objectives with your selected grazing strategy using the S&T model to predict whether the expected outcome will be desirable. The strategy must provide or accommodate a restoration/community pathway if the desired state/community pathway is not present.

10. If the restoration/community pathway cannot be attained through grazing management alone, select a strategy that will maintain the current state/community phase until the needed inputs are available to reinitiate site progression. Once site progression is reinitiated toward a desirable state/community phase (e.g. prescribed fire), the grazing strategy must work in harmony with the pathway. If not, the strategy should be changed, which may include resting the area until it is suitable for a grazing strategy to resume.

11. Follow-up by collecting monitoring information (e.g., livestock actual use, utilization, vegetation condition/trend, climate, and etc.) and conducting land health assessments to verify that sage-grouse habitat objectives are being met or whether a new grazing management strategy if needed.

Residual Cover Management Concepts

- "Grazing influence on sage-grouse habitat is a function of both long-term management to promote desirable plant communities and annual management of the standing crop to provide cover for sage-grouse habitat. With few exceptions, leaving adequate residual herbage will provide for both long- and short-term objectives (Cagney et al., 2010)."

- It is important that the grazing strategy allow plant growth requirements to be achieved for the desired plant community identified within a state and community phase. Long-term management for plant health includes proper timing (e.g. allowing for critical growth periods

and recovery from herbivory) and intensity (e.g. utilization, providing adequate litter/residual cover, and etc.). This should include giving consideration to duration, frequency, and sequence as well.

- Stock the pasture/allotment to achieve prescribed utilization goals, which must be applied to locations preferred by livestock. Do not include areas in the immediate vicinity to traditionally high concentration areas such as water troughs that would prevent a reasonable assessment of utilization.

- Identify riparian and upland plant growth seasons (see Figure 14, page 25 of Cagney et al., 2010) to assist in proper timing of grazing to meet plant growth requirements and plant community objectives. This will help provide the foundation for a sound grazing management strategy. Describe the timing, intensity, and the grazing strategy analysis for each plant growth season (i.e. Winter, Early, Critical Growing, and Late).

- Evaluate and manage for sufficient standing crop/residual cover to meet site specific sage-grouse habitat objectives (e.g. hiding cover, nesting, etc.) specific to that site in the planning area.

- Consider existing and/or proposed range improvement projects (e.g. fences, water troughs, etc.) and how it affects grazing patterns that directly or indirectly affect sage-grouse habitats. Examples include analyzing how the project would change the grazing intensity of an area or if it would fragment sage-grouse habitat. Consider if or how that impact could be mitigated (e.g. bird ladders, visibility markers for fences, and etc.).

- Work to address and prevent overuse areas by managing for good livestock distribution.

- Monitor, assess, and evaluate the grazing management strategy and whether objectives are being met. Monitoring would include vegetation trend/condition, actual use reports, utilization, and climate data.

<u>State and Transition Model Component Terms (Draft - Interagency Ecological Site Handbook for Rangelands, 2010, p. 17-18)</u>

State: A suite of plant community phases that interact with the environment to produce a characteristic composition of plant species, functional and structural groups, soil functions, and a characteristic range of variability. The state is defined with reference to plant community phases, dynamic soil properties, and animal populations that are linked to one another via feedback mechanisms. Alternative states differ in the operation of one or more *primary ecological processes* including the hydrologic (water) cycle, nutrient cycle, the process of energy capture and transformation (energy flow). Each state has distinct benefits and values depending upon the intended use, products, and ecosystem services desired from the site.

Transitions: Transitions describe the drivers and mechanisms of shifts between states. Transition is the trajectory of system change between states that will not cease before the establishment of a new state. A transition can be triggered by natural events (climatic events or fire), management actions (grazing, farming, burning, etc.) or both. Because alternative states are persistent and exhibit characteristic feedbacks and primary ecological processes, transitions may be irreversible, or at least

do not reverse themselves within management timeframes (i.e. several decades). The trajectories of change between states which alter ecological structure and function require intensive management practices to reverse. Transitions may also occur quickly as in the case of catastrophic events like fire or flood, or a hurricane event. Thus, in practical terms, changes that warrant the use of accelerating practices and restoration technologies to return to the previous state can be considered to be transitions.

Restoration pathways: Restoration pathways describe the environmental conditions and practices that are required to recover a state that has undergone a transition. Remediation is included in this definition. Environmental conditions, for example, may include relatively high rainfall years. Practices include significant management inputs (e.g., chemical/mechanical treatments or planting) coupled to facilitating and management practices (e.g., fencing and grazing management prescriptions).

Community phases: Community phases are unique assemblages of plants and associated dynamic soil property levels that can occur over time within a state. In states that attain equilibrium, community phases are equivalent to seral or successional stages that may undergo orderly changes in response to natural disturbance, management, and succession. In states that do not attain equilibrium, community phases may shift from one to the other in complex ways depending on the interactions of climate, natural disturbance, and management. Community phases included in a single state will typically have similar floristics or functional groups, but may differ in dominant or subordinate species.

Community pathways: Community pathways describe the causes of shifts between community phases. In contrast to alternative states, shifts in community phases are reversible due to succession, short-term climatic variation, and facilitating practices such as grazing management. Collectively, the community phases represent the range of variation within a state, including conditions that place the state at risk of a transition.

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ATTACHMENT 9 –
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