

Idaho and Southwestern Montana Greater Sage-Grouse

Draft

Land Use Plan Amendment and
Environmental Impact Statement

Volume III



Forest Service

BLM

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Volume Three

APPENDICES

- A Custer and Owyhee County Plan Evaluation
- B Reasonably Foreseeable Development Scenario for Greater Sage-Grouse Habitat in Idaho and Southwest Montana Sub-Region
- C Greater Sage-Grouse Habitat Required Design Features and Best Management Practices
- D State of Idaho Governor's Alternative
- E Greater Sage-Grouse Draft Monitoring Framework Plan
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- H BLM Areas of Critical Environmental Concern Evaluation and Forest Service Zoological Areas
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- O List of Wildlife Species within the BLM Dillon Field Office, Montana
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- Q Detailed Employment and Earnings Data
- R Economic Impact Analysis Methodology
- S Non-Market Valuation Methods

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Appendix A

Custer and Owyhee County Plan Evaluation



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OCWG Sage-Grouse Management Plan BLM RMP/MFP Consistency Review – J.Beck – 4/25/2013

Owyhee County Sage-Grouse Management Plan Direction	Owyhee RMP Direction	Owyhee RMP Compliance	Bruneau MFP Direction	Bruneau MFP Compliance	Jarbidge RMP Direction	Jarbidge RMP Compliance	Inclusion in Amendment EIS
Summary of the direction of the Owyhee County Sage-Grouse Management Plan							
Management actions described in the Owyhee County Plan are largely consistent with the existing Bruneau, Jarbidge and Owyhee RMP management direction, with some minor exceptions regarding seeded species, and could be implemented in conformance with those RMPs.							
SAGE-GROUSE HABITAT INVENTORY ACTION PLAN							
A. Map locations of all known active and historical sage-grouse leks in Owyhee County by the end of 2001.	SPSS1. MA 9. Identify, protect and enhance key sage grouse habitats and populations. Guidance for enhancement and protection is addressed in the Memorandum of Agreement in the 1997 Idaho Sage Grouse Management Plan (March 1998). Subsequent guidance may become available through development of plans by local sage grouse working groups or similar efforts.	Yes	Silent	Yes	Silent	Yes	Each action alternative within the LUPA describes a mapping convention for GRSG habitat which is based on lek locations. IDFG maintains information regarding lek locations and population monitoring which is described and utilized in the adaptive management strategies described in Alternatives D & E.
B. Identify and map sage-grouse breeding (nesting and early brood) habitat associated with active leks by the end of 2004	SPSS1. MA 9. Identify, protect and enhance key sage grouse habitats and populations. Guidance for enhancement and protection is addressed in the Memorandum of Agreement in the 1997 Idaho Sage Grouse Management Plan (March 1998). Subsequent guidance may become available through development of plans by local sage grouse working groups or similar efforts.	Yes	Silent	Yes	Silent	Yes	See above. The adaptive management strategy in Alternative E utilizes IDFG information with regard to nesting and brood-rearing habitat.
C. Identify and map known sage-grouse wintering habitat by the end of 2001.	SPSS1. MA 9. Identify, protect and enhance key sage grouse habitats and populations. Guidance for enhancement and protection is addressed in the Memorandum of Agreement in the 1997 Idaho Sage Grouse Management Plan	Yes	Silent	Yes	Silent	Yes	IDFG also maintains mapping of winter habitat that has been utilized in developing the GRSG mapping designations in the LUPA.

Owyhee County Sage-Grouse Management Plan Direction	Owyhee RMP Direction	Owyhee RMP Compliance	Bruneau MFP Direction	Bruneau MFP Compliance	Jarbridge RMP Direction	Jarbridge RMP Compliance	Inclusion in Amendment EIS
	(March 1998). Subsequent guidance may become available through development of plans by local sage grouse working groups or similar efforts.						
D. Perform a qualitative assessment of the sage-grouse breeding (nesting and early brood) habitat associated with active leks.	Silent	Yes	Silent	Yes	Silent	Yes	This is not specifically addressed within the sub regional LUPA and would be more appropriate at the site specific scale.
E. Map undesirable disturbance and habitat.	Silent	Yes	Silent	Yes	Silent	Yes	As part of the evaluation for the LUPA, USGS and BLM mapped and quantified regional impacts and disturbances to GRSG that has been included in the evaluation. This report is USGS Open-file Report 2013-1098: Summary of Science, Activities, Programs, and Policies that influence the rangewide conservation of Greater Sage-grouse.
SAGE-GROUSE HABITAT IMPROVEMENT ACTION PLAN							
A. Grazing Management. <i>Sage-grouse habitat condition will be assessed through quantitative assessments conducted in accordance with the SAGE-GROUSE HABITAT INVENTORY ACTION PLAN (Paragraph D) on state and private land. Sage-grouse habitat conditions on lands managed by the Bureau of Land Management will be assessed through the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management. Standard 8 addresses threatened and endangered plants and animals and sensitive animals including sage-grouse. If the assessment concludes, relative to sage-grouse, that the standard is not being met due to livestock grazing, the Local Working Group will establish an interdisciplinary review (ID) team at the request of an affected party. The ID team will normally consist of a wildlife biologist, range scientist, livestock management specialist, livestock operator(s) and other affected interests who wish to participate. The ID team structure may be modified by agreement of the affected interests if specific participants are not reasonably available. Upon review of all quantitative data and other available information and following a site visit, the ID team will make grazing management recommendations to the Local Working Group. This team will consider both</i>	VEGE1. MA 7. Implement grazing practices designed to meet Idaho Standards for Rangeland Health and conform to the Guidelines for Livestock Grazing Management (See Appendix L V ST-1).	Yes	Silent	Yes	<u>Livestock Grazing Management Objectives:</u> The overall objective of the range program is to maintain or improve the soil, vegetation and watershed conditions within the resource area and to provide forage for livestock, wildlife, and wild horses. <u>Wildlife Management Objectives:</u> Wildlife habitat will be managed to maintain or increase wildlife numbers over the long term, and the total acres of unsatisfactory crucial habitat will be reduced over the long term. <i>Management Unit Area 13 (East Devil) Objectives</i> Maintain present areas of sage-	Yes	Alternatives A, B, D, E & F would address grazing through application of the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management for lands in Idaho. Alternative B, D, E & F also include specific GRSG management objectives for vegetation and livestock that would be considered and included within the evaluations. Alternative E also includes adjustments to livestock grazing as a result of adaptive management triggers when grazing is determined to be a causal factor.

Owyhee County Sage-Grouse Management Plan Direction	Owyhee RMP Direction	Owyhee RMP Compliance	Bruneau MFP Direction	Bruneau MFP Compliance	Jarbridge RMP Direction	Jarbridge RMP Compliance	Inclusion in Amendment EIS
<i>short and long-term benefits to sage-grouse and impact on other potentially affected species. The team may recommend additional sage-grouse habitat improvement actions based on quantitative assessments and other pertinent data. All grazing management recommendations will be developed on a site-specific basis with full consultation, cooperation and coordination with all affected landowners, management agency(s), permittee(s), lessee(s) and other affected interests. (Lead: Appropriate land management agency or private landowner). (Initiated in 1999 and Ongoing)</i>					<p>grouse habitat.</p> <p><u>Range Resources Management Guidelines:</u></p> <p>Data from the range inventory, actual grazing use studies, forage utilization studies, long-term trend studies (when available) and the evaluation of wildlife needs will be used to arrive at the adjusted stocking levels.</p> <p><u>Terrestrial Wildlife Resources Management Guidelines:</u></p> <p>Forage/cover requirements will be incorporated into allotment management plans and will be specific to areas of primary wildlife use.</p> <p>Manage all wildlife habitat within the resource area to provide a diversity of vegetation and habitats.</p> <p><u>Sage-grouse Resource Management Guidelines:</u></p> <p>Maintain the density of sagebrush canopy coverage at 20 – 30% within nesting habitats and at least 20% in wintering habitats.</p>		
B. Develop maps that identify sage-grouse habitat for high priority protection from wildfire.	SPSS1. MA 3. Protect and enhance habitat for a diversity of special status species through implementation of management actions identified in objectives SOIL 1 and 2, WATR 1 and 2, VEGE 1, RIPN 1, FORS 1 and 2,	Yes	Silent	Yes	<p><u>Fire Control Management:</u></p> <p>Full suppression on wild fires will be applied to the entire resource area.</p> <p><u>Appendix F – Fire Management:</u></p> <p>Full suppression is aggressive</p>	Yes	Each of the action alternatives identifies areas of highest priority for suppression activities to protect GRSG habitat.

Owyhee County Sage-Grouse Management Plan Direction	Owyhee RMP Direction	Owyhee RMP Compliance	Bruneau MFP Direction	Bruneau MFP Compliance	Jarbidge RMP Direction	Jarbidge RMP Compliance	Inclusion in Amendment EIS
	<p>WDLF 1, FISH 1 and 2, RECT 3, WNES 1 and 2, HAZM 1 and ACEC 1.</p> <p>SPSS1. MA 9. Identify, protect and enhance key sage grouse habitats and populations. Guidance for enhancement and protection is addressed in the Memorandum of Agreement in the 1997 Idaho Sage Grouse Management Plan (March 1998). Subsequent guidance may become available through development of plans by local sage grouse working groups or similar efforts.</p>				<p>action taken on all fires which are on or are threatening public land with sufficient forces to contain the fire during the first burning period. When multiple fires are experienced, suppression priority is given to fires threatening areas of highest value.</p> <p><i>Multiple Use Area 10 – Inside Desert and West Devil Suppression Priority:</i></p> <ol style="list-style-type: none"> 1) Private lands and structures. 2) Post Office Historical and Cultural Site. 3) Wildlife Habitat. 4) WSA boundary <p><i>Multiple Use Area 13 – East Devil Suppression Priority:</i></p> <ol style="list-style-type: none"> 1) Private Property. 2) Salmon Falls Creek Canyon 3) Crucial wildlife habitat and riparian areas. 4) Recreational Facilities <p><i>Multiple Use Areas 15 and 16 – Jarbidge Foothills and Diamond A Suppression Priorities:</i></p> <ol style="list-style-type: none"> 1) Private lands and structures. 2) Crucial wildlife habitat and riparian areas. 3) Bruneau and Jarbidge River Canyons. 4) Recreational sites. 		
<p>C. Fire Rehabilitation. <i>The sites of all future wildfires in high priority sage-grouse habitat identified in Section C will, regardless of potential for natural recovery, be reseeded with sagebrush and, when needed, grasses and forbs best adapted to the site to hasten</i></p>	<p>Objective FIRE 2: Decrease soil erosion and sediment yield, restore forage values, and restore upland habitat values and riparian values</p>	<p>No. BLM decides seed mix based on ESR plan objectives</p>	<p>Silent</p>	<p>No. Violates BLM policy</p>	<p><u>Sage-grouse Resource Management Guidelines:</u></p> <p>Seed mixtures for range improvement projects and fire</p>	<p>No – although not specifically addressed in the Jarbidge RMP, the requirement</p>	<p>Alternatives CB, C, D E & F all encourage the use of natives species during rehabilitation and restoration activities. Alternatives C & F would require the use of natives, including</p>

Owyhee County Sage-Grouse Management Plan Direction	Owyhee RMP Direction	Owyhee RMP Compliance	Bruneau MFP Direction	Bruneau MFP Compliance	Jarbridge RMP Direction	Jarbridge RMP Compliance	Inclusion in Amendment EIS
<p>recovery of the habitat. (<u>Lead: Appropriate land management agency or private landowner</u>). (The action has been carried out since 2000 and is ongoing).</p>	<p>using fire rehabilitation procedures following a wildfire.</p> <p>Fire 2, MA 3. Apply rehabilitation seed mixtures to meet watershed, wildlife and riparian objectives.</p>	<p>and vegetative community prior to the fire. Often we choose to do nothing based on the potential for natural recovery.</p>			<p>rehabilitation projects will include a mixture of grasses, forbs and shrubs that benefit sage-grouse.</p> <p><u>Fire Management Resource Guidelines:</u></p> <p>Seedings will include appropriate seed mixtures to replace wildlife habitat that is burned.</p> <p><u>Appendix F – Fire Management:</u></p> <p><i>Multiple Use Areas 6 and 7 – Saylor Creek West/Saylor Creek East</i></p> <p>Seed mix should contain shrub component to benefit wildlife and improve vegetative community.</p> <p><i>Multiple Use Area 10 – Bruneau-Jarbridge-Sheep Creek</i></p> <p>Burned areas should be allowed to revegetate to native grasses. If seeding is necessary, the mix should be native species if possible, and should improve wildlife habitat. Burned areas are not rehabilitated in limited suppression areas.</p> <p><i>Multiple Use Areas 11 and 12 – Inside Desert/ West Devil</i></p> <p>Rehabilitation efforts will meet wildlife management objectives, in addition to providing forage for livestock and providing ground cover.</p> <p><i>Multiple Use Area 13 – East Devil</i></p>	<p>to plant sagebrush in known winter habitat is not in compliance with BLM ESR policy. The decision to allow natural recovery of burned areas is based on factors such as burn severity, seed availability, pre-burn vegetation and conditions, and is made following a wildfire.</p>	<p>sagebrush.</p>

Owyhee County Sage-Grouse Management Plan Direction	Owyhee RMP Direction	Owyhee RMP Compliance	Bruneau MFP Direction	Bruneau MFP Compliance	Jarbridge RMP Direction	Jarbridge RMP Compliance	Inclusion in Amendment EIS
					<p>Rehabilitation of burned areas will meet wildlife, as well as other resource management objectives.</p> <p><i>Multiple Use Areas 15 and 16 – Jarbridge Foothills and Diamond A</i></p> <p>In the crucial wildlife winter ranges, use seed mixtures which benefit wildlife as well as livestock.</p>		
<p>D. Sagebrush Restoration. Implement sagebrush restoration <i>projects in historical sage-grouse habitat where historical fires have removed sagebrush cover. A minimum of 1,000 acres of combined federal, state, and private lands shall be targeted for restoration annually with seed mixtures that are best for sage-grouse and adapted to the site. (Lead: Appropriate land management agency or private landowner)</i></p>	<p>SSPS 1. MA 9. Identify, protect and enhance key sage grouse habitats and populations. Guidance for enhancement and protection is addressed in the Memorandum of Agreement in the 1997 Idaho Sage Grouse Management Plan (March 1998). Subsequent guidance may become available through development of plans by local sage grouse working groups or similar efforts.</p> <p>VEGE 1. MA 3. Implement prescribed burning practices in areas where it is determined that burning would improve rangeland health and increase native plant biodiversity in western juniper and big sagebrush vegetation types. Mechanical and chemical methods may also be used.</p>	Yes	<p>Objective RM-2: Over the next 15 years, treat 85,600 acres of suitable public land to increase forage production and reduce the acreage of range in poor condition.</p> <p>Objective WL-1: Protect and/or improve endangered species habitat within the Bruneau Planning Unit.</p> <p>Objective WL-2: Manage sensitive species habitat in the BPU to maintain or increase existing and potential populations.</p> <p>WL-4.4 Manage 520,000 acres of sage grouse range in the BPU to improve nesting, brood rearing, and winter habitats by: (1) improving all poor and fair big sagebrush, meadow, and riparian ecological sites to good ecological condition, and (2) referring to and addressing the "Guidelines for Habitat Protection in Sage Grouse Range" as published by the Western States Sage Grouse Committee, June 1974, when making management decisions affecting areas used by sage grouse in the BPU.</p>	Yes	<p><u>Management Prescriptions:</u></p> <p><i>Multiple Use Area 6 – West Saylor Creek</i></p> <p>Rehabilitate 150 acres of existing burns for terrestrial wildlife.</p> <p><i>Multiple Use Area 11 – Inside Desert</i></p> <p>Interseed or reseed 500 acres and rehabilitate 2000 acres of existing burns for terrestrial wildlife.</p> <p><i>Multiple Use Area 12 – West Devil</i></p> <p>Interseed or reseed 500 acres and rehabilitat 2,500 acres of existing burns for terrestrial wildlife.</p> <p><i>Multiple Use Area 13 – East Devil</i></p> <p>Interseed or reseed 1000 acres and rehabilitate 150 acres of existing burns for terrestrial wildlife.</p> <p><i>Multiple Use Area 15 – Jarbridge</i></p>	Yes	Restoration and rehabilitation of GRSG habitat is addressed and promoted in Alternatives B, C, D, E & F; however, in Alternative C restoration actives would be primarily passive recovery.

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					<p><i>Footbills</i></p> <p>Interseed or reseed 3,750 acres for terrestrial wildlife.</p> <p><i>Multiple Use Area 16 – Diamond A</i></p> <p>Rehabilitate 1,350 acres of existing burns for terrestrial wildlife.</p> <p><u>Range Resources Management Guidelines:</u></p> <p>Interseeding and reseeded projects in Multiple Use Areas with objectives to improve ecological condition to benefit wildlife or livestock will use shrub, forb and grass seed moisture that are normally found in that type of ecological zone///type.</p> <p>Priority #4 for vegetative treatment is areas where unacceptable wildlife habitat condition exists (appropriate seed mixtures for wildlife will be used).</p> <p><u>Terrestrial Wildlife Resources Management Guidelines:</u></p> <p>Vegetative manipulation projects will be designed to minimize impacts and improve wildlife habitat by including a variety of palatable shrubs, forbs and grass.</p> <p><u>Sage-grouse Resource Management Guidelines:</u></p> <p>Seed mixtures for range</p>		

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					improvement projects and fire rehabilitation projects will include a mixture of grasses, forbs and shrubs that benefit sage-grouse.		
E. Juniper Encroachment. <i>Using the maps created by the Habitat Inventory Action Plan, identify existing and potential loss of sage-grouse habitat due to juniper encroachment. The areas of greatest benefit to sage-grouse will be prioritized so that juniper control activities can be scheduled. Suitable methods of juniper eradication such as prescribed burning, chemical control, woodland harvest, chaining, and other mechanical means should be evaluated and employed where appropriate. Treat and eradicate juniper on a minimum of 500 acres of state land (IDL Plan) and 12,000 acres of federal land (Owyhee RMP) annually to enhance sage-grouse habitat by restoring healthy sagebrush-grassland communities. (Lead: Appropriate land management agency/ authority).</i>	RIPN 1. MA 5. Implement a juniper abatement plan for appropriate sites on which juniper is invading. SOIL 1. MA6. Implement a juniper abatement plan for appropriate sites on which juniper is invading.	Yes	Silent	Yes	Silent	Yes	Alternatives A, B, D, E & F all identify conifer encroachment and the need to remove, to varying levels, conifers from GRSG habitat. Alternative C does not support the removal of junipers.
F. Juniper Treatment on Private Land. <i>Funding will be identified to develop a 50/50 cost share program to assist private landowners in the reduction or eradication of seral juniper stands on their lands. (Lead: Owyhee LWG) (January 2005 and will be ongoing). These projects were demonstrations near leks affecting 5,000 acres as of 2012. This work is continuing through the Sage-Grouse Initiative (See "Program Funding Action Plan").</i>	Outside BLM's Jurisdiction						Not Applicable
G. Juniper Treatment Grazing Policy. <i>Initiate discussions with the BLM to review and seek change of the livestock grazing policy for prescribed burn programs that prohibits fall grazing use after a burn program has been completed. (Lead: Owyhee LWG) (Initiated January 2005 and ongoing).</i>	LVST 1. MA 7. Prescribed burning practices will be used in areas where it is determined that burning would improve rangeland health and increase biodiversity in big sagebrush and western juniper vegetation communities. Livestock grazing will be adjusted to ensure successful prescribed burns. Areas prescribed to be burned may require rest prior to burning and will require rest after burning for a minimum of	No	Silent	No	<u>Fire Management Resource Guidelines:</u> All grazing licenses issued that include areas recently burned and/or seeded areas will include a statement concerning the amount of rest needed in the seedings or burn area. Normally two years of rest will be necessary to protect these areas.	No	This is not a LUP decision.

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	two (2) growing seasons. Mechanical and chemical methods may also be used but in very limited areas where burning is not an option due to limited fuels or safety. VEGE 1. MA 4 Provide a minimum of two growing seasons rest from livestock grazing and other watershed disturbing activities following prescribed or wild fire.						
H. Forage Reserve Program. <i>Seek sponsors to develop a forage reserve program to provide off site grazing opportunity when livestock are displaced during juniper treatment programs. (Lead: Owyhee LWG; ongoing).</i>	LVST 1. MA 13 If the opportunity presents itself as a result of current active permitted use being either relinquished or lost for any reason then the available carrying capacity may be utilized to resolve grazing issues anywhere within the resource area. Livestock could be transferred either temporarily or permanently in order to meet resource objectives.	Yes	Silent	Yes	Silent	Yes	The opportunity for this activity is support in Alternatives A, B, D & F.
I. Invasive Species and Noxious Weeds. <i>Seek additional funding to support the activities of the Jordan Valley Cooperative Weed Management Area, which is conducting a variety of weed control and/or eradication programs throughout the Owyhee River Watershed. Encourage the development of additional CWMA's in other areas of the County and seek additional funding as needed to support those programs. (Lead: Owyhee LWG)</i>	Silent	Yes	Silent	Yes	N/A		Alternatives A, B, C, D, E & F support this activity with various alternatives providing direction regarding prioritization of these activities within GRSG habitat.
J. Development. <i>The LWG will provide comment and utilize other means as available to supports the policies of the Owyhee County Comprehensive Plan and Owyhee County Land Use Plan for Federal and State Lands to promote economically viable and sustainable ranching operations in order to discourage conversion of rangeland to rural/ remote recreational home development. (Lead: Owyhee LWG; ongoing).</i>	WDLF 1. MA7. Retain all public land within crucial and other high quality wildlife habitats unless exchanging for land of equal or higher value and acquire additional high quality habitat through purchase or	Yes	Silent	Yes	Silent	Yes	Acres of public lands identified for disposal may have an impact on this activity it is not a forgone conclusion that lands disposed would contribute to urbanization. Each action alternative identifies GRSG habitat for retention and therefore the decision authority in the LUPA is limited.

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	exchange with willing landowners. These include but are not limited to wetland/riparian habitats, crucial big game winter habitat and isolated tracts and shrublands adjacent to agricultural areas that provide important cover for upland game. Isolated tracts will be grazed only if needed to maintain or improve wildlife habitat.						
K. Habitat Fragmentation – <i>The LWG, in cooperation with Federal, State, and Private partners, will attempt to minimize and/or mitigate habitat fragmentation associated with infrastructure developments (roads, fences, etc.).</i>	WDLF 1. MA 5. Design and implement vegetation treatments to improve habitat where juniper or shrub density is contributing to unsatisfactory habitat conditions. All treatments will be designed to protect scarce, unique and highly productive wildlife habitat types, retain large interconnected blocks of more common habitat types and accommodate specific wildlife habitat requirements including migration corridors for big game. Reseed burns with a variety of shrubs, forbs and grasses. Rest all burns and seedings from livestock grazing for a minimum of two growing seasons following treatment.	Yes		Yes	Silent	Yes	Alternatives B, C, D, E & F each address various approaches for minimizing habitat fragmentation.
PREDATOR ACTION PLAN							
A. Using radio-telemetry tracking of sage-grouse, determine the effect of predation on sage-grouse (Lead: IDFG). This action item cannot be accomplished with the current level of telemetry studies and is tabled until funding is sufficient to conduct more extensive studies.	SSPS 1. Monitoring. Monitor key populations and habitats or population/habitat objectives as identified in AMPs or other activity plans.		Silent	Yes	Silent	Yes	Predation control is managed by IDFG and for some avian species USFWS. This effort is separate from the LUPA and would be consistent with any of the alternatives.
B. Perform artificial nest studies in selected parts of Owyhee County to compare	SPSS 1. MA7 Construct artificial nesting structures	Yes	Silent	Yes	Silent	Yes	See above.

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artificial nest fate in different types of habitat. Use established techniques to reduce potential biases and to identify species of predators involved. <u>(Lead: Wildlife Services and IDFG)</u> . Complete initial research by the end of 2002 and continue as needed.	for ferruginous hawks and other special status species in areas where suitable nesting sites are determined to be limiting.						
HUNTING ACTION PLAN							
A. Review harvest data collected annually, and if the information indicates a need to change hunting season parameters, recommend hunting regulation changes in March of the following year to the Idaho Fish and Game Commission Lead: <u>Owyhee LWG and IDFG</u> (Initiated in 2000 and continuing annually).	Outside BLM's Jurisdiction						Hunting and setting of seasons is done under the discretion and authority of the state wildlife agencies – IDFG and MT FWP.
B. Maintain needed check stations and wing barrels. (Lead: IDFG) (Ongoing)	Outside BLM's Jurisdiction						See above.
C. Use a telephone survey of permit holders to estimate sage-grouse harvest in each county.	Outside BLM's Jurisdiction						See above.
D. Band sage-grouse in selected areas to help estimate harvest rates in those areas. (Lead: IDFG)	SSPS 1. Monitoring Conduct population or habitat monitoring on a regular basis for selected special status species of plants and animals.	Yes	Silent	Yes	Silent	Yes	While monitoring of the LUPA is included as a component for all alternatives, the utility in determining harvest rates from the proposed monitoring may not be appropriate.
E. Re-evaluate this Hunting Action Plan annually. (Lead: IDFG) (Continuing annually)	Outside BLM's Jurisdiction						See hunting above.
SAGE-GROUSE RESEARCH AND MONITORING ACTION PLAN							
A. Provide a reliable estimate of the distribution and populations of sage-grouse in Owyhee County	SSPS 1. Monitoring Conduct population or habitat monitoring on a regular basis for selected special status species of plants and animals.	Yes	Silent	Yes	Silent	Yes	The GRSG habitat designations described in each action alternative are based on habitat and population data and modeling which comprise areas that have the highest conservation value to maintaining sustainable GRSG populations and include breeding, late brood-rearing and winter concentration areas.
B. Coordinate efforts by IDFG, BLM, USAF and others to systematically survey (fly or by other means) and/or otherwise identify through landowner surveys all active leks and historical leks in the county	SSPS 1. Monitoring Conduct population or habitat monitoring on a regular basis for selected special status species of plants and	Yes	Silent	Yes	Silent	Yes	The LUPA would not change the coordination currently occurring with BLM and IDFG in the annual survey of leks.

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by the end of the spring 2004 breeding season. (Lead: IDFG, LWG and University of Idaho)	animals.						
C. Determine which sage-grouse populations are non-migratory and migratory. (Lead: IDFG). (Four areas completed or in progress, two areas proposed, program is ongoing)	Silent	Yes	Silent	Yes	Silent	Yes	IDFG continues to monitor and survey populations to determine life history patterns.
D. Initiate radio-telemetry studies to determine causes of sage-grouse chick mortality by 2002. (Lead: IDFG). This action item cannot be accomplished with the current level of telemetry studies and is tabled until funding is sufficient to conduct more extensive studies.	Silent	Yes	Silent	Yes	Silent	Yes	IDFG develops and sponsors various population monitoring efforts including radio-telemetry studies.
E. Investigate the impact of different weather on variation in sage-grouse populations in Owyhee County. (Lead: IDFG) (ongoing).	WDLF 1. Monitoring. Monitoring includes collection of utilization, trend, climate, rangeland health assessment, and other data to assess vegetation characteristics as they apply to wildlife species and wildlife habitat objectives.	Yes	Silent	Yes	Silent	Yes	See above.
F. Investigate the impact of West Nile virus on sage-grouse populations in Owyhee County (Lead: IDFG) (ongoing).	Silent	Yes	Silent	Yes	Silent	Yes	See above.
G. Encourage research on the impacts of human physical disturbance on sage-grouse. (Lead: Owyhee County Natural Resource Committee). (ongoing).	Silent	Yes	Silent	Yes	Silent	Yes	See above.
H. Investigate the impacts of energy and infrastructure development on sage-grouse in Owyhee County.	Objective Land 3. Authorize and manage the use of public lands for rights-of-way, right-of-way reservations, easements, permits, leases, licenses, agreements, etc., except for those areas identified as exclusion areas. Applications for use of the public lands will be evaluated on a case by case basis using current existing laws, regulations, and procedures.		Silent	Yes	Silent	Yes	The LUPA includes monitoring of activities addressed by management actions, of which infrastructure is a part.

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PROGRAM FUNDING ACTION PLAN							
A. Obtain funding for juniper eradication projects as specified under the Habitat Improvement Action Plan beginning immediately. (Lead: Fundraising Subcommittee). (Ongoing).	Outside BLM's Jurisdiction						Outside the scope of BLM & Forest Service LUP decisions.
B. Obtain funding for fire rehabilitation projects as specified under the Habitat Improvement Action Plan beginning immediately. (Lead: Fundraising Subcommittee). (Ongoing)	Outside BLM's Jurisdiction						Outside the scope of BLM & Forest Service LUP decisions.
C. Obtain funding for sagebrush restoration projects as specified under the Habitat Improvement Action Plan beginning immediately. (Lead: Fundraising Subcommittee). (Ongoing).	Outside BLM's Jurisdiction						Outside the scope of BLM & Forest Service LUP decisions.
D. Habitat restoration is the best use of federal and state dollars and we should focus our efforts on this rather than predator control and basic telemetry studies. However, it is important to keep predator control as a tool in our toolbox in the future.	Outside BLM's Jurisdiction						Each action alternative addresses priorities for habitat restoration and rehabilitation for GRSG habitat.
E. Point landowners to Sage Grouse Initiative (SGI) funding which is available through the Natural Resources Conservation Service. Identify areas where SGI funding will have the greatest effect.	Outside BLM's Jurisdiction						Outside the scope of BLM & Forest Service LUP decisions.

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Custer County Sage-Grouse Management Plan, BLM Challis RMP Consistency Review and Inclusion in GRSG Amendment

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<p>Summary of the direction of the Custer County Sage-Grouse Management Plan: Management actions described in the Custer County Plan are consistent with the existing Challis RMP management and direction and could be implemented in conformance with the Challis RMP.</p> <p>The County Plan encourages the federal agencies (BLM & Forest Service) to coordinate and maintain communication with the county and the counties' Natural Resources Advisory Committee. As part of this coordination the county requests documentation and research be available to support management decisions.</p> <p>The county plan uses different terms to designate habitat than described in the EIS (p. 10); however, the geographical designations, while not exact, are similar to those described in Alternative E.</p> <p>The county plan identifies predation as the primary threat in the county (p. 14). This threat is not shown as a primary threat on other threat descriptions (BLM, State, USFWS, Local Working Group). Predator control is not under the jurisdiction or authority of the BLM or FS and a specific alternative to address predator control has been eliminated from detailed analysis – see Chapter 2.</p>			
Chapter 3: Plan Area and Habitat Characteristics			
Focus “conservation measures...on the primary threats as they exist in Custer County...” Threats identified in Chapter 4 Threat Assessment – E. Custer Board of County Commissioners – primary threats are identified as 1. Excessive predation; 2. Improper management of public lands; 3. Wild horse and burro and other wildlife impacts.	Silent	Yes	Threats identified by the Custer Board of County Commissioners are different than those identified by the USFWS 2010 Finding, the 2006 Idaho Sage Grouse Plan, and the 2007 Challis Local Working Group Plan.
“Occupied sage-grouse habitat is categorized into a single delineation in Custer County. This will be known as suitable habitat....[this includes] All habitat that has been identified as either having lek’s present or having the	Silent	Yes	Alternative C of the Draft Idaho and Southwest Montana Greater Sage-Grouse EIS (DEIS) combines all occupied habitat into one single category for management. Alternative E identifies Core and Important

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<p>characteristics necessary to support the sage-grouse...There is no good estimate of total acres of suitable habitat currently available. For purposes of discussion the areas identified in Appendix D1-D10 as it relates to Custer County in the Challis Sage-grouse LWG Conservation Plan as adopted in 2007 and Figure 3 in the 2009 amendment to the same plan will be used as points of reference.”; “Suitable habitat includes all seasonal habitats, including breeding habitats, early breeding habitats, summer late brood-rearing habitats and winter habitats.”</p>			<p>Habitat Zones most closely aligned with the maps referenced from the LWG plan.</p>
<p>Chapter 4: Threat Assessment</p>			
<p>“...the BOCC has determined that the primary threats to the Greater Sage-Grouse in Custer County are the following: 1. Excessive Predation; 2. Improper management of public lands (i.e. failure to adapt grazing systems and uses in a timely manner consistent with weather and seasonal changes); 3. Wild Horse and Burro and other wildlife impacts.</p>		<p>Yes</p>	<p>See discussion above regarding threats.</p>
<p>Chapter 5: Plan Implementation</p>			
<p>“The BOCC shall be responsible for managing and implementing the Plan.”</p>	<p>Silent</p>	<p>No, Outside Scope of Plan</p>	<p>BLM maintains final authority or plans and implementation actions on public lands and described in the Federal Land Policy and Management Act; Forest Service maintains final authority for plans and implementation actions on national forest system lands as</p>

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			described in the National Forest Management Act.
<p>A. Implementation on Public Lands: The principles and policies contained with this Plan shall be required for the management of sage-grouse and its habitat on public lands that contain suitable habitat as described in B. Habitat Characteristics.</p>	Silent	The principles and policies of the Custer County GRSG Plan, while consistent with the Challis RMP, are not currently required under that plan.	Requirement on BLM and Forest Service administered lands would require a land use plan amendment to incorporate that guidance.
<p>B. Implementation on Private Lands: For private lands in the Plan Area, the principles and policies contained within this Plan are voluntary and encouraged to be implemented through Best Management Practices (BMP’s) and conservation measures for the management of sage-grouse and its habitat as defined as suitable habitat and depicted in B Habitat Characteristics.</p>	Silent	Implementation of activities on private lands is typically outside the scope of BLM planning.	Outside the scope of decisions within the EIS.
<p>C. “...require federal agencies to coordinate their plans and policies with the County, and ability to coordinate with state agencies, therefore, ensuring that all entities with responsibilities for the species and habitat are working together...”; “Implementation of this plan will be</p>	Silent	Yes	BLM’s obligation to coordinate land use inventory, planning and management activities is described under FLPMA Sec. 202 (c)(9)-(9) to the extent consistent with the laws governing the administration of the public lands, coordinate the land use

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<p>conducted through a formal coordination process with all agencies that have jurisdiction and/or responsibility for the sage-grouse and/or its habitat.”</p>			<p>inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located....In implementing this directive, the Secretary shall, to the extent he finds practical, keep apprised of State, local, and tribal land use plans; assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans, and shall provide for meaningful public involvement of State and local government officials, both elected and appointed, in the development of land use programs, land use regulations, and land use decisions for public lands, including early public notice of proposed decisions which may have a significant impact on non-Federal lands....Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.</p>

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<p>D. 1. Annual Review: Annual Coordination review, annual meeting, updates to the Plan as needed. The input shall be considered and incorporated where appropriate into a formal written Plan update to be approved by the BOCC within 120 days of the submittal date of the requested change.</p>	Silent	Yes	See coordination responsibilities above. Updates to the plan may require land use plan amendments to incorporate into public land management if and when those changes affect land use planning level decisions.
<p>D.2. New Scientific Information: If at any time between the annual review period with federal or state agencies, or private entities with property interests in the Plan Area become aware of or acquire new science regarding the species or its habitat in the Plan Area within Custer County that may warrant changes to the BMP's, conservation measures or policies within this Plan, then they shall submit a written report to the County, including the scientific review and supporting data, for the County's consideration. If the BOCC finds changes to the Plan are warranted, then it can initiate a formal review of the Plan in coordination with all entities.</p>	Silent	Yes	Yes, see above for description of plan changes.
Chapter 6: Principles			
<p>C. Custer County has a population of approximately 4,333, and therefore is considered a “small local jurisdiction” as defined by the Regulatory Flexibility Act (5 USC 601). All proposed rules for the purpose of managing the sage-grouse or its habitat by federal agencies requires an economic analysis and consideration of</p>	Silent	Yes	The Social and Economic Analysis has been shared with Custer County and the County has provided comments to the BLM. These are currently under review and evaluation and additions, clarifications and changes to the social and economic analysis will be included in the DEIS.

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that analysis prior to the finalization of the proposed rule. This analysis shall be prepared in Coordination with Custer County.			
E. Sage-grouse management decisions shall be made based on the best available scientific information that is applicable to sage-grouse habitat in Custer County. The scientific information used will be consistent with standards of the Information Quality Act (44 USC 3516) (see definitions of Quality, Objectivity, Utility and Integrity), as verified by the County.	Silent	Yes	Comments on the Administrative Draft EIS identified specific concerns over cited and referenced scientific literature. These references are being reviewed for proper inclusion within the DEIS.
F. Land management plans of all government agencies that have ownership or management responsibilities for the lands or species within Custer County shall be consistent with the policies set forth in this plan subject to valid existing rights.	Silent	Yes	Guidance from the county plan is incorporated into one or more alternatives analyzed in detail within the DEIS.
H. No policies shall infringe on the private property rights of any landowner within Custer County. All species and land coverage information gathered on private property shall be treated as the property of the landowner and shall not be used by any private or government entity for any purpose unless express, written permission has been obtained from the landowner.	Silent	Implementation of activities on private lands is typically outside the scope of BLM planning.	Outside the scope of decisions within the EIS.

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<p>I. All sage-grouse habitat and species management programs that impact the County, administered by federal and state agencies, shall be coordinated with Custer County, and the data collected by state and federal agencies will be shared with the County in a timely manner and be provided to the County regardless of completeness.</p>	<p>Silent</p>	<p>Yes</p>	<p>See coordination discussion above.</p>
<p>J. All public lands within the Plan Area containing suitable habitat for sage-grouse shall be managed to continue the multiple-uses of the lands as required by 43 USC 1707(a)(7). No policies shall be implemented that prescribe the management of lands for a single purpose, but all functions of the land, including providing habitat for wildlife and supporting the productive uses of its resources, shall be considered with the objective of balancing and continuing all uses of the land. Unlike public owned land where there are many property interest holders and the multiple uses must be maintained, private land owners have more discretion to manage their property for the primary purpose of conserving sage-grouse, if so desired.</p>	<p>Silent</p>	<p>Yes</p>	<p>As part of the planning criteria the DEIS must follow applicable laws. In this case FLPMA directs land use planning for resources associated with public lands. FLPMA Section 202 (c) In the development and revision of land use plans, the Secretary shall– (1) use and observe the principles of multiple use and sustained yield set forth in this and other applicable law;</p>
<p>K. The ability of wildlife, including sage-grouse, to habituate to inanimate manmade structures and changes to the landscape shall be acknowledged.</p>	<p>Silent</p>	<p>Yes</p>	<p>Incorporation of applicable scientific references – see previous discussion regarding use of science.</p>

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<p>L. All sage-grouse conservation measures enacted on public land or through a federal nexus shall be for the purpose of directly benefiting the species and its verified habitats. These measures shall be scientifically defensible. All data and information used to produce conservation measures shall be made available to the public and the County and shall be coordinated with the County. Additionally, the balance of impacts to other species and to human welfare must be weighed prior to approval and implementation. All planning efforts shall be governed through adaptive management principles to ensure that use of the latest scientific research on sage-grouse and their habitat, BMP's, technological advances, and incorporation of impact avoidance, minimization, and mitigation opportunities are vetted and utilized.</p>	<p>Silent</p>	<p>Yes</p>	<p>The purpose and need of the DEIS is to address greater sage-grouse habitats. See also discussion above regarding scientific information. See also discussion above regarding coordination. The DEIS contains an analysis of the social and economic environment. Each action alternative (Alts B-F) contains an adaptive management component.</p>
<p>Chapter 7: Policies</p>			
<p>A. Predation 1. Prior to implementing any conservation measures that decrease the productive use of the land for the benefit of the sage-grouse, the impact of predation must be considered. Measures must be put in place to control predation to the satisfaction of the BOCC, if found to be the cause of the impact. 2. The BOCC will coordinate with the</p>	<p>Silent</p>	<p>Yes</p>	<p>Direct predator control is outside the authority of BLM and outside the scope of potential decisions for the DEIS. Alternative E contains an adaptive management approach which includes identification of specific causes, where ascertainable, and appropriate management changes based on the identified cause(s). Alternatives B, C, D & F include anti perch devices</p>

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<p>Idaho Fish and Game to determine appropriate predator control measures.</p> <p>3. Encourage private landowners and citizens to document predator occurrences and provide these to the BOCC so that the proper agencies can be notified and appropriate control measures implemented.</p> <p>4. Anti-perch devices will be encouraged, but not required, for all existing and future transmission lines and structures that may have a deleterious affect on sage-grouse in suitable habitat.</p>			<p>as required design features. Alternative E does not require anti perching devices although they can be implemented as best management practices.</p>
<p>B. Livestock Grazing</p> <p>1. Maintain sustainable grazing consistent with historic land use and ranching practices.</p> <p>2. Livestock grazing is an important tool to properly manage sage-grouse habitat, and should not be removed from the Plan Area.</p> <p>3. Any grazing restrictions or conservation measures that are implemented through a grazing permit shall be based solely on the conditions and activities specific to that permitted grazing allotment.</p> <p>4. Annual precipitation measurements should become a part of annual operating plans. Although the County contains the states highest mountain ranges, it receives the least amount of precipitation of any county in Idaho, and therefore has a climate, topography and ecology that is</p>	<p><u>Livestock Grazing</u></p> <p>Goal 1 - Rationale 1: Manage livestock grazing activities to ensure achievement and maintenance of, or significant progress toward achieving, fundamentals of rangeland health, and standards for rangeland health and guidelines for livestock grazing management (per 43 CFR 4180).</p> <p>Goal 2 - Rationale 2: Prescribed burns and seedings would be done to promote a variety of resource objectives including ecosystem health and diversity. See Rangeland Vegetation Treatment Projects Goal 1, #2 (p. 51) for further criteria).</p> <p>Goal 2 – Rationale 3: Use land treatments, range improvements, and improved grazing management as tools to achieve multiple use objectives. Evaluate</p>	<p>Yes</p>	<p>Alternatives B, D & E all continue to allow for livestock management. These alternatives also recognize proper livestock grazing as a potential tool to utilize in moving towards desired vegetation conditions that support greater sage-grouse habitat. Alternatives B, D, E & F all continue to implement Standards for Rangeland Health which address conditions at the allotment level. All these alternatives also incorporate sage-grouse habitat management objectives (such as the Connelly guidelines) .</p> <p>4. How does present drought management protocol include or incorporate precipitation?</p> <p>Actions 6-11 are all included as components of Alternative E.</p>

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
<p>unlike any other area with sage-grouse habitat. This uniqueness also contributes to areas with above average precipitation while areas just over the hill are receiving below average precipitation. If the monitoring data shows there is an increase in forage that supports additional livestock in a suitable habitat area, then increased grazing should be considered. If monitoring data shows a decrease in forage in a suitable habitat area, then a reduction in livestock can be considered as long as it is demonstrated that failure to do so would cause a deleterious effect on the sage-grouse.</p> <p>5. Add sage-grouse guidelines into management plans as desired conditions, recognizing livestock grazing may not always be a causal factor (State Alternative)</p> <p>6. Prioritize completion of land (range) health assessments and grazing permit NEPA analysis on allotments with declining sage-grouse populations, as verified by Custer County.</p> <p>7. Allotment Assessments will use published Characteristics of sage-grouse habitat and comply with 43 CFR 4180.2(c).</p> <p>8. Allotment management changes must be tailored to address specific problems when the cause of that problem has been determined using the best available science including the flexibility to change time on a unit, the number of livestock for</p>	<p>existing seedings for retreatment before any new seedings are done within a given allotment. Authorize permanent increases in livestock preference as a result of range improvement projects only after an ID team has performed an allotment analysis and determined that resource objectives have been met.</p>		

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
<p>a designated period of time and season of use.</p> <p>9. Changes in grazing management should only occur when monitoring indicates sage-grouse objectives are not being met as a result of grazing practices.</p> <p>10. Management changes, when needed, must be tailored to specifically address habitat objectives that need improvement, but should not adversely affect the habitat of other species.</p> <p>11. Altering grazing schemes in allotments, where needed and appropriate, may be facilitated by enhanced grazing opportunities with introduced seeding or areas with lower values to sage-grouse. The unintended consequences of altering grazing use, such as possible increased risk of wildfire, must be carefully considered in any management proposal. (State Alternative)</p>			
<p>C. Wild Horse, Burro and Wildlife Management</p> <p>1. The BLM Challis Field Office shall follow herd management plans for wild horses and stay within appropriate management levels</p> <p>2. If it is determined, utilizing the best available science and monitoring data, including private data, that over grazing is causing a deleterious effect on suitable habitat, then the impact of wild horses, burros and wildlife must be considered</p>	<p>Wild Horses and Burros</p> <p>Goal 1: Maintain a viable population of wild horses so as to achieve a thriving natural ecological balance in the Herd Management Area.</p> <p>Rationale: Required by the Wild Horse and Burro Act.</p> <p>1. Manage the wild horse herd for an appropriate management level of 185 animals in accordance with the 1985 U.S. District Court Consent Judgment and the current activity plan for the wild horse</p>	<p>Yes</p>	<p>The DEIS maintains existing guidance described in the Challis RMP with regard to wild horse herd management plans and appropriate management levels. Alternative E contains an adaptive management approach which includes identification of specific causes, where ascertainable, and appropriate management changes based on the identified cause(s).</p>

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
<p>first before any conservation measures are taken to reduce domestic livestock grazing. Only after reductions in wild horses, burros and wildlife have been taken and not found to sufficiently reduce the impact can the reduction of domestic livestock be considered.</p> <p>3. If wildlife grazing is determined to be the cause of inadequate sagebrush form and cover, modifications of herd objectives shall be prioritized by the appropriate agencies.</p>	<p>Herd Management Area. The herd would vary from 185 to about 253 animals between roundups. Adjust horse numbers to a lower level if monitoring data show that the current appropriate management level is causing unacceptable levels or resource degradation.</p> <p><u>Wildlife Habitat</u> Goal 1 - Rationale 3: Monitor key habitat sites to ensure that big game populations do not exceed proper levels or damage important habitat components. Design monitoring to determine whether big game are adversely affecting progress toward the riparian and aquatic habitat conditions described in Attachment 15. (p. 127 of the Challis RMP)</p>		
<p>D. Mineral Development</p> <p>1. Mineral development can occur in suitable habitat utilizing best management practices and taking all reasonable measures to reduce impacts and avoid impacts to suitable habitat where possible.</p> <p>2. Conservation measures designed to protect suitable habitat shall not affect access to any existing or future mining claim.</p> <p>3. No federal land mineral withdrawals shall be made as an effort to conserve suitable habitat. Full access to all resources must be maintained in order to ensure a productive economy and the</p>	<p><u>Minerals</u></p> <p>Goal 1: Manage the Federal mineral estate in the resource Area for oil, gas, and geothermal exploration and development, while minimizing adverse impacts to other resource values.</p> <p>Goal 2: Provide saleable and non-energy leasable minerals to meet local demand, while minimizing adverse impacts to other resources values.</p> <p>Goal 3: Maintain the availability of public lands for locatable mineral exploration and development. Minimize adverse effects of locatable mineral development. Minimize adverse effects of locatable mineral</p>	Yes	Alternative D & E allow for mineral development in GRSG habitat with application of best management practices.

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
health, safety and welfare of the citizens of Custer County.	development activity on other resources.		
<p>E. Recreation</p> <p>1. Any plan for creating new or additional recreational opportunities on federal lands in suitable habitat must provide Custer County a sage-grouse impact analysis for review.</p> <p>2. Limit motorized recreational use to existing roads, primitive roads, and trails, as verified by Custer County in suitable habitat.</p> <p>3. Any road, primitive road and trail closures must comply with Custer County’s Transportation Plan and must be coordinated with the BOCC.</p>	<p><u>Recreation Opportunities and Visitor Use</u></p> <p>Goal 3: Provide recreational opportunities for the remainder of the Resource Area not included in the SRMA, including areas specifically for unstructured outdoor experiences, trails, (e.g., hiking, horseback riding, bicycling), recreational mineral collecting, and OHV use.</p> <p>Goal 4: Enhance recreational opportunities through designation of additional existing roads into the BLM national Backcountry Byways program.</p> <p>Attempted to obtain a copy of the BOCC Transportation Plan and was told the final document has not been released.</p>	Yes	<p>Alternatives within the DEIS identify all GRSG habitat areas (Alts. B, C, E, F) as limited to existing roads and trails. Alternative D identifies all lands within the Challis Field Office as limited to existing roads and trails, where explicit decisions RMP have been made to manage an area as open, those areas will remain open. After the land use plan amendment is completed comprehensive travel and transportation management plans would be completed to identify designated roads and trails and the areas would then be managed as limited to designated roads and trails. Coordination with Custer County would occur as described previously.</p>
<p>F. Infrastructure and Roads</p> <p>1. Limit motorized travel to existing roads, primitive roads and trails as verified by Custer County in suitable habitat.</p> <p>2. Any road, primitive road, or trail closures must comply with Custer County’s Transportation Plan and must be coordinated with the BOCC.</p> <p>3. New infrastructure can be placed in suitable habitat, as long as, reasonable measures are taken to ensure there will be no deleterious effect on the sage-grouse, as determined by Custer County. Best</p>	<p><u>Transportation</u></p> <p>Goal 1: Consistent with other resource objectives and values, provide an adequate road and trail system on the Challis Resource Area’s public lands to (a) satisfy the public needs for recreation, commodity production, access, and safety, and (b) facilitate management of BLM resources and programs.</p> <p>The Challis Travel Management Plan was approved in 2008 and has been implemented.</p>	Yes	<p>See travel and transportation discussion above. Infrastructure development is allowed with restrictions and/or conservation measures in Alternatives D & E. The best management practices identified are included as a component of Alternative E.</p>

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
Management Practices, as defined in the State’s Alternative (pg 43) shall be followed.			
<p>G. Fire Management and Wildfire</p> <p>1. 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).</p> <p>2. Prior to prescribed controlled burns near suitable habitat, all other fuel reduction methods shall be considered.</p> <p>3. In the event of a wildfire, coordinate with appropriate agencies in developing and implementing rehabilitation plans.</p> <p>4. When pursuing habitat restoration or rehabilitation, use native plant species, based on availability, and probability of successful establishment.</p>	<p>Fire Management</p> <p>Goal 1: Protect human life, property, and valuable resources from wildfire, and reduce the impacts of suppression activities. Use prescribed fire to protect property and valuable resources, improve range and timber resource conditions, and perpetuate the natural ecosystem.</p>	Yes	All actions described are included in Alternatives B, C, D, E & F. In addition Alternative C does not allow for prescribed burning as a tool to manage GRSG habitat.
<p>H. Invasive Species</p> <p>1. The Cooperative Weed Management Areas (CWMA), in cooperation with all land managers, shall encourage the continuing inventory for invasive species.</p> <p>2. Areas of suitable habitat, where non-natives have invaded, shall be prioritized for treatment in coordination with the BOCC and the CWMA.</p> <p>3. The County’s Invasive Species Plan shall be followed when any treatment,</p>	<p>Goal 1: Reduce potential for new infestations of noxious weeds.</p> <p>Goal 2: Develop an active weed inventory program by training public land users and BLM personnel in weed identification.</p> <p>Rationale: 1 – coordinate with Federal, State, and local agencies and private landowners in the identification of weed treatment areas.</p>	Yes	All actions described are included within all of the analyzed alternatives.

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
reseeding or restoration projects occur in or around suitable habitat.			
<p>I. Areas of Critical Concern and Wilderness Study Areas There shall be no new designations of ACEC's or WSA in Custer County. If such designations are being considered by federal land managers, then the county is to be informed immediately and the consideration of the designation coordinated with the County</p>	<p>Goal 1: Maintain and protect important biological, cultural, scenic, and other natural systems or processes by high-lighting management of areas containing these resources.</p>	Yes	Alternatives B, D & E do not include new designations of ACECs.
<p>J. Monitoring and Habitat Category Changes A. All federal and state agencies, with management responsibilities in the plan area for the species and/or its habitat, shall provide the County with an annual update of the monitoring programs they have in place, data collected and specifics about their collection protocols. These agencies will inform the County of proposed research projects and allow for the County's input and collaboration prior to implementation. B. All data shall be collected and studies prepared using protocols that will ensure the quality, utility, objectivity and integrity of the information as required under the Information Quality Act. C. All data that is gathered in the Plan Area shall be shared with the County in a timely manner, and supplied to the County regardless of its state of completion.</p>	Silent	Yes	See coordination discussion above. Alternative B, C, D, E & F all include monitoring approaches and protocols that are accepted as appropriately collecting information within acceptable parameters to provide information to assess management activities described in the DEIS.

Custer County Sage-Grouse Management Plan Direction – Plan Implementation	Challis RMP Direction	Challis RMP Compliance	Inclusion in Amendment EIS
<p>D. Private landowners are also encouraged to monitor and share data collected on private property with the County.</p> <p>E. All data that is shared with the County that is not public information will be treated as confidential and used by the County only to help inform its policies and best management practices.</p>			



Appendix B

Reasonably Foreseeable Development Scenario for Greater Sage-Grouse Habitat in Idaho and Southwest Montana Sub-Region



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B. Reasonably Foreseeable Development Scenario for Greater Sage-Grouse Habitat in Idaho and Southwest Montana Subregion

B.1 Introduction

This Reasonably Foreseeable Development Scenario (RFDS) is a required component of the GRSG LUPA/EIS and addresses potential fluid mineral exploration and development over the next 15 years, and its resulting potential impact on leasing and development of federal and nonfederal lands and/or mineral rights within occupied GRSG habitat in the Idaho/southwest Montana subregion. This RFDS applies primarily to BLM- and Forest Service-administered lands and split-estate underlain by federal minerals, although it takes into consideration nonfederal development in the cumulative impact analysis.

This RFDS generally follows the procedures outlined in BLM Instruction Memorandum 2004-089, Policy for Reasonably Foreseeable Development Scenarios for Oil and Gas. It projects a baseline scenario of activity assuming that all potentially productive areas are open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order. Under these conditions, this RFDS provides a maximum development scenario. The effect of the alternatives on potential development is also included in this scenario.

B.2 Oil and Gas Resources

The reasonably foreseeable disturbance acreage associated with oil and gas development from existing plans is presented in Table B-1.

The Four Rivers RFDS concluded it was reasonable to anticipate 6 to 10 exploration wells would be drilled on Federal lands north of the Payette River east of Payette. Due to the recent discovery and development of private lands near New Plymouth, and because several expressions of interest have been received, the nearby Federal lands (some of which are split estate) are considered to have medium potential for the discovery and development of a natural gas resource. Leasing is deferred pending completion of the Four Rivers RMP/EIS. The lands are not located in sage grouse habitat. Due to existing road density in the area, it was concluded that approximately one mile of temporary road would be required for each exploratory well.

The Jarbidge RFDS concluded it was reasonable to anticipate up to 2 exploration wells would be drilled, only because lands have been nominated for leasing on lands in the vicinity of Brown's Bench (leasing is deferred pending the completion of the Jarbidge RMP/EIS). The potential for discovery of an oil or gas resource is considered low. Therefore no field development is anticipated. Due to existing road density in the area, it was concluded that approximately two miles of temporary road would be required for each exploratory well. These lands are located in priority sage grouse habitat.

Table B-1
Reasonably Foreseeable Development Scenario for the Idaho and Southwest Montana Subregion

Plan Name/RFDS	# of Exploration Wells Predicted	Acres of Drill Pads¹	Miles of Road²	Acres of Roads³	Acres Disturbed from Exploration	# of Discovery Wells	Exploration Wells Reclaimed (acres)	# Step-out Wells	Acres Disturbed from Step-out	Total Permanent Disturbance (acres)
Four Rivers	6-10	18-30	8	40	48-80	1	35-65	4	32	46
Jarbidge	2	6	4	20	26	0	26	0	0	0
Pocatello	5	15	20	100	115	1	92	4	32	55
Dillon	6	18	10.5	105	123	2	100	4	32	55
Caribou NF	4	12	24	120	132	0	120	0	0	0
TOTALS	23-27	69-81	66.5	332.5	401.5-413.5	4	376-406	12	96	156

¹ Assumes 3 acres each

² Miles of road per exploration well varies by RFDS. Miles of road for step-out wells equals one mile per well (in accordance with Idaho well spacing rule)

³ Assumes 5 acres per mile

The Pocatello RFDS concluded it was reasonable to anticipate that 5 exploratory wells would be drilled, likely in the Bear Lake area. Lands have been nominated, but leasing is deferred pending the outcome of this EIS. The area has moderate potential for the discovery of a limited gas field (see oil and gas potential report for more information). Due to existing road density in the area, it was concluded that approximately four miles of temporary road would be required for each exploratory well. These lands are located in priority habitat

The Dillon RFDS concluded it was reasonable to anticipate that 6 exploratory wells would be drilled, and each well would require 3.5 miles of temporary road. Of these wells, two are anticipated to encounter commercial quantities of oil or gas. Dillon predicted that 2 additional step-out wells would be drilled for each discovery well. Given the location of lands with moderate potential in the Dillon RFDS, it is assumed that three of the 6 exploratory wells would be located in priority sage grouse habitat, and that one well would encounter commercial quantities of oil or gas, resulting in one three-well field.

The Caribou NF RFDS concluded it was reasonable to anticipate that 4 exploratory wells would be drilled, and that each well would require 6 miles of temporary road. Mineral potential is low to moderate. It is anticipated that the wells would be dry and that no field development would occur. It is assumed the wells would not be located in sage grouse habitat.

Table B-2
RFDS by Alternative

Alternative	# of Exploration Wells Predicted	Acres of Drill Pads (3 acres ea)	Total Miles of Road	Acres of Roads (5 ac. Per mile)	Acres Disturbed from Exploration	Exploration Wells Reclaimed (acres)	# of Discovery Wells	# Step-out Wells	Acres Disturbed from Step-out	Total Permanent Disturbance (acres)	Geophysical Exploration Allowed?
Alternative A	25 wells	75	66.5	332.5	401.5-413.5	376-406	4	12	96	156	Yes
Alternative B	15 wells ¹	45	38	190	235	220	2	6	48	73.5	No ²
Alternative C	13 wells ³	39	34	170	209	209	2	6	48	73.5	No
Alternative D	23 wells ⁴	69	62.5	312.5	375.5-387.5	350-386	4	12	96	156	Yes, with TLs
Alternative E	13 wells ⁵	39	34	170	209	209	2	6	48	73.5	Not addressed
Alternative F	15 wells ⁶	45	38	190	235	220	2	6	48	73.5	No ²

¹ Alt. B closed to leasing in PH= No leasing on Bear Lake Plateau (Pocatello) and assume half the number of wells in Dillon (assume half is in PH)

² Only 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. Geophysical exploration shall be subject to seasonal restrictions that preclude activities in breeding, nesting, brood rearing and winter habitats during their season of use by sage-grouse.

³ Alt C closed to leasing in PH and GH= No leasing in areas above, as well as assume wells in Jarbidge are in general habitat

⁴ Alt D no to low potential areas within PH or MH are closed to leasing. Therefore no leasing in Jarbidge

⁵ Alt E lease with NSO in PH and GH= same as Alt. C (assuming Montana's state plan is consistent with Idaho's

⁶ Alt. F closed to leasing in PH (same as B) = No leasing on Bear Lake Plateau (Pocatello) and assume half the number of wells in Dillon (assume half is in PH)

B.3 Geothermal Resources

BLM currently has 25 existing geothermal leases, 15 of which are located in SG habitat. While most of the planning area has moderate potential for the discovery of a geothermal resource, it is predicted, for the purposes of this planning document, that the following 8 areas of public lands in Idaho are likely to experience exploration and possible development of the resource for the purposes of energy production:

- Raft River, in southern Cassia County: It is assumed that the operator of the existing 13 MW power plant would increase its output by drilling additional wells on adjacent public lands they now lease. It is also assumed that a different leaseholder would drill the 5 wells it has been approved to drill on public lands, as well as additional unspecified wells, to develop a second power plant at Raft River. It is likely the plant would be located on private land.
- Crane Creek, in Washington County: Lessee has drilled temperature gradient holes, but has not proposed development drilling to date. It is assumed, for planning purposes, that a power plant would be developed, possibly on-lease, requiring approximately 12 large bore production wells.
- Magic Reservoir, in Camas/Blaine Counties: Lessee has not done any exploration to date, however existing data indicates this has potential for power production. It is assumed that a small field would be discovered and a 10 MW power plant would be constructed.
- West of Weiser, in Washington County: Lessee has not performed any exploration to date. It is assumed that temperature gradient drilling would be conducted on lease. Due to the scattered land ownership pattern in this area, it is not assumed that the geothermal resource would be developed for energy production in the next 10 years.
- Castle Creek, in Owyhee County: Numerous water wells in the general area have encountered a higher geothermal gradient than normal, indicating a possible heat source at depth. Normal faulting provides a conduit for fluid flow. Leases offered but no bidders. It is not assumed that the resource would be developed for energy production in the next 10 years.
- Blackfoot/Grays Lake area, in Caribou/Bonneville Counties: higher than normal geothermal gradient indicated in an oil and gas well drilled in 1980's. No other information available. It is not assumed that the resource would be developed for energy production in the next 10 years.

Table B-3
Reasonably Foreseeable Total Disturbance Acreage by Alternative for Geothermal Resources

Alternative	MW Predicted	Acres Disturbed by TG Drilling (1 ac per well)	# of Prod/ Inj. Wells Predicted	Acres of Drill Pads (3 acres ea)	Total Miles of Road	Acres of Roads (5 ac. Per mile)	Powerplant Construction (1/2 ac per MW)	Pipeline Construction	Transmission Line Construction (5 ac. per mile)	Total Permanent Disturbance	Geophys. Allowed in SG
Alt. A	50 MW	28 acres	35 wells	105 ac	24 mi	120 ac	25 ac.	60 ac.	20 miles = 100 ac.	410 acres	yes
Alt. B	50 MW	23 acres	35 wells	105 ac.	20 mi	100 ac.	12 ac.	50 ac.	100 ac.	367 acres	yes
Alt. C	50 MW	23 acres	35 wells	105 ac.	20 mi	100 ac.	12 ac.	50 ac.	100 ac.	367 acres	no
Alt. D	50 MW	23 acres	35 wells	105 ac.	20 mi	100 ac.	12 ac.	50 ac.	100 ac.	367 acres	yes
Alt. E	50 MW	23 acres	35 wells	105 ac.	20 mi	100 ac.	12 ac.	50 ac.	100 ac.	367 acres	yes
Alt. F	50 MW	23 acres	35 wells	105 ac.	20 mi	100 ac.	12 ac.	50 ac.	100 ac.	367 acres	yes

Appendix C

Greater Sage-Grouse Habitat Required Design Features and Best Management Practices



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C. Greater Sage-Grouse Habitat Required Design Features and Best Management Practices

C.1 Introduction

Required Design Features (RDFs) are a suite of features that would establish the minimum specifications for certain activities (i.e., water developments, fluid mineral development, and fire and fuels management) to help mitigate adverse impacts. In general, the design features are accepted practices that are known to be effective when implemented properly at the project level. However, their applicability and overall effectiveness cannot be fully assessed until the project-level when the project location and design are known. Because of site-specific circumstances, some features may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations (e.g., a larger or smaller protective area). All variations in design features would require appropriate analysis and disclosure as part of future project authorizations. Additional mitigation measures may be identified and required during individual project development and environmental review, and it is not possible to list them all at the planning level. RDFs for BLM would be incorporated as appropriate plan components or content for Forest Service LUPs.

Best Management Practices (BMPs) are a suite of techniques that guide or may be applied to management actions to aide in achieving desired outcomes. BMPs are continuously improving as new science and technology become available and therefore are subject to change.

Alternatives Summary: There are no consistently-applied RDFs in the current Idaho and southwest Montana LUPs. Current management does include the use of BMPs at the project level, however these are not a land use plan-level decision; for example, the BLM’s fluid minerals program uses Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book) – these standard and guidelines are updated as needed and are not listed in LUPs.

The RDFs listed below apply where applicable and appropriate for all action alternatives. An example of where an RDF would not be applicable would be Alternative F – for fluid minerals, the entire PH and GH would be No Lease, so many of the fluid minerals RDFs would not be necessary.

**Table C-1
RDFs that Would Apply to Alternatives B and F**

GOA Number	RDF Number	RDF
<i>West Nile Virus</i>		
352		Increase the size of fresh -water ponds to accommodate a greater volume of water than is discharged. This will result in un-vegetated and muddy shorelines that breeding <i>Cx. tarsalis</i> avoid (De Szalay and Resh 2000). This modification may reduce <i>Cx. tarsalis</i> habitat but could create larval habitat for <i>Culicoides sonorensis</i> , a vector of blue tongue disease, and should be used sparingly (Schmidtman et al. 2000). Steep shorelines should be used in

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
		combination with this technique whenever possible (Knight et al. 2003).
353		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).
354		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).
355		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).
356		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.
357		Line the overflow spillway with crushed rock, and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation.
358		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.
<i>Fluid Minerals, Roads -PPH</i>		
312		Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
313		Locate roads to avoid important areas and habitats.
314		Coordinate road construction and use among ROW or SUA holders.
315		Construct road crossings at right angles to ephemeral drainages and stream crossings.
316		Establish speed limits on BLM and FS system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
317		Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
318		Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
319		Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)
320		Use dust abatement on roads and pads.
321		Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.
<i>Roads- PPH</i>		
276		Cluster disturbances associated with operations (fracturing stimulation, liquids gatherin, etc.) and facilities as close as possible.
277		Use directional and horizontal drilling to reduce surface disturbance.
278		Place infrastructure in already disturbed locations where the habitat has not been fully restored.
279		Apply a phased development approach with concurrent reclamation.
280		Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.
281		Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).
322		Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).
282		Restrict the construction of tall facilities and fences to the minimum number and amount needed.
283		Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
284		Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
285		Bury distribution power lines.
286		Collocate powerlines, flowlines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).
287		Design or site permanent structures which create movement (e.g. pump jack)to minimize impacts to sage-grouse.
288		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.
289		Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.
290		Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007, Evangelista et al. 2011). (E.g. by washing vehicles and equipment.)
291		Use only closed-loop systems for drilling operations and no reserve pits.
359		Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
360		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: <ul style="list-style-type: none"> ○ Overbuild size of ponds for muddy and non-vegetated shorelines.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
		<ul style="list-style-type: none"> ○ 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
292		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).
293		Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
294		Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).
295		Require sage-grouse-safe fences.
296		Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.
297		Clean up refuse (Bui et al. 2011).
298		Locate man camps outside of priority sage-grouse habitats.
<i>Reclamation - PPH</i>		
141 & 142		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.
143		Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.
144		Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
145		Irrigate interim reclamation if necessary for establishing seedlings more quickly.
146		Utilize mulching techniques to expedite reclamation and to protect soils.
<i>Roads – PGH</i>		
312		Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
318		Do not issue ROWs or SUAs to counties on newly constructed energy or mineral development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
316		Establish speed limits on BLM and FS system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
314		Coordinate road construction and use among ROW or SUA holders.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
315		Construct road crossings at right angles to ephemeral drainages and stream crossings.
320		Use dust abatement practices on roads and pads.
321		Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.
<i>Operations - PGH</i>		
276		Cluster disturbances associated with operations (fracturing stimulation, liquids gathering, etc.) and facilities as close as possible.
277		Use directional and horizontal drilling to reduce surface disturbance.
297		Clean up refuse (Bui et al. 2010).
282		Restrict the construction of tall facilities and fences to the minimum number and amount needed.
288		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.
289		Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.
322		Use remote monitoring techniques for production facilities and develop a plan to reduce frequency of vehicle use (Lyon and Anderson 2003).
290		Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007, Evangelista et al. 2011). (E.g. by washing vehicles and equipment.)
359		Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Dougherty 2007).
<i>Locatable Minerals, Roads - PPH</i>		
312		Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.
313		Locate roads to avoid important areas and habitats.
314		Coordinate road construction and use among ROW or SUA holders.
315		Construct road crossing at right angles to ephemeral drainages and stream crossings.
316		Establish speed limits on BLM and FS system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
318		Do not issue ROWs or SUAs to counties on newly constructed energy or mineral development roads, unless for a temporary use consistent with all other terms and conditions including this document.
319		Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).
320		Use dust abatement practices on roads and pads.
321		Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.
<i>Operations - PPH</i>		
276		Cluster disturbances associated with operations (fracturing stimulation, liquids gathering, etc.)and facilities as close as possible.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
278		Place infrastructure in already disturbed locations where the habitat has not been restored.
282		Restrict the construction of tall facilities and fences to the minimum number and amount needed.
283		Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
284		Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
299		Bury power lines.
288		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.
289		Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
290		Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007, Evangelista et al. 2011). (E.g. by washing vehicles and equipment.)
359		Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
295		Require sage-grouse-safe fences around sumps.
297		Clean up refuse (Bui et al. 2010).
298		Locate man camps outside of priority sage-grouse habitats.
<i>Reclamation - PPH</i>		
142		Include restoration objectives to meet sage-grouse habitat needs in reclamation practices/sites.
142		Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve sage-grouse habitat needs.
143		Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
144		Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community.
145		Irrigate interim reclamation if necessary for establishing seedlings more quickly.
146		Utilize mulching techniques to expedite reclamation and to protect soils.
<i>Fuels Management (from NTT Report)</i>		
88		Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit sage-grouse habitat.
89		Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.
90		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).

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
91		Ensure proposed sagebrush treatments are planned with interdisciplinary input from BLM, FS, and /or state wildlife agency biologist and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.
92		Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by sage-grouse (See Connelly et al., 2000*)
93		Where applicable, incorporate roads and natural fuel breaks into fuel break design.
94		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.
95		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.
96		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.
97		As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.
98		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.
99		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.
100		Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.
101		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.
102		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).
<i>Fire Management (from NTT Report)</i>		
64		Develop state-specific sage-grouse toolboxes containing maps, a list of resource advisors, contact information, local guidance, and other relevant information.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
65		Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.
66		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.
67		On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in sage-grouse habitat areas.
68		During periods of multiple fires, ensure line officers are involved in setting priorities.
69		To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, and 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.
70		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.
71		Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.
72		Minimize burnout operations in key sage-grouse habitat areas by constructing direct fire line whenever safe and practical to do so.
73		Utilize retardant and mechanized equipment to minimize burned acreage during initial attack.
74		As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.
<i>Fire Operations (from IM 2013-128)</i>		
		Compile district-level information into state-wide sage-grouse tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each district, which will be aggregated into a state-wide document.
		Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.
		Assign a resource advisor with sage-grouse expertise, or who has access to sage-grouse expertise, to all extended attack fires in or near 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.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
		On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in sage-grouse habitat areas.
		As appropriate, utilize existing fuel breaks, such as roads or discrete changes in fuel type, as control lines in order to minimize fire spread.
		During periods of multiple fires, ensure line officers are involved in setting priorities.
		To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) 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.
		Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near sage-grouse habitat areas to minimize noxious weed spread.
		Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.
		Minimize burnout operations in key sage-grouse habitat areas by constructing direct fireline whenever safe and practical to do so.
		Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.
		As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.
		Adequately document fire operation activities in sage-grouse habitat for potential follow-up coordination activities.
<i>Fuels Management (from IM 2013-128)</i>		
		Where applicable, design fuels treatment objectives to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit sage-grouse habitat.
		Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.
		Use burning prescriptions which minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).
		Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with state fish and wildlife agencies, and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.
		Where appropriate, ensure that treatments are configured in a manner that promotes use by sage-grouse.
		Where applicable, incorporate roads and natural fuel breaks into fuel break design.

Table C-1
RDFs that Would Apply to Alternatives B and F

GOA Number	RDF Number	RDF
		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.
		Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to sage-grouse habitat. Additionally, develop maps for sage-grouse habitat which spatially display current fuels treatment opportunities for suppression resources.
		Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands, first to sites which are adjacent to or surrounded by preliminary priority habitat (PPH) or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPH, but within two miles of PPH. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPH. The intent is to focus restoration outward from existing, intact habitat.
		As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of that referenced in land use planning documentation.
		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.
		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 resources permit.
		Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.
		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.
		Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PPH or important restoration areas (such as where investments in restoration have already been made).

Under Alternative D, all the RDFs from Alternative B would be applied as BMPs to priority habitat with the exceptions presented in the table below. The measures in the table below would be applied as BMPs to the habitat specified.



Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
64		Action: No similar action.	Medial, General
65		Action: No similar action.	Medial, General
66		Action: No similar action.	Medial, General
67		Action: No similar action.	Medial, General
68		Action: During periods of multiple fires, ensure the appropriate management representation is involved in setting priorities.	Priority
		Action: No similar action.	Medial, General
69		Action: Locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, and 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.	Priority
		Action: No similar action.	Medial, General
70		Action: Power-wash all firefighting vehicles, including engines, water tenders, personnel vehicles, and ATVs prior to deploying in or near sage-grouse habitat areas to minimize noxious weed spread.	Priority
		Action: No similar action.	Medial, General
71		Action: Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.	Priority, Medial, General
72		Action: Minimize burnout operations in sage-grouse habitat areas by constructing direct fireline whenever safe and practical to do so.	Priority, Medial
		Action: No similar action.	General
73		Action: Where allowed, utilize retardant and mechanized equipment to minimize burned acreage during initial attack.	Priority
		Action: No similar action.	Medial, General
74		Action: No similar action.	Medial, General
88		Action: No similar action.	Priority, Medial, General
89		Action: No similar action.	Priority, Medial, General
90		Action: No similar action.	Priority, Medial, General
91		Action: No similar action.	Priority, Medial, General
92		Action: No similar action.	Priority, Medial, General
93		Where applicable, incorporate linear authorizations and natural fuel breaks into fuel break design.	Priority, Medial, General
95		Action: No similar action.	Priority, Medial, General

Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
96		Action: No similar action.	Priority, Medial, General
97		Action: No similar action.	Priority, Medial, General
99		Action: No similar action.	Priority, Medial, General
100		Action: No similar action.	Priority, Medial, General
101		Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling linear authorizations.	Priority, Medial, General
102		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 priority habitats or important restoration areas (such as where investments in restoration have already been made).	Priority, Medial, General
141		Action: No similar action.	Priority, Medial, General
143		When road and well pad is no longer needed but access is still required, reduce access road width to minimum standard needed, seed edges of road, reclaim well pad by re-shaping to blend, topsoil, re-seed to surrounding landscape.	Priority, Medial, General
276		Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.	Priority, Medial, General
277		Use directional and horizontal drilling to reduce surface disturbance.	Priority, Medial, General
278		Place infrastructure in already disturbed locations where the habitat has not been fully restored.	Priority, Medial, General
279		Apply a phased development approach with concurrent reclamation.	Priority, Medial, General
280		Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.	Priority, Medial
281		Consider placing pipelines under or immediately adjacent to a road or adjacent to other pipelines first, before considering co-locating with other ROW.	Priority, Medial, General
282		Restrict the construction of tall facilities and fences to the minimum number and amount needed.	Priority, Medial, General
283		Action: No similar action.	Priority, Medial, General
284		Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.	Priority, Medial, General

Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
285		Where physically feasible, bury distribution powerlines and communication lines within existing disturbance.	Priority, Medial, General
286		Action: No similar action.	Priority, Medial, General
287		Design or site permanent structures which create movement (e.g. pump jack) to minimize impacts to sage-grouse.	Priority, Medial, General
288		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.	Priority, Medial, General
289		Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.	Priority, Medial, General
290		Control the spread and effects of non-native plant species (Evangelista et al. 2011). (E.g. by washing vehicles and equipment.)	Priority, Medial, General
291		Action: No similar action.	Priority, Medial, General
292		Action: No similar action.	Priority, Medial, General
293		Require noise shields when drilling during the breeding (lekking, nesting, early brood-rearing), or wintering season.	Priority, Medial, General
294		Fit transmission or distribution towers with anti-perch devices (Lammers and Collopy 2007).	Priority, Medial, General
295		Require sage-grouse-safe fences: use siting, marking, fence modification and/or fence density thresholds based on latest science (e.g. Stevens 2011).	Priority, Medial, General
296		Action: No similar action.	Priority, Medial, General
297		Clean up refuse (Bui et al. 2011).	Priority, Medial, General
298		Locate temporary construction camps/sites, outside of priority habitats.	Priority, Medial
299		Action: No similar action.	Priority, Medial, General
312		Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.	Priority, Medial, General
314		Coordinate road construction and use among ROW or SUA holders.	Priority, Medial, General
315		Construct road crossings at right angles to ephemeral drainages and stream crossings.	Priority, Medial, General
316		Establish speed limits on BLM and FS system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	Priority, Medial, General

Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
317		Action: No similar action.	Priority, Medial, General
318		Action: No similar action.	Priority, Medial, General
319		Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)	Priority, Medial, General
320		Use dust abatement on roads and pads.	Priority, Medial, General
321		Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation as soon as possible upon completion of activity.	Priority, Medial, General
322		Develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003). For example, in oil and gas operations, this could include trip restrictions or minimization through use of telemetry and remote well control.	Priority, Medial, General
		Minimize the construction of new roads.	Priority, Medial, General
		Utilize dead end roads rather than loop roads.	Priority, Medial, General
<i>West Nile Virus</i>			
		Overbuild 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 <i>Cx. tarsalis</i> avoid (De Szalay and Resh 2000). This modification may reduce <i>Cx. tarsalis</i> habitat but could create larval habitat for <i>Culicoides sonorensis</i> , a vector for blue tongue disease, and should be used sparingly (Schmidtman et al. 2000). Steep shorelines should be used in combination with this technique whenever possible (Knight et al. 2003).	Priority, Medial, General
		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 increase wave action that deters mosquito production, and create more permanent ponds that are a deterrent to colonizing mosquito species like <i>Cx. tarsalis</i> which prefer newly flooded sites with high primary productivity (Knight et al. 2003).	Priority, Medial, General
		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 less <i>Culex</i> mosquitoes than completely vegetated	Priority, Medial, General



Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
		wetlands (Walton and Workman 1998). Wetlands with open water also had significantly less stage III and IV larval instars which may be attributed to increased predator abundances in open water habitats (Walton and Workman 1998).	
		Construct dams or impoundments that restrict down slope seepage or overflow by digging ponds in flat areas rather than damming natural draws for affluent water storage, or lining constructed ponds in areas where seepage is anticipated (Knight et al. 2003). Seepage and overflow results in down-grade accumulation of vegetated shallow water areas that support breeding mosquitoes.	Priority, Medial, General
		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.	Priority, Medial, General
		Line the overflow spillway with crushed rock, and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation.	Priority, Medial, General
		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.	Priority, Medial, General
		Channelization to increase the water flow, to steepen banks and provide access to predators of mosquitoes that reduce the likelihood of isolated pools and marshy areas favorable for mosquito development (Knight et al. 2003).	Priority, Medial, General
<i>Livestock Management Considerations for Emergency Stabilization and Rehabilitation (ES&R-BLM) and Burned Area Emergency Rehabilitation (BAER-FS)</i>			
		<p>Livestock Rest and ES&R/ BAER:</p> <p>Background: The BLM and FS traditionally prescribe a minimum of two growing seasons rest and achievement of vegetation objectives prior to the resumption of grazing by livestock. The duration of the rest period depends on a number of factors. Foremost is whether a site can recover naturally or whether it needs to be seeded. The natural recovery of established, re-sprouting plants typically requires a shorter rest period than newly seeded plants that must germinate from seed, establish and grow into robust, mature plants. Recovery of vegetation is typically faster on moister, higher elevation sites, which are more adapted to fire, and undergo less competition from invasive annuals than on drier, warmer, lower elevation sites. The type of pre-burn vegetation such as a native plant community as opposed to a</p>	Priority, Medial, General

Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
		<p>robust, established, crested wheatgrass seeding also plays a role. In the latter case, grazing can often be resumed following the first growing season after fire. Factors governing livestock rest that should be considered in natural recovery areas and new seedings are as follows:</p> <p>Natural Recovery:</p> <ol style="list-style-type: none"> 1. Burn area has achieved ES&R/BAER Plan vegetation and ground cover objectives, which is a function of: <ul style="list-style-type: none"> • Composition and health/vigor of pre-burn vegetation, • Fire severity and associated heat damage into plant root crowns etc., • Post-fire growing conditions (e.g., drought, wet year, etc.). <p>New Seedings:</p> <ol style="list-style-type: none"> 1. Seeding has achieved ES&R/BAER Plan vegetation and ground cover objectives. 2. Seeded vegetation is robust and mature enough to provide for soil stabilization, compete with invasive annuals and is sustainable under long-term livestock grazing. 3. Perennial plants are producing seed. 4. New seedings should not be grazed until at least the end of the second growing season following seeding (Monson et al. 2004). Adequate rest is needed to allow seeded plants to successfully establish, mature and develop robust root systems that will: <ul style="list-style-type: none"> ○ stabilize the site, ○ establish a perennial plant community that will compete effectively against invasive annuals, and ○ where appropriate, change the fuel characteristics of a site from flashy continuous fuels (characteristic of annual-dominated areas) to more discontinuous fuels that will decrease the occurrence and extent of future fires. 	
		<p>Livestock Management Considerations in Adjacent, Unburned Areas:</p> <p>Background: In some cases, wildfires may consume a considerable portion of one or more GRSG seasonal habitats locally. The remaining unburned areas may therefore become especially important for maintaining local</p>	<p>Priority, Medial, General</p>

Table C-2
BMPs that Would Apply to Alternative D

GOA Number	BMP Number	BMP	Habitat where BMP would Apply
		<p>GRSG populations. In such cases it is important to consider the effect of the burn on sage-grouse seasonal habitat-use locally, and the potential need for livestock grazing adjustments in adjacent or nearby unburned areas. Factors to consider include:</p> <ul style="list-style-type: none"> ○ Location of the burn relative to remaining, unburned breeding habitat (lekking, nesting, early brood-rearing), winter, or locally important late brood habitat. ○ Recent, local GRSG nest success, productivity or population trend data. For example, sage-grouse population areas with a declining population trend may warrant more conservative management of adjacent unburned areas for a time. Such data should be evaluated in cooperation with the state wildlife agency (IDFG, MFWP) and interpreted with other relevant information such as climatic conditions, habitat quality, West Nile virus outbreaks, etc., ○ The proportion of burned breeding (lekking, nesting, early brood-rearing), winter, or locally important late brood habitat relative to adjacent or nearby unburned habitat. For example, was the majority of breeding, winter, and/or late brood-rearing habitat in the local area burned or only a minor portion? ○ The nature of the burn. Was it patchy with unburned islands or a uniform burn with little or no surviving sagebrush? ○ Quality of the habitat burned. Was it generally suitable or marginal? Loss of substantial proportions of high quality habitat locally may necessitate more conservative management of adjoining areas. 	

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Appendix D

State of Idaho Governor's Alternative



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Brief Description of Governor's Alternative for the State of Idaho

In December 2011 Secretary of the Interior Ken Salazar invited western governors to create state-specific GRSG conservation plans to provide for the needs of GRSG and help preclude the need to list the species. In response to this invitation Governor Otter issued Executive Order 2012-02 on March 9, 2012 establishing the Governor's Sage-Grouse Task Force (Task Force). The Task Force was a diverse group of stakeholders comprised of representatives from local sage-grouse working groups, conservation interests, state and local officials and industry. The Task Force was charged with providing recommendations on actions for developing a state-wide regulatory mechanism to preclude the need to list the species under the ESA.

From March through May 2012, the Task Force met eight times in various locations across the State of Idaho. The Task Force conducted an information gathering and decision-making process consistent with state laws and regulations. Each meeting was open to the public and provided an opportunity for the public to comment on GRSG conservation and its potential effects. Additionally, the IDFG hosted a Web page displaying the times and locations of Task Force meetings, agenda, meeting notes, and presentations made during the meetings (IDFG 2012b).

On June 15, 2012, after much deliberation and discussion, the Task Force - aided by the technical expertise of IDFG including that of GRSG expert Dr. Jack Connelly, USFWS, and other relevant State and Federal agencies—delivered its recommendations to Governor Otter for review and consideration. After carefully reviewing those recommendations, the Governor developed a set of “guiding principles” used to develop a draft alternative for the State of Idaho for incorporation into the BLM and Forest Service land-use plan (LUP) amendment process. After 30-days of public comments, modifications to the Governor's alternative were made followed by the submission of the alternative to the BLM and Forest Service on September 5, 2012.

The Governor's Alternative has continued to be collaboratively refined since September 5th, 2012. In March 2013, Governor Otter wrote to the USFWS to clarify elements of the Alternative, but to also request the agency's “concurrence” with the strategy. Brian Kelly, Idaho State Supervisor for the Service replied to the Governor in April 2013 concurring with the general structure of the alternative and its major foundational elements, including the grazing management component. Since then, the State of Idaho has worked closely with the relevant state and federal agencies to further refine aspects of the Governor's alternative for the BLM and Forest Service analysis and submitted additional clarification and management actions to the agencies on July 1, 2013.

Alternative E was based on inputs from the Idaho Governor's Office (for federal lands within Idaho) and the Utah Governor's Office (for the portion of the Sawtooth National Forest in Utah that would be analyzed within the Idaho/southwest Montana sub-region). Lands in Montana would be managed under Alternative A for this alternative. Alternative E focuses primarily on management for the threats of wildfire, invasive species, and large infrastructure projects, and secondarily on management for the threats of improper livestock

grazing management and related infrastructure, West Nile Virus, and recreation. It recommends use of an adaptive management approach and implementation of triggers or thresholds that adjust zone criteria.

The refined Idaho Governor's Alternative has been incorporated as Idaho's portion of Alternative E, and draws heavily from recommendations developed by the Task Force. The Utah Governor's Alternative has been incorporated as the Utah portion of Alternative E. The intent of the Idaho and Utah's Governor's Alternative is to provide specific multiple-use management and direction for the conservation and management of the GRSG in lands administered by the BLM and Forest Service.

The actions described in this alternative for Idaho build upon, supplement, or replace the Idaho 2006 State Plan and LWG plans by identifying habitat zones, adaptive regulatory triggers and concrete best management practices for primary threats (e.g., wildfire, invasive species and infrastructure) and some secondary threats (e.g., recreation, improper livestock grazing and West Nile virus) as identified by the Service necessary to preclude a listing (for the sake of completeness, Idaho's 2006 Plan is incorporated herein by reference). Activities not addressed by this alternative, such as predation issues, will continue to be guided by the 2006 State Plan, LWG plans or relevant federal resource management plans. This alternative would replace land management plan direction inconsistent with the GRSG management actions described, unless otherwise prescribed by statute, regulation or valid existing authorizations. This alternative would retain land management plan direction that is not inconsistent with actions described to provide guidance for projects and activities within the Sage-Grouse Management Area (SGMA). It is important to note that any action taken under these provisions would have to undergo a site-specific NEPA analysis.

This alternative includes measurable population objective (e.g., population within the CHZ), and utilizing monitoring to ensure that objective is met; and setting metrics that trigger changes in practices or review of current practices to ensure the conservation objective is met long-term. Specifically, the use of four separate Conservation Areas (CAs), described below, in which the adaptive triggers are individually applied adds an increased level of sensitivity to change.

This alternative includes the establishment, through Idaho Governor's Executive Order, of an Implementation Task Force following the implementation model based on the State's success in developing a federal rule for the management and conservation of the inventoried roadless areas within Idaho (73 Federal Register 61,456 October 16, 2008).

Habitat restoration and vegetation management under Alternative E would focus on prioritizing conifer removal and restoring sagebrush and perennial grasslands. Native vegetation would be used for restoration to the extent practicable. In addition, invasive species would be controlled for three years after wildfire treatments. Alternative E provides guidance to reduce wildfire response time, create fuel breaks, and improve the wildfire suppression baseline. Targeted grazing would be allowed in all habitat management zones to reduce fine fuels and mitigate for the risk of wildfire.



This alternative emphasizes the need for livestock permittees to achieve the Idaho Rangeland Health Standards while also achieving flexibility and management predictability through the use of the state's adaptive construct.

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*Executive Department
State of Idaho*

C.L. "BUTCH" OTTER
GOVERNOR

*State Capitol
Boise*

**EXECUTIVE DEPARTMENT
STATE OF IDAHO
BOISE**

EXECUTIVE ORDER NO. 2012-02

ESTABLISHING THE GOVERNOR'S SAGE-GROUSE TASK FORCE

WHEREAS, the greater sage-grouse inhabits significant portions of the sage-steppe habitat in Idaho;

WHEREAS, the State of Idaho currently enjoys viable and widespread populations of the species;

WHEREAS, the State of Idaho by and through the Sage-grouse Advisory Committee (SAC) and the Local Working Groups (LWGs) has a long track record of successful engagement in managing and conserving the species and its habitat;

WHEREAS, the State by and through the involvement of the SAC and the LWGs developed a state-wide management plan for the species in 2006 and amended in 2009 (2009 Plan);

WHEREAS, the sage-grouse has been the subject of several petitions to list, federal regulatory actions and multiple rounds of litigation regarding its status under the Endangered Species Act (ESA);

WHEREAS, on March 23, 2010, the U.S. Fish and Wildlife Service (Service) determined the species warrants listing over all of its range, including Idaho, but is precluded by higher-priority listing actions;

WHEREAS, due to the Service's decision, the sage-grouse is currently considered a "candidate" species under the ESA;

WHEREAS, on February 2, 2012, the United States District Court for the District of Idaho ruled the Service must reevaluate the status of the species under the ESA by September 30, 2015;

WHEREAS, in response to this decision, the Secretary of the Interior has invited the eleven (11) western states impacted by a potential listing of the species to develop state-specific regulatory mechanisms to conserve the species and preclude the need to list under the ESA;

WHEREAS, the development of a state-specific regulatory mechanism in Idaho will be critical in demonstrating to the Service the species does not warrant federal protection;

WHEREAS, the Bureau of Land Management (BLM) is currently implementing national Instruction Memoranda to guide interim management of public lands and to develop sage-grouse conservation measures for incorporation into the agency's existing Resource Management Plans (RMPs) by September 2014;

WHEREAS, the development of a state-specific regulatory mechanism, consistent with the objectives of this Executive Order, may allow the State the opportunity to be exempted from the applicability of these Instruction Memoranda guiding interim management of public lands within Idaho;

Idaho and Southwest Montana Sub-Region Greater Sage-Grouse LUPA/EIS

October 2013

WHEREAS, the development of a state-specific regulatory mechanism will enable the BLM to incorporate the State's plan as an alternative in its environmental analysis pursuant to the National Environmental Policy Act (NEPA);

WHEREAS, it is vital to the interests of the State to develop a state-specific regulatory mechanism as the listing of the species would adversely impact the economy of Idaho, including the ability to generate revenues from private property and State endowment lands;

WHEREAS, the listing of the species would have a significant impact on the State's custom, culture and way of life; and

WHEREAS, development of the State's regulatory mechanism must be driven by the most current scientific information, input from a variety of stakeholders and aimed at conserving the species and its habitat while maintaining predictable and multiple uses of private, state and public lands.

NOW, THEREFORE, I, C.L. "BUTCH" OTTER, Governor of the State of Idaho, by the authority vested in me under the Constitution and laws of the State of Idaho do hereby create the Sage-Grouse Task Force.

1. The creation of the Governor's Sage-Grouse Task Force:

A. The members of the Governor's Sage-Grouse Task Force (Task Force) shall be appointed by and serve at the pleasure of the Governor through calendar year 2012.

i. The Task Force shall be composed of fifteen (15) members, representing the various geographic areas of the State within the range of the species.

ii. The Office of the Governor will chair this entity.

iii. The Office of Species Conservation and the Idaho Department of Fish and Game will staff this entity.

B. The Task Force members shall be appointed from the following categories:

i. Individuals who:

- Represent agricultural interests; or*
- Represent energy or mineral development interests.*

ii. Individuals representing:

- A local working group; or*
- A nationally, regionally or locally recognized environmental organization; or*
- Nationally or locally recognized wildlife or sportsmen's groups.*

iii. Individuals who:

- Hold State elected office; or*
- Hold county elected office; or*
- Represent the public at large.*

2. Duties of the Task Force:

A. Provide the Governor recommendations on policies and actions, using the 2009 Plan and other on-going activities as a backdrop, for developing a state-wide regulatory mechanism to preclude the need to list the species;

- B. *The recommendations must be based on the following objectives and/or criteria:*
- i. *Conserve the species and its habitat while maintaining predictable and multiple uses of private, state and public lands;*
 - ii. *Identify and designate key/core sage-grouse habitat based on the biological needs of the species;*
 - iii. *Tailor the management recommendations to the import of the habitat and is attuned to the interests of the State;*
 - iv. *Address the following primary threats to the species as identified by the Service:*
 - *Habitat fragmentation due to wildfire and invasive species;*
 - *Conversion of habitat for agriculture or urbanization; and*
 - *Energy development/infrastructure.*
 - v. *Address the following secondary threats to the species as identified by the Service:*
 - *Disease/West Nile virus;*
 - *Management issues related to livestock grazing;*
 - *Collisions with fences and power lines;*
 - *Mining;*
 - *Prescribed fire and range treatments;*
 - *Water development; and*
 - *Conifer invasion.*
 - vi. *Identify opportunities for pro-active sage-grouse habitat enhancement projects; and*
 - vii. *Recognize, encourage and incentivize land use practices that are actively maintaining or improving sage-grouse habitat as evidenced by improvements in habitat quality, active lek routes or stable/increasing populations of the species.*
- C. *The duties of the Task Force are solely advisory.*
- D. *The Task Force will provide its recommendations to the Governor no later than May 31, 2012.*
- E. *Technical Expertise:*
- i. *The Task Force may request consultation, information and technical expertise from Directors or their designees of state agencies regarding the biological needs of the species, activities on state, federal and private lands potentially impacted by the status of the species, and requirements of the ESA and other relevant statutory requirements, including but not limited to the Office of Species Conservation, the Idaho Department of Fish and Game, the Idaho Department of Lands, the Office of Energy Resources, the Idaho State Department of Agriculture and the Idaho Department of Parks and Recreation.*
 - ii. *The Task Force may request comments, information and technical expertise from the American Indian Tribes of Idaho, the universities of the State, federal agencies, including but not limited to the Service, the BLM, the U.S. Forest Service and the Idaho and Southwestern Montana Sub-Region Greater Sage-Grouse LUPA/EIS, Natural Resources Conservation Services, and members of the public.*



IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Idaho at the Capitol in Boise on this 9th day of March, in the year of our Lord two thousand and twelve, and of the independence of the United States of America the two hundred thirty-sixth and of the Statehood of Idaho the one hundred twenty-second.

A handwritten signature in blue ink, reading "C.L. Butch Otter", written over a faint "COPY COPY COPY" watermark.

C.L. "BUTCH" OTTER
GOVERNOR

A handwritten signature in black ink, reading "Ben Yursa", written over a faint "COPY COPY COPY" watermark.

BEN YURSA
SECRETARY OF STATE

July 13, 2012

Brian Kelly, State Director
U.S. Fish and Wildlife Service
Idaho State Office
1387 South Vinnell Way
Boise, ID 83709-1657

RE: Governor's Draft Alternative for Sage-Grouse Management

Dear Brian,

I appreciate your attendance and participation on my annual trail ride to discuss the State of Idaho's effort to conserve the sage-grouse and its habitat while maintaining predictable levels of land use across all ownerships. As I stated during our discussion, Idaho's sage-grouse plan must work for the State and preclude the need to list the species under the Endangered Species Act (ESA). We can only achieve this meaningful objective and solve this complex natural resource issue if the State, federal government and other important stakeholders truly view this as an opportunity to form a partnership. I believe this was Secretary Salazar's intent when he invited the affected states to craft state-specific plans for the species.

To this end, and as you are fully aware, my Sage-Grouse Task Force (Task Force) was assigned to provide recommendations and policies to serve as a foundation for a successful management strategy. I'm confident you would agree the Task Force made significant inroads in developing such a strategy within a very aggressive timeframe. Based largely on these recommendations, I recently released a draft plan for the species and requested public input.

I believe the draft plan provides a solid framework and moves us one step closer to completing this difficult and important task. Recognizing that further detail and refinement need to take place based on continued stakeholder input, I request feedback on the following questions:

- Whether the management framework – based on a thematic habitat continuum and population metrics – outlined in my Draft Alternative represents a sound policy that should move forward; and

- Whether or not the habitat zones, especially the Core Habitat Zone and Important Habitat Zone, are consistent with the U.S. Fish and Wildlife Service's understanding of the most important sage-grouse habitats in the State.

I look forward to continuing our dialogue and discussion of this important issue. It is essential that we keep the lines of communication open to ensure we achieve our mutual objectives.

As Always—Idaho, “Esto Perpetua”

A handwritten signature in black ink, appearing to read "C.L. Butch Otter". The signature is fluid and cursive, with the first name "C.L." written in a smaller, more compact style than the last name "Otter".

C.L. “Butch” Otter
Governor of Idaho

Cc: Idaho Department of Fish and Game, Director (V. Moore)
Governor's Office of Species Conservation, Acting Administrator (D. Miller)
BLM, State Director (S. Ellis)
U.S. Forest Service, Regional Forester (H. Forsgren)
Governor's Sage-Grouse Task Force



United States Department of the Interior

Fish and Wildlife Service

Idaho Fish And Wildlife Office

1387 S. Vinnell Way, Room 368

Boise, Idaho 83709

Telephone (208) 378-5243

<http://www.fws.gov/idaho>



AUG 01 2012

The Honorable C.L. "Butch" Otter
 Governor of Idaho
 State Capitol
 Boise, Idaho 83702

Subject: Draft Federal Alternative of Governor C.L. 'Butch' Otter for Greater Sage-Grouse Management in Idaho-June 29, 2012

Dear Governor Otter:

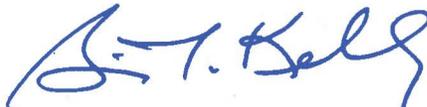
Thank you for your letter of July 13, 2012, regarding your Draft Alternative for Sage-Grouse Management. Let me begin by following up on the trail ride discussion you hosted in June, and reiterate the U.S. Fish and Wildlife Service's (Service) appreciation for your leadership on this important issue. Your staff, the Task Force you appointed, Idaho Department of Fish and Game and the Office of Species Conservation worked diligently to develop a draft state strategy under an aggressive timeline. Their work built on years of effort by many in Idaho, in particular the foundational accomplishments of the local working groups. My staff and I appreciated the opportunity to serve as technical advisors throughout the Task Force process. Your letter requested that the Service provide feedback regarding (1) whether the "management framework – based on a thematic habitat continuum and population metrics" was a sound policy that should move forward, and (2) whether or not the "habitat zones, especially the Core Habitat Zone and Important Habitat Zone" are consistent with the Service's understanding of the most important sage-grouse habitats in the State.

The Service believes the management framework that you have developed provides a sound policy outline from which to build upon to meet the long-term conservation goals of greater sage-grouse in Idaho. The thematic approach based on conservation objectives that are monitored in an adaptive management construct that your framework incorporates, are fundamental attributes of the Service's own approach to strategic conservation (USFWS and USGS 2006). My staff and I look forward to continuing to work with you (and the Bureau of Land Management and U.S. Forest Service as they work through their land management planning processes) to identify and resolve issues that will help solidify the adequacy of this framework, and associated policy, necessary for our 2015 Endangered Species Act listing review.

The Core and Important Habitat Zones, as currently drafted by the Task Force, are indeed among the most important sage-grouse habitats in the State. In identifying these zones, the Task Force had the foresight to address not only the conservation of what are now the most important habitats, but also a means to provide for long-term conservation and restoration of sage-steppe habitat and rangelands in Idaho. Addressing the threats to sage-grouse across jurisdictional boundaries in these areas will be important for our listing review in 2015. Specifically, I look forward to continued conversations regarding how the State will approach implementation of long-term conservation on State and private lands where necessary.

Thank you for the opportunity to provide feedback on the draft alternative. The compressed timeframes which you have worked within to assemble this framework is commendable. In closing, the Service agrees that success in this endeavor hinges on our ability to work with many in a partnership. We look forward to our continued role as one of those partners with you and others to assist the conservation of greater sage-grouse in Idaho. If you have any questions regarding the information provided here please do not hesitate to contact me at 208-378-5243 or Jason Pyron of my staff at 208-685-6958.

Sincerely,



Brian T. Kelly, State Supervisor
Idaho Field Office

cc:USFWS, National Greater Sage-grouse Coordinator, Cheyenne, WY (P. Deibert)
BLM, State Director, Boise, ID (S. Ellis)
USFS, Regional Forester (H. Forsgren)
IDFG, Director and Sage-Grouse Task Force Co-Chair, Boise, ID (V. Moore)
Governor's Office of Species Conservation, Administrator, Boise, ID (D. Miller)
Governor's Sage-Grouse Task Force Co-Chair, Boise, ID (T. Perry)
USFWS Region 1 Director, Portland, OR (R. Thorson)

Literature Cited:

U.S. Fish and Wildlife Service and U.S. Geological Survey. 2006. Strategic Habitat Conservation: final report of the National Ecological Assessment Team. U.S. Department of Interior, Washington, D.C. 48p.



C.L. "BUTCH" OTTER
GOVERNOR

August 17, 2012

Steve Ellis, State Director
Bureau of Land Management
Idaho State Office
1387 S. Vinnell Way
Boise, ID 83709-1657

Dear Steve,

I appreciate your attendance and participation on my annual trail ride to discuss the State of Idaho's effort to conserve the sage-grouse and its habitat while maintaining predictable levels of land use across all ownerships. As I stated during our discussion, Idaho's sage-grouse plan must work for the State and preclude the need to list the species under the Endangered Species Act (ESA). We can only achieve this meaningful goal and solve this complex natural resource issue if the State, federal government and other important stakeholders truly view this as an opportunity to form a partnership. I believe this was Secretary Salazar's intent when he invited the affected states to craft state-specific plans for the species.

As you are fully aware, my Sage-Grouse Task Force (Task Force) was assigned to provide recommendations and policies to serve as a foundation for a successful management strategy. I'm confident you would agree the Task Force made significant inroads in developing such a strategy within a very aggressive timeframe. Based largely on these recommendations, I released a draft plan for the species and requested public input.

I believe the draft plan provides a solid framework and moves us one step closer to completing this difficult and important task. As the State continues working with stakeholders to refine my proposal, I request feedback on the following questions prior to submitting a revised version of the State's Alternative:

- Whether the management framework outlined in my Draft Alternative – based on a thematic habitat continuum and population metrics – represents a sound policy that should move forward; and

- Whether my Draft Alternative is consistent with the agency’s multiple-use mandate as well as the National Greater Sage-Grouse Land Use Planning Strategy.

It is essential that I receive answers to these questions to ensure all stakeholders are striving to achieve the mutual objectives outlined by the Secretary and my Executive Order (2012-02). One near-term objective, as noted in my Executive Order, is to have the “opportunity to be exempted from the applicability of these Instruction Memoranda guiding interim management of public lands within Idaho.” This aim was recently affirmed in a Nevada BLM Instruction Memo (NV 2012-058) stating, “Nevada BLM may adopt the Governor’s strategy through a subsequent Instruction Memorandum and upon concurrence by the U.S. Fish and Wildlife Service....”

As you are aware, I sent a similar letter to Brian Kelly, state director of the U.S. Fish and Wildlife Service (Service), requesting his agency’s perspective on my draft plan. As the agency charged with implementing the ESA, the Service opined:

The Service believes the management framework that you have developed provides a sound policy outline from which to build upon to meet the long-term conservation goals of greater sage-grouse in Idaho. The thematic approach based on conservation objectives that are monitored in an adaptive construct that your framework incorporates, are fundamental attributes of the *Service’s own approach to strategic conservation* (USFWS and USGS 2006).

(emphasis added).

Thus, from your answers to these two questions the State can discern whether the agencies are moving in the same direction with regard to my plan, ultimately affording Idaho the opportunity for a state-specific Instruction Memorandum. Thank you for your consideration and support on this issue.

As Always—Idaho, “Esto Perpetua”



C.L. “Butch” Otter
Governor of Idaho

Cc: U.S. Secretary of the Interior, The Honorable Ken Salazar
Counselor to the Assistant Secretary for Fish, Wildlife and Parks (M. Bean)
Idaho Department of Fish and Game, Director (V. Moore)
Governor’s Office of Species Conservation, Administrator (D. Miller)
USFWS, State Director (B. Kelly)
U.S. Forest Service, Regional Forester (H. Forsgren)
Governor’s Sage-Grouse Task Force



United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Idaho State Office
1387 South Vinnell Way
Boise, Idaho 83709-1657



August 30, 2012

In Reply Refer To:
6500/6515/6520 (930)

Honorable C. L. "Butch" Otter
Office of the Governor
PO Box 83720
Boise, ID 83720

Dear Governor Otter:

I appreciate your letter of August 17, 2012, and our discussion about sage-grouse management at your annual trail ride in June. As I indicated during our discussion on the trail ride, I am encouraged by the efforts of your Sage-Grouse Task Force (Task Force) and look forward to receiving your final alternative for consideration in our resource management planning effort. I share Idaho's goal of long term conservation of sage-grouse and its habitat, which may make it unnecessary to list the species under the Endangered Species Act.

We support the efforts of the State of Idaho and your Task Force to advance sage-grouse conservation across public lands, state lands, and private lands. The State of Idaho and local working groups have been the foundation for advancing sage-grouse conservation in Idaho in coordination with federal agencies and other partners. Your Task Force represents a diversity of interests and expertise that worked diligently under an aggressive timeframe to develop a draft alternative. This spring we committed \$75,000 towards the task force planning effort and my staff actively participated in all task force meetings as technical advisors. My technical staff has thoroughly reviewed the State of Idaho's Draft Alternative released to the public in June and we believe it is a thoughtful approach to sage-grouse conservation on public lands. Jeff Foss and wildlife specialists on my staff have had follow-up discussions with Tom Perry and Virgil Moore to share ideas as the Draft Alternative is being finalized.

Your letter requested feedback on two questions: 1) Whether the management framework outlined in the State of Idaho's Draft Alternative—based on a thematic habitat continuum and population metrics—represents a sound policy that should move forward; and 2) Whether the State of Idaho's Draft Alternative is consistent with the agency's multiple-use mandate as well as the National Greater Sage-grouse Land Use Planning Strategy. The management framework detailed in the Idaho's Draft Alternative provides a sound management platform and represents one in a range of alternatives we will fully consider in our resource management planning process that is underway. The management framework outlined in the Draft Alternative incorporates habitat information and population metrics that are central to developing a sound management strategy. The adaptive regulatory triggers and emergency response outlined in the

Draft Alternatives represent an innovative approach to addressing the complex and dynamic threats that influence the sage-grouse habitat. Adaptive management is of particular importance in Idaho where the threats of wildfire and invasive species are actively impacting habitat conditions and maintenance of large, intact stands of sagebrush.

The management framework for the Draft Alternative addresses many of the issues we received from the public during scoping and many of the responsibilities the BLM has as a multiple-use agency. For example, the Draft Alternative provides a strategy for guiding land management activities to address the primary threats of wildfire, invasive species, and fragmentation of habitat resulting from large-scale infrastructure projects. The Draft Alternative also provides a strategy to address impacts to sage-grouse habitat from improper livestock grazing and recreation activities. A rigorous analysis of a range of alternatives in BLM's draft Environmental Impact Statement (EIS) will provide the basis to evaluate the effectiveness of the alternatives in achieving sage-grouse conservation. Upon public review and comment and development of a final EIS, I will have a reasoned basis for issuing a final decision to amend our resource management plans by 2014.

BLM's National Greater Sage-grouse Land Use Planning Strategy provides guidance for incorporating the National Technical Team report "into at least one alternative in the land use planning process." The National Greater Sage-grouse Land Use Planning Strategy also provides guidance for use and update of preliminary priority habitat and preliminary general habitat maps that were developed in coordination with the Idaho Department of Fish and Game. The State of Idaho's Draft Alternative meets the purpose and need of the sage-grouse program and is responsive to BLM's National Sage-grouse Planning Strategy which calls for explicit objectives, desired habitat conditions, management actions, and area-wide use restrictions. Given that the National Greater Sage-grouse Land Use Planning Strategy is largely guiding the planning process, I believe it is reasonable to add the State of Idaho's Alternative to the range of alternatives analyzed in the EIS.

BLM's interim management of sage-grouse is outlined in IM 2012-043 which provides policies and procedures for management while the resource management plans are undergoing amendment and revision. The instruction memorandum states "*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 conservation of the Greater Sage-grouse in coordination and concurrence with the FWS; 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.*" If the U.S. Fish and Wildlife Service provides concurrence on Idaho's regulatory mechanism for the conservation of Greater Sage-grouse, Idaho BLM will initiate discussions with your staff about BLM policy considerations and organizational capacity for potentially adopting the State's Final Alternative as interim direction until the BLM issues the final EIS and Record of Decision, by the end of 2014.

I appreciate the continued strong coordination between the State of Idaho and Idaho BLM in the conservation of sage-grouse and public land management. We will continue to be actively engaged with sage-grouse planning efforts led by the State of Idaho and look forward to receiving your final alternative for inclusion in our EIS effort. My primary management point of contact for sage-grouse conservation is Jeff Foss, Deputy State Director for Resource Services (208-373-3801).

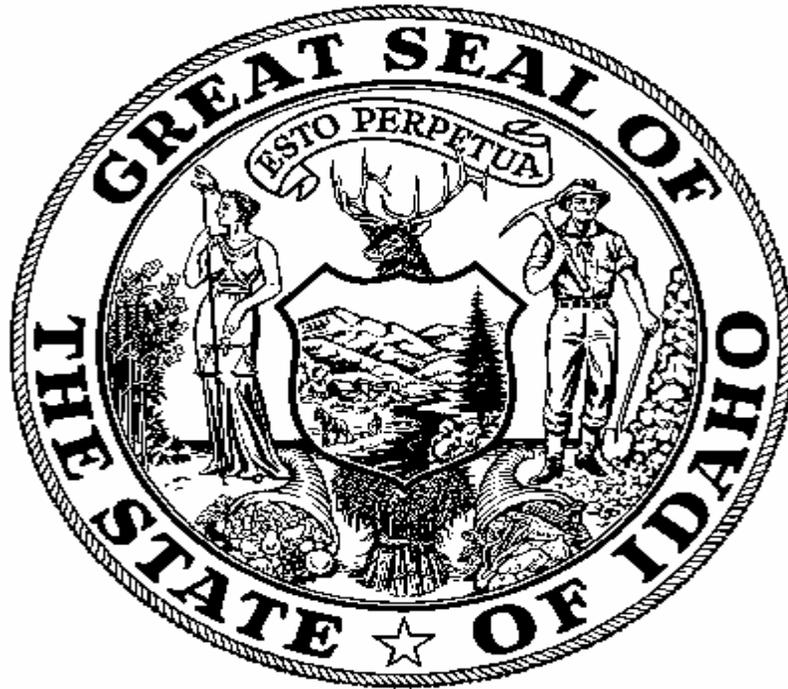
Thank you for your leadership in advancing conservation of sage-grouse and close coordination with Idaho BLM regarding public land management in Idaho.

Sincerely,

A handwritten signature in black ink that reads "Steven A. Ellis". The signature is written in a cursive style with a large initial 'S'.

Steven A. Ellis
State Director
Idaho BLM

FEDERAL ALTERNATIVE OF GOVERNOR C.L. "BUTCH" OTTER



FOR GREATER SAGE-GROUSE MANAGEMENT IN IDAHO

September 5, 2012 Version

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BACKGROUND

As Governor of the State of Idaho, I hereby submit to the U.S. Secretary of the Interior and U.S. Secretary of Agriculture (collectively, “the Secretary”) the State of Idaho’s Alternative (“Idaho’s Alternative”) for incorporation into the National Greater Sage-Grouse Land Use Planning Strategy (“Strategy”) of the U.S. Bureau of Land Management (“BLM”) and U.S. Forest Service (“USFS”) (*see* BLM/USFS 2012). The Strategy aims to incorporate objectives, desired habitat conditions and management actions into land use plans for Federal lands – for the BLM, the Resource Management Plans (“RMPs”) required by the Federal Land Policy and Management Act (“FLPMA”) and for the USFS, the land management plans (“LMPs”) required by the National Forest Management Act (“NFMA”)—by September 30, 2014. The ultimate outcome for the Strategy is to conserve the Greater sage-grouse (*Centrocercus urophasianus*) (“sage-grouse”) and its habitat and potentially avoid a listing under the Endangered Species Act (“ESA”) (*see* BLM 2011a).

The State of Idaho wishes to express its appreciation for the Secretary’s recognition of the important role states can play in managing and conserving the sage-grouse. This recognition is also evinced in the ESA as it directs the Secretary to “take[ing] into account those efforts” being made by a state prior to a listing determination. 16 U.S.C. § 1533(b)(1)(A). Accordingly, I believe the recommendations contained herein not only provide a balanced approach to this complex natural resource issue, but also ensure the long-term sustainability of those habitat attributes necessary to preclude the need to list the species under the ESA.

In order to place Idaho’s Alternative in proper context, it is necessary to set out a brief overview of the process the State employed. As Idaho currently enjoys viable and widespread populations of sage-grouse, I was fully aware of the need for a carefully planned process to ensure we conserved the species and its habitat while maintaining predictable levels of land use. I would strongly urge our Federal partners to approach the issue in this fashion.

GOVERNOR’S SAGE-GROUSE TASK FORCE

On March 9, 2012, I issued Executive Order 2012-02 establishing the Governor’s Sage-Grouse Task Force, hereafter “Task Force” (*see* Task Force Website, available at: <http://fishandgame.idaho.gov/public/wildlife/?getPage=310>). The Task Force was a diverse group of stakeholders comprised of representatives from local sage-grouse working groups, conservation interests, state and local officials and industry. The Task Force was charged with providing recommendations on actions for developing a state-wide regulatory mechanism to preclude the need to list the species under the ESA.

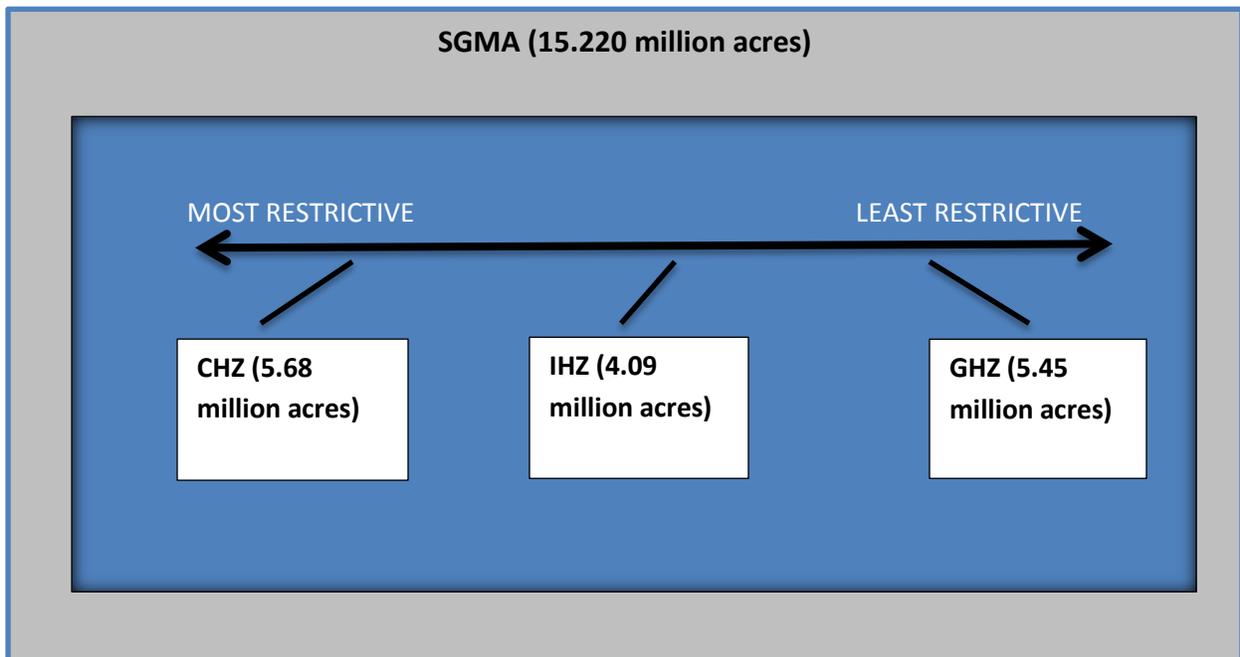
In March through May 2012, the Task Force met eight times in various locations across the State of Idaho. Each meeting was open to the public and provided an opportunity for the public to comment on sage-grouse conservation and its potential effects. Additionally, the Idaho Department of Fish and Game (“IDFG”) hosted a Web page displaying the times and locations of Task Force meetings, agenda, meeting notes, and presentations made during the meetings. *See* IDFG 2012b. Thus, the Task Force conducted an open and transparent information-gathering and decision-making process.

After much deliberation and discussion, the Task Force on June 15, 2012—aided by the technical expertise of IDFG, the U.S. Fish and Wildlife Service (“Service”), and other relevant State and Federal agencies—delivered its recommendations to me for review and consideration. After carefully reviewing those recommendations, I developed a set of “guiding principles” to help evaluate the strength of the Task Force’s recommendations, public comments and other important considerations. These guiding principles will be discussed in further detail under section I.

OVERVIEW OF THE STATE’S ALTERNATIVE

Consistent with the unanimous recommendation of the Task Force, the State is adopting the designation of a Sage-Grouse Management Area (“SGMA”) with three distinct management zones: Core Habitat (“CHZ”), Important Habitat (“IHZ”) and General Habitat (“GHZ”).

Figure 1. Idaho’s Sage-Grouse Management Area¹



¹ The acreages displayed in Figure 1 are approximate values.

Generally, these management zones outline a suite of basic management activities that may, under certain conditions, or may not occur within a given area. In other words, the three management zones within the SGMA represent a management continuum that includes at one end, a relatively restrictive approach aimed at providing a high level of protection to the species within the CHZ, and on the other end, a relatively flexible approach for the GHZ allowing for more multiple-use activities. While the IHZ provides greater flexibility than in the CHZ, the overall quality and ecological importance of the habitat within this zone is more closely aligned with the habitat in the CHZ than in the GHZ.

Allocation to a specific management zone does not mandate or direct the relevant Federal agency to propose or implement any action; rather, the three habitat zones provide an array of permitted and prohibited activities. Activities not specifically addressed by the Alternative are still subject to the allowances and restrictions of the applicable resource management plan.

The measures set forth below are essential to sage-grouse conservation in Idaho and should receive not only priority consideration in the Strategy, but also in the shaping of future agency budgets. In order to accomplish the objectives set out below, I strongly urge State and Federal agencies, including the Service, BLM, USFS and other federal agencies to work collaboratively to ensure uniform and consistent application of Idaho's Alternative. In particular, BLM needs to make federal funding for fire suppression, especially in the CHZ, a top priority.

It is important to note that this document does not represent a complete list of sage-grouse actions for the State of Idaho. This document only provides special management for sage-grouse on lands managed by the BLM and USFS, and while beneficial to other sage-steppe species, agencies will still have the obligation to analyze other values when considering a proposed action.

That said, with this management framework in place, the State will approach willing private parties, local governments, other Federal partners, and the Idaho Department of Lands to see what actions are necessary and appropriate to complement the State's Federal Alternative. Furthermore, it is important to note that the relevant Federal agencies in considering these measures as part of environmental analyses, planning updates and ESA listing determinations, should recognize that actions on these lands can have direct and indirect impacts on State endowment trust lands managed by the Idaho Department of Lands. Thus, it is important to evaluate sage-grouse management in a comprehensive and holistic manner.

STATE OF IDAHO'S ALTERNATIVE

The following section further explains the “guiding principles” used to develop Idaho’s Alternative.

I. GUIDING PRINCIPLES

A. Task Force Recommendations

Because the Task Force represents the diverse stakeholders associated with this issue, the State has made a concerted effort to defer to their recommendations. In areas where the Task Force provided alternative recommendations and/or left actions to the discretion of the State, we have endeavored to capture the intent of the Task Force consistent with the parameters set out in the Governor’s Executive Order.

B. ESA Considerations

On March 23, 2010, the Service determined the species warrants listing over all of its range, including Idaho, but is precluded by higher listing actions. 75 Fed. Reg. 13,910 (Mar. 23, 2010). Specifically, the Service found Federal resource management plans deficient with respect to addressing the primary threats to the species—namely, habitat fragmentation due to wildfires, invasive species and infrastructure development. *See* 75 Fed. Reg. at 13,973-80.

Following the Service’s decision, the United States District Court for the District of Idaho ruled that pursuant to a D.C. District Court settlement, the agency must reevaluate the status of the species under the ESA by September 30, 2015. In response to this deadline, the Secretary of the Interior in December 2011 invited the eleven western states impacted by a potential listing of the species to develop state-specific regulatory mechanisms to address these cited deficiencies in an effort to preclude a listing under the ESA. Accordingly, one of the State’s primary objectives in submitting this Alternative is to develop a management framework that passes muster under the ESA.

C. Idaho’s Management Approach

The State’s management approach was designed to be clear and measurable over varying spatial and temporal scales. This approach consists of management objectives attempting to address key decision points outlined in the Service’s 2010 determination. As mentioned above, the Service’s 2010 decision cited lack of regulatory mechanisms and habitat loss as the primary drivers for its warranted but precluded decision. Importantly, both of these factors affect the population status of the species. The Idaho Sage-Grouse Management Approach includes: (1) implementation of regulatory mechanisms to support the overall management and conservation objectives of the species; (2) stabilization of habitats and populations, including a systematic review of habitat and

population status; and (3) development of adaptive regulatory triggers and a wildfire emergency clause to address sudden and unanticipated changes.

The best available information indicates that wildfire, invasive species and infrastructure, as defined below, are the primary threats to sage-grouse in Idaho. The State aided by the valuable contributions of the Task Force developed a suite of regulatory measures to address these primary threats as well as some activities identified by the Service as secondary threats (e.g., recreation, improper livestock grazing and West Nile virus). The State believes that implementation of these measures will provide significant conservation benefits to sage-grouse, other sage-steppe obligate species, and should be sufficient to preclude a listing under the ESA in Idaho.

Notwithstanding these efforts, unexpected and catastrophic events (e.g., major wildfire event(s), West Nile virus) may result in a substantial loss of habitat and concomitant decline in sage-grouse populations sufficient to trigger a change in the regulatory approach to the issue. Hence, the State has developed adaptive regulatory triggers and an emergency wildfire clause to ensure the populations and habitats within the CHZ, and to a lesser extent, the IHZ are maintained and enhanced. These adaptive triggers are intended to provide a regulatory backstop for navigating unanticipated and deleterious impacts to the species.

If these measures prove necessary, the State would still be well positioned to conserve the species and its habitat, while maintaining predictable levels of land use. It is important to note the development and implementation of regulatory triggers, primarily to deal with wildfire, is a new approach for managing this particular species. With that recognition, the State anticipates continuing to work with its partners to refine this feature of the plan to ensure the triggers are properly attuned to the needs of the State and the species.

To aid in the assessment of this management approach, the State has divided the SGMA into four individual Conservation Areas (“CA”) across the State: two north (Mountain Valleys, Desert) and two south (West Owyhee, Southern) of the Snake River. Each Conservation Area is divided into Core, Important, and General management zones (“MZs”) based upon modeling of sage-grouse breeding bird density, habitat connectivity and persistence, scientific knowledge based on surveys and radio-telemetry studies, and the recommendations of the Task Force.

Although wildfire, infrastructure, and invasive species pose threats for sage-grouse in all CAs, wildfire and invasive species tend to be a greater issue in the Desert and West Owyhee CAs than in the Mountain Valleys or Southern CAs. Additionally, sage-grouse habitats in the Desert and West Owyhee CAs are relatively contiguous, while those in the Mountain Valleys and Southern CAs tend to be more fragmented. North of the Snake River, the CHZ is approximately three million acres, while the CHZ south of the Snake River is approximately 2.7 million acres.

Acreage for the CHZ and IHZ in the four CAs is presented in Table 1. These four CAs are further described below:

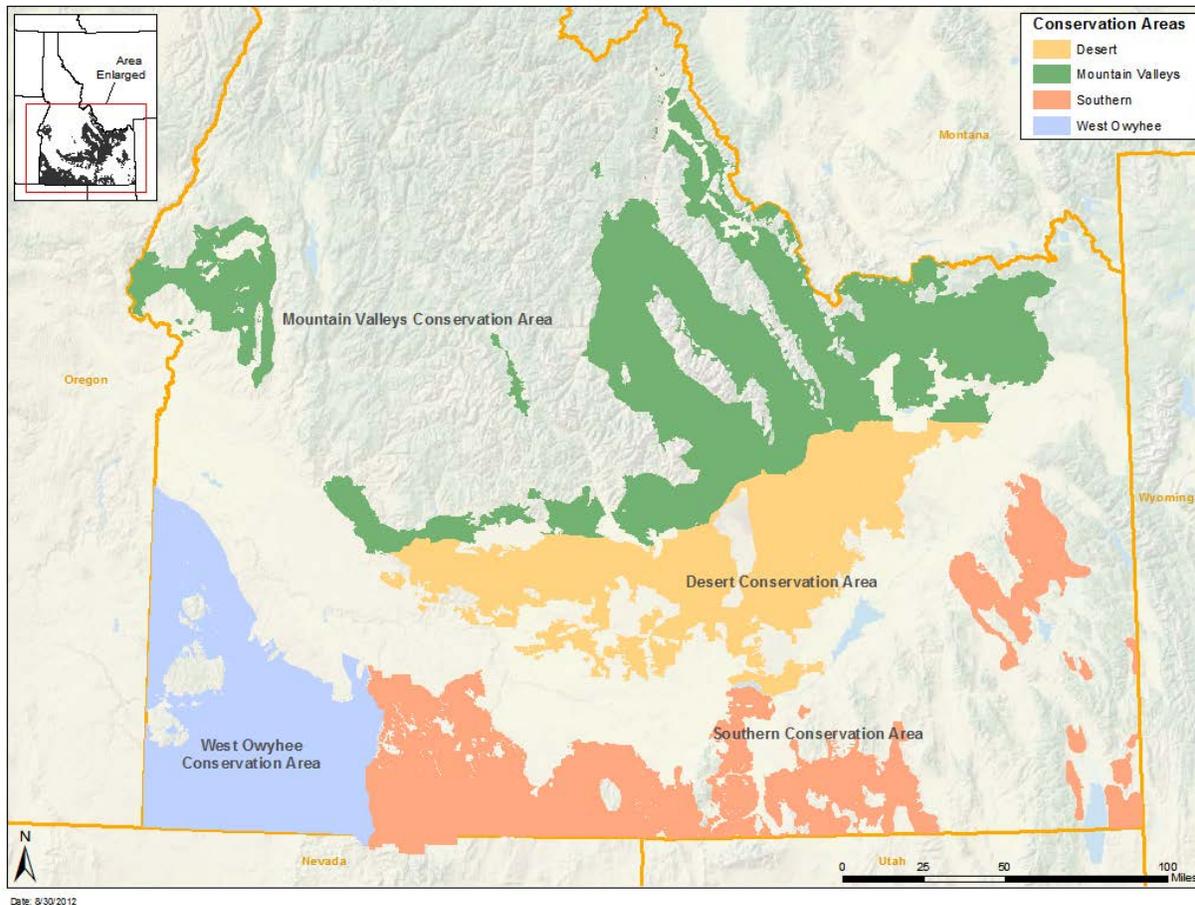
North of the Snake River

- Mountain Valleys CA— Starting at Rexburg and extending west, sage-grouse habitat north and west of Highway 33 to Howe, Highway 33/22 to Arco, Highway 26/20/93 to Carey, Highway 20 west to Mountain Home, south from Mountain Home on Highway 51 to the Snake River. West-Central is included in this area.
- Desert CA—South of the above CA.

South of the Snake River

- West Owyhee CA—West of the Jarbidge River.
- Southern CA—East of the Jarbidge River, including East Idaho uplands and Bear Lake Plateau.

Sage Grouse Conservation Areas



MANAGEMENT OBJECTIVES

Objective 1: Implement Regulatory Mechanisms – The State’s first objective is to implement the regulatory mechanisms provided herein to maintain and enhance sage-grouse habitats, populations and connectivity in areas within the CHZ, buffered by strategic areas within IHZ, dominated by sagebrush. Through the implementation of these mechanisms, the State will be able to provide a level of protection sufficient to conserve at least 65% of the current known leks within the State, which are fully captured in the CHZ. Recognizing the risk and difficulty of controlling wildfire, invasive species and providing the opportunity to consider limited high-value infrastructure development, the IHZ provides an additional population buffer.

The effectiveness of this objective with respect to the primary threats of wildfire, invasive species and infrastructure will be assessed every three years for each Conservation Area. Secondary threats addressed in this Alternative will be evaluated according the various schedules contained in the regulatory language. IDFG will serve as the lead in conducting these assessments in concert with the Governor’s Office of Species Conservation and relevant Federal agencies as the management of the species is currently under the jurisdiction of the State of Idaho.

Objective 2: Stabilize Habitats and Populations – The second management objective examines the effectiveness of the regulatory measures by monitoring the stability of habitat and population trends over time. As described above, the State recognizes the need to regularly analyze the effectiveness of the regulatory measures as well as to discern whether active conservation and restoration efforts, including conifer control, wildfire suppression, and more passive habitat protection techniques such as fuel breaks are effective strategies. Areas within the CHZ, and to a lesser extent the IHZ, will be used for baseline comparison to evaluate progress in achieving this objective.

During the first three-year period (2012-2015) of implementation, Idaho’s management approach will emphasize limiting habitat loss in the CHZ and IHZ respectively to no more than a ten percent (10%) loss due to fire and/or infrastructure development resulting in a proportionate reduction of males counted on leks within a particular Conservation Area. This allowance is made because of the difficulty in developing effective wildfire suppression programs, including allocation of appropriate resources and infrastructure projects currently planned and/or underway.

Should a ten percent loss occur within this timeframe, IDFG in coordination with the Governor’s Office of Species Conservation and other relevant State and Federal agencies will initiate a management review of the State’s regulatory approach to assess the causal factors for declines. Conceptually, the review would include a determination of whether the loss is based on a population-related decline (e.g., West Nile virus, drought) or is driven by habitat loss. If the loss

is habitat-driven, the review team will assess the effectiveness of current best management practices, funding levels and restoration efforts in order to preclude the triggering of the adaptive regulatory triggers.

Three primary indicators provide a baseline for population status:

- 1) Maximum number of males counted on lek routes in 2011 within CHZ.
- 2) Number of active leks counted in 2011 within CHZ.
- 3) Average rate of population change.

Males counted on lek routes, numbers of leks and rate of population change provide a solid baseline against which future comparisons will be made to assess the success of the approach or indicate when populations may be in trouble potentially triggering additional conservation actions.

Using the average value for λ (finite rate of change) for 2009-2011 within CHZ is a relatively new approach for monitoring sage-grouse populations. Under this evaluation, population growth calculations (λ) will be compared to a value of 1.0 which indicates a stable population and evaluated for statistical significance.

Recognizing that this indicator was not discussed in any detail with the Task Force, the State will continue working with its partners to better understand this population evaluation tool to ensure a consistent on-the-ground application. In addition, the State may request a review of this approach by Dr. Oz Garton (Bio-statistician, University of Idaho). The State reserves the right to modify or remove the evaluation tool if it's application would lead to the regulatory triggers being tripped unnecessarily, or conversely, not being sensitive enough to changes on the landscape.

Table 1. Acreage of the CHZ and IHZ by Conservation Area in 2011.

Area	Core	% Core	Important	% Imp
North of the Snake River	2,994,000	34	2,480,000	28
Desert	1,044,000	33	751,000	24
Mountain Valleys	1,949,000	36	1,729,000	32
South of the Snake River	2,686,000	41	1,609,000	24
Southern	948,000	25	975,000	26
West Owyhee	1,738,000	61	634,000	22
Grand Total	5,680,000	37	4,089,000	27

Table 2. Species Population in the CHZ and IHZ by Conservation Area based on 2011 lek data.

Zone	Males Counted				Active leks			
	Core	%Core	Important	% IMP	Core	%Core	Important	% IMP
North of Snake River	4710	79	907	15	196	71	57	21
Desert CA	2332	83	294	10	101	78	17	13
Mountain Valleys CA	2378	77	613	20	95	64	40	27
South of Snake River	2468	64	1203	31	142	63	67	30
Southern CA	642	41	758	48	59	49	47	39
West Owyhee CA	1826	80	445	20	83	80	20	19
Grand Total	7178	73	2110	22	338	67	124	25

ADAPTIVE REGULATORY TRIGGERS AND WILDFIRE EMERGENCY RESPONSE CLAUSE

As mentioned above, sage-grouse adaptive regulatory triggers were developed to provide a regulatory backstop to prevent further loss and stabilize habitats and populations in the CHZ and IHZ where a demonstrated significant loss has either occurred over time or unexpectedly. These adaptive triggers are used when dramatic shifts in population or habitat occurs. Additionally, an emergency wildfire clause was developed to direct immediate response following a significant loss of sage grouse habitat due to catastrophic wildfire.

Whereas a review of the management approach is initiated when a Conservation Area exceeds a ten percent loss, an adaptive regulatory trigger—extending the conservation benefit of the measures in the CHZ to the IHZ—automatically occurs if two out of the three criteria outlined below are demonstrated. In developing these triggers it is important to note that sage-grouse populations often lag in their response to habitat loss and fragmentation. A negative population response may not be detected for three to five years following the habitat disturbance. Therefore, a habitat measure is also a component of the adaptive management trigger.

- i. Maximum number of males on lek routes declines by >20% over a three-year period compared to 2011 values.
- ii. A 30% or greater loss of sagebrush habitat is documented within defined breeding or winter habitat during a three-year period.
- iii. The finite rate of change (λ) over 3 years starting with the baseline years 2009- 2011 is significantly less than 1.0.

As mentioned above, the number of active leks is a valuable indicator of population status and can be used to further inform decisions guided by the above triggers. Declines by >20% over a three-year period compared to 2011 values would indicate a problem. With the stated caveat above, the State may add, modify or remove criterion (iii) replacing the rate of change for evaluating whether to apply the adaptive regulatory trigger.

When the adaptive regulatory trigger is operative, population data and associated habitats will be reviewed to determine whether the problem is habitat related (e.g., fire) or caused by some other population-related issue (e.g., West Nile virus). If the problem is habitat related, the CHZ best management practices (*see* Section V, below) will be applied to areas in the IHZ within the same Conservation Area. For example, and while the trigger is operational, a project proponent in the IHZ would have to meet the more stringent criteria of the CHZ for developing new infrastructure. If the problem is not habitat related, appropriate management actions will be employed to minimize or alleviate the threat.

As mentioned previously, the State is also proposing an emergency clause to address dramatic habitat loss due to wildfire similar to the losses experienced in the Murphy Complex Fire. The current emergency clause states that where a wildfire burns 200,000 acres or more of CHZ habitat, and at least 50% of the burned acres contained important breeding or wintering habitat, the CHZ regulatory provisions shall apply to the IHZ within the relevant Conservation Area. The State may revise this clause based on a better understanding—e.g., mapping—of the important breeding and wintering habitat within the CHZ and IHZ.

D. Existing State Sage-Grouse Plan

In 1997, the then Idaho Sage-grouse Task Force, under the direction of the IDFG Commission, completed the Idaho Sage-grouse Management Plan (“1997 Plan”). The 1997 Plan divided Idaho into sage-grouse management areas and called for the creation of Local Working Groups (“LWGs”) to develop sage-grouse management plans for each of Idaho’s sage-grouse planning areas. Currently, for twelve local planning areas, nine LWG plans are completed, one LWG plan is nearly complete, and one plan is in progress.

Between 1999 and 2003, the Service received eight petitions to list the species as endangered or threatened under the ESA. In April 2004, the Service determined three of the petitions to list the species provided substantial information that listing might be warranted, thus initiating a comprehensive range-wide status review.

Based on the status review, the Idaho State Sage-Grouse Advisory Committee (“SAC”) in 2003 was convened to assist the State in updating the 1997 Plan. The Conservation Plan for the Greater Sage-Grouse in Idaho was completed in 2006 (“2006 Plan”). The 2006 Plan was amended in 2009 to include the completion of the Implementation Chapter.

This Alternative builds upon, supplements, and in some instances replaces the 2006 State Plan and LWG plans by identifying habitat zones, adaptive regulatory triggers and concrete best management practices for primary and some secondary threats as identified by the Service necessary to preclude a listing. For activities not addressed by this Alternative, including predation issues, the 2006 State Plan and LWG plans will continue to be operative. For the sake of completeness, Idaho’s 2006 Plan is incorporated herein by reference.

E. Valid Existing Rights

All management zones and recommendations are intended to be subject to and protect all valid existing rights. It is critical, especially for areas within the CHZ and IHZ that existing land uses and landowner activities continue to occur, particularly agricultural activities on all land ownerships.

F. Maps

The State recognizes that any attempt to map sage-grouse habitat must, by necessity, be at a broad, programmatic scale. The mapping of boundaries presented above is not intended to equate to verified boundary locations or on-the-ground habitat types from which the public can determine with certainty whether any particular location is inside or outside of a particular management zone.

Rather, the mapping exercise is intended to give governmental entities, land managers, project proponents and the public a general idea of where certain types of habitat and conservation priorities are spatially located as of the date of the map. The State also recognizes that this mapping exercising depicting current habitat for the species is not static, and any map must be verified through site-specific environmental analysis. Moreover, the map does not alleviate the duty of State and Federal agencies to determine the actual quality and trends of the habitat at a specific location where, for example, a project is proposed or grazing permit is up for renewal.

G. Infrastructure

When the Alternative refers to measures regarding infrastructure, it is referring to discrete, large-scale anthropogenic features, including highways, high voltage transmission lines, commercial wind projects, energy development (e.g., oil and gas development, geothermal wells), airports, mines, cell phone towers, landfills, residential and commercial subdivisions, etc.

Infrastructure related to small-scale ranch, home and farm businesses (e.g., stock ponds, fences, range improvements) do not fall within this definition. These issues are not included within this definition, and are addressed in other sections of the Alternative or through local resource management plans.

H. Mitigation Framework

Where compensatory mitigation—such as, for new infrastructure project authorized in the CHZ—is required to off-set impacts to sage-grouse or their habitats, the Idaho Sage-Grouse Mitigation Framework (see ISAC 2011) is the preferred mechanism to plan, select, implement and monitor these types of projects. Potential compensatory mitigation should be guided by a science-based statewide strategy to guide the selection of mitigation actions that will receive funding based on the benefits to sage-grouse populations. For example, restoration efforts are

likely to target perennial grasses and conifer encroachment areas within or adjacent to the CHZ, and secondarily, on perennial grasses and conifer encroachment areas within the IHZ with low fire risk. The Task Force recognized the importance of these targeted restoration efforts by including areas within the management regime of the CHZ current not meeting the general biological standard of 25-50% breeding bird density as described below in order to ensure these areas would still retain high restoration potential.

Mitigation efforts will focus on increasing the resiliency and productivity of sage-grouse populations and habitats, especially within the CHZ. Should these efforts materialize; the State will consider establishing a mitigation bank of sage-grouse habitation restoration projects that future development projects would repay through compensatory mitigation requirements. The State recognizes that this is a key provision in this Alternative, and intends to provide more detail on this component through the Governor's Implementation Commission.

I. Livestock Grazing Management

No studies exist directly relating livestock grazing systems or stocking rates to sage-grouse abundance or productivity. Most concerns about the effects of grazing on sage-grouse are localized in nature, whereas the species is demonstrated to be more responsive to stressors at a larger landscape. Therefore, grazing should be viewed as a landscape stressor with monitoring and management actions tailored accordingly.

Numerous studies have been published providing detailed information on characteristics of sage-grouse seasonal habitats (Knick and Connelly 2011). These studies provide insight on heights and cover of sagebrush and herbaceous plants needed for productive habitats (Connelly et al. 2000).

Based on this information, opportunities exist for livestock permittees, Federal and State agencies and university researchers to collaborate in an effort to fine-tune knowledge of current conditions and needed management actions in sage-grouse habitats throughout southern Idaho. This work would provide needed insight into current conditions within sage-grouse habitat and guide specific management actions necessary for ensuring healthy and stable sage-grouse populations.

Approach:

While grazing management options should be considered at a landscape scale, livestock grazing is typically considered in a site-specific context over time where vegetative condition can be manipulated by the timing and intensity of grazing practices. Currently, this is being done by designating allotments and scheduling grazing periods based on factors such as elevation, weather and plant growth (e.g., high elevations are grazed during summer months).

The three habitat zones provide additional options for scheduled grazing and should be considered. Altering grazing schemes in allotments within the CHZ, where needed and

appropriate, may be facilitated by enhanced grazing opportunities with introduced seedings or areas with lower value to sage-grouse (e.g., GHZ). The unintended consequences of altering grazing use, such as a possible increased risk of wildfire, must be carefully considered in any management proposal.

Guidelines for managing sage-grouse habitats and populations have been published (Connelly et al. 2000, Hagen et al. 2007) and are often included in various management plans. These guidelines describe *characteristics* of productive sage-grouse habitats based on a large number of studies conducted throughout the species' range. However, they do not reflect data collected in all parts of the range nor do they reflect data collected from randomly sampled locations. Thus, this information should not be considered as providing *standards* by which to judge effects of livestock grazing on the ultimate quality of sage-grouse seasonal habitats.

Proper grazing management greatly benefits from flexibility and the opportunity to schedule and adjust intensity, timing, duration, and frequency of grazing use over time in a manner that maintains rangeland health and habitat quality. In addition, vegetative characteristics of sage-grouse seasonal ranges can change spatially and temporally due to a wide variety of other influences. Therefore, these sage-grouse habitat characteristics should be viewed as a tool for assessing habitats and guiding management actions but not as a means of dictating grazing strategies or stocking rates. On-the-ground management actions and strategies to meet these habitat characteristics should be informed local resource knowledge and conditions.

Management Framework:

Grazing within the CHZ and IHZ will be managed according to the process outlined in the text below. The first step, and perhaps the most important, is to inform and educate affected permittees regarding sage-grouse habitat needs and conservation measures. These habitat needs or characteristics outlined in Tables 3-5 will be incorporated into relevant resource management plans as the desired conditions with the understanding that these desired conditions may not be achievable: (a) due to the existing ecological condition, ecological potential or the existing vegetation; or (b) due to casual events unrelated to existing livestock grazing.

Based on these habitat characteristics, conduct fine and site scale-habitat assessments to help inform grazing management. Where necessary, a determination of factors causing any failure to achieve the habitat characteristics (Tables 3, 4 and 5) will be conducted at a resolution sufficient to document the habitat condition. This determination will include consideration of local spatial and inter-annual variability. A determination of issues attributable to livestock grazing management should not result from one year of data at a specific location within an allotment.

The assessment process will be completed in conjunction with scheduled term grazing permit renewals (i.e., every ten years). Given limited agency resources, prioritization will be given to areas that have the potential to provide the greatest benefit to sage-grouse. Allocation of resources should be concentrated on allotments within the CHZ that have declining sage-grouse populations. Following those permits within the CHZ, resources will be further prioritized to

allotments within the IHZ with breeding habitats that have decreasing lek counts. (See Flow Chart below). Sage-grouse populations that are stable or trending upward will be a lower priority for permit renewal and the assessment process.

Typically, summer habitats will be managed to provide the conditions described in Table 3; winter Table 4; and breeding habitats in Table 5. However, the assessment/determination process must rely on published characteristics of sage-grouse habitat and the Ecological Site Descriptions, existing vegetation, habitat inventories/assessments (Stiver et al. 2010), and where available, state and transition models that describe vegetation and other physical attributes for sage-grouse. The related characteristics within the categories shown below will also be included. These characteristics indicate the ability of a given area to provide sage-grouse habitat.

Category 1: The grazing allotment (or any pasture/significant area therein) has the existing vegetation and/or existing ecological condition (seral state) to provide sage-grouse habitat

Category 2: The grazing allotment (or any pasture/significant area therein) has the ecological potential to provide sage-grouse habitat.

If the process and conditions outlined above demonstrate that livestock grazing is limiting achievement of the habitat characteristics (Tables 3-5), renewed permits will include measures, including but not limited to the actions outlined in (J), to achieve desired habitat conditions. These measures must be tailored to address the specific management issues.

Additionally, adaptive management changes related to existing grazing permits should only be undertaken if improper grazing is determined to be the causal factor in not meeting habitat characteristics, specific to site capability, based upon monitoring over time with appropriate site variability.

Table 3. General Characteristics of Late Brood Rearing Habitat.

Habitat Features	Habitat Indicators	Habitat Characteristics	
		Upland Sagebrush Communities	Riparian/Wet Meadow Communities
Protective Cover	Sagebrush Canopy Cover	10-25%	N/A
	Sagebrush Height	16-31 inches	N/A

	Sagebrush Proximity	N/A	Protective sagebrush cover (10-25%) is within 300 m of riparian/meadow feeding area.
Protective Cover and Food	Grass/forb canopy cover	>15%	N/A
Food	Forb Availability	Succulent forbs are available during the summer. Generally applies to higher elevations, such as mtn. big sage sites.	Riparian and wet meadow conditions are such that succulent forbs are available during the summer.

Table 4. General Characteristics of Winter Habitat.

Habitat Features	Habitat Indicators	Habitat Characteristics
Protective Cover and Food	Sagebrush Canopy Cover	10-30% exposed above snow
	Sagebrush Height	10-14 inches exposed above snow

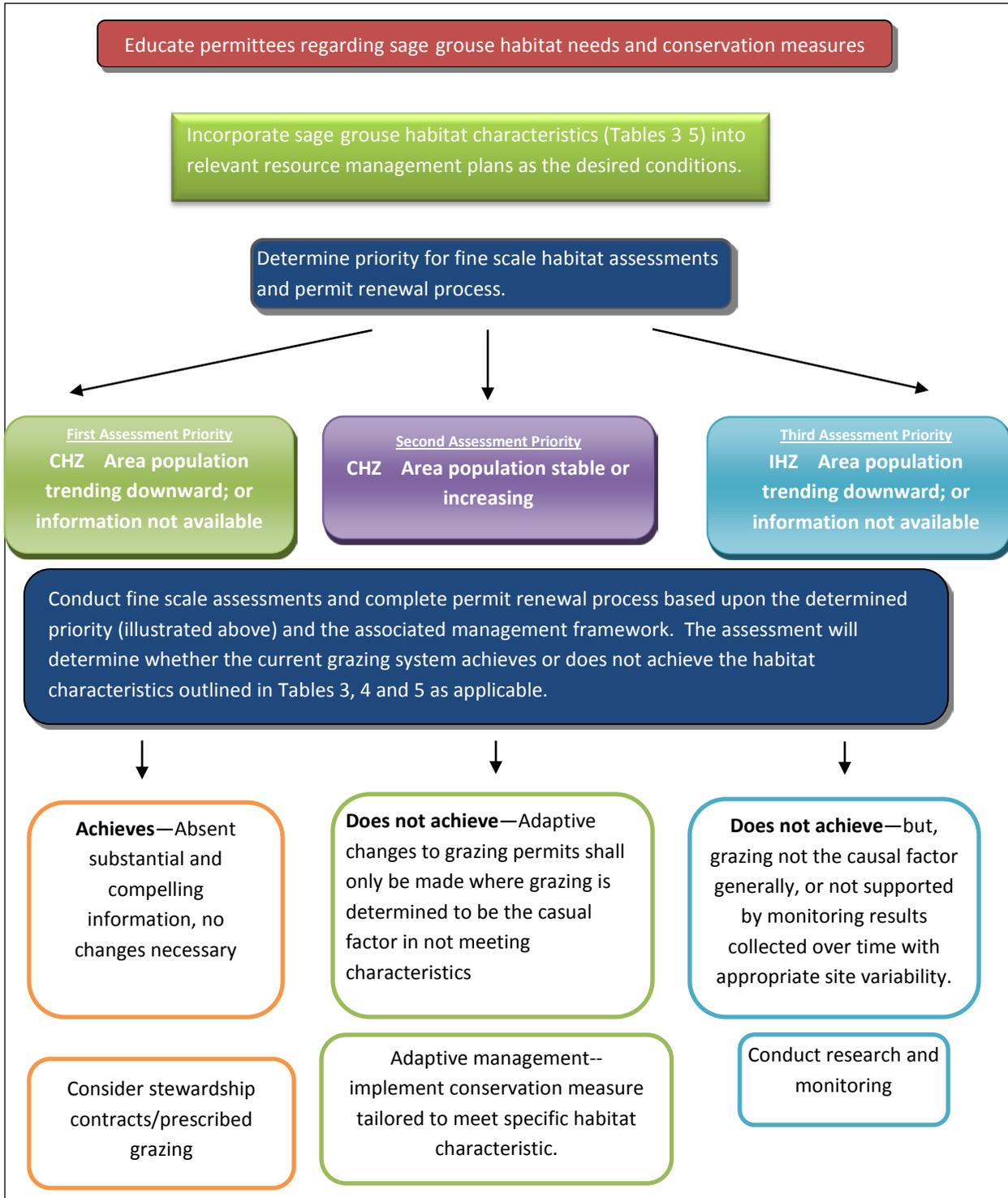
Table 5. General Characteristics of Productive Breeding/Nesting and Early Brood Rearing Habitat.

Habitat Features	Habitat Indicators	Habitat Characteristics	
		Arid Sites	Mesic Sites
Protective Cover	Sagebrush Canopy Cover	15-25%	15-25%
	Sagebrush Height	12-31 inches	16-31 inches
	Sagebrush Growth Form	Spreading	Spreading
	Perennial Grass/Forbs Heights (post hatch)	Adequate residual nesting cover ²	
	Perennial Grass Canopy Cover	Not specified	>15%
Protective Cover and Food	Forb Canopy Cover	Not specified	>10%
	Total Grass/Forb Cover	>15%	>25%

² As defined by Connelly et al. 2000, Hausleitner 2003, and Holloran et al. 2005.

Food	Forb Availability Good abundance and availability relative to ecological site potential
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Figure 3. Livestock Grazing Management in CHZ and IHZ



J. Implementation of Idaho's Alternative

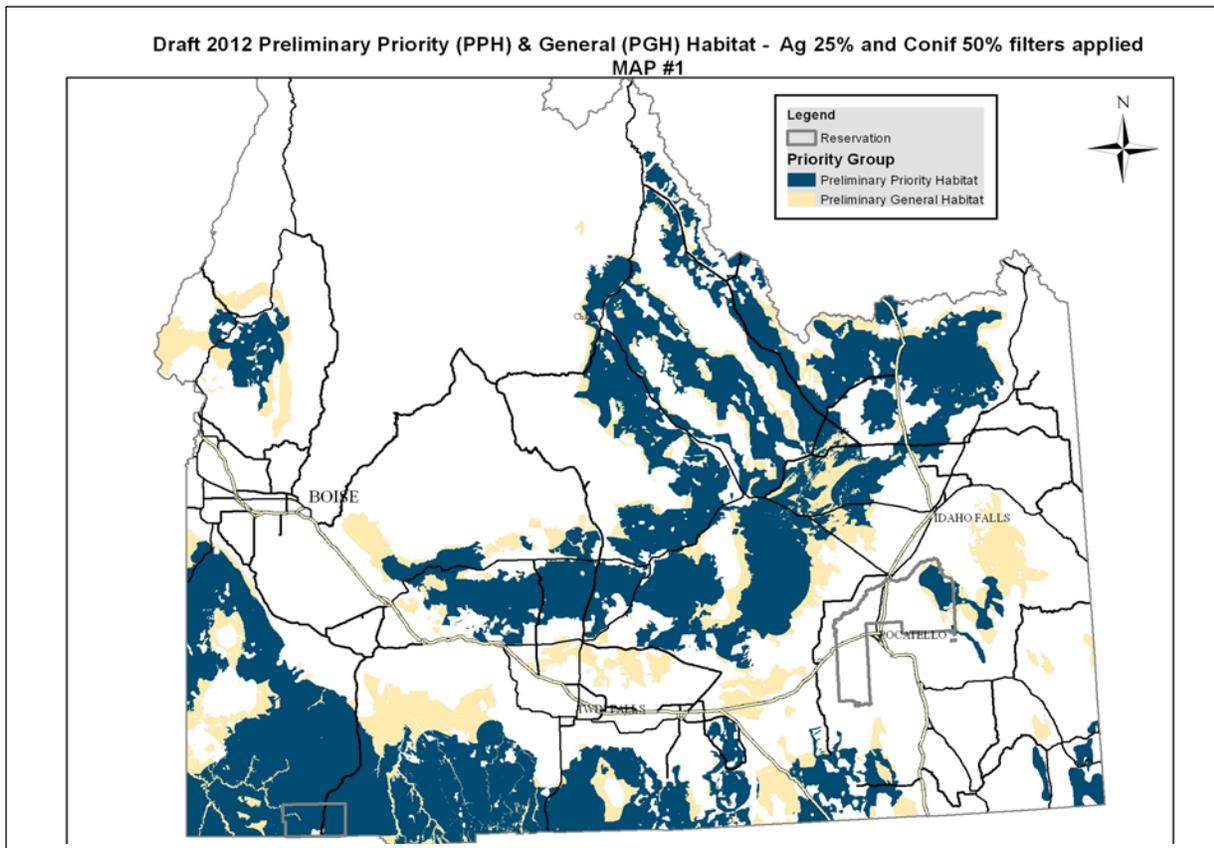
The Governor's Task Force has been a good model of collaborative problem-solving and decision-making. Should Idaho's Alternative be selected and incorporated into relevant resource management plans, I intend to establish by Executive Order an Implementation Task Force to ensure the intent of the State's Alternative is properly implemented. Specifically, the newly-formed group will examine situations where project proponents attempt to develop new infrastructure in the CHZ using the exemption process as described below; and whether proposed projects comply with the criteria outlined in the IHZ. This implementation model has proven successful in implementing the Idaho Roadless Rule.

Additionally, a key component to this alternative is adaptive management. While the State firmly believes the regulatory measures and other features of the plan effectively preclude the need to list, there is a need to continuously evaluate new information as it becomes available. For example, the U.S. Forest Service's research on *Pyrenophora semeniperda* ("black fingers of death") has shown effectiveness in eliminating the cheatgrass carryover seed. The State strongly encourages the Federal government to continue its research on this topic, and may modify this plan to make the application of this tool as an integral part of fire suppression.

II. IDAHO'S SAGE-GROUSE MANAGEMENT AREA (SGMA)

As mentioned previously, the State is adopting the designation of the SGMA with three distinct management zones CHZ, IHZ and GHZ. Recognizing and identifying distinct management zones within the SGMA enables the State and the Federal government to prioritize conservation and restoration efforts to those areas that provide the most effective opportunities to benefit sage-grouse populations and their habitat while maintaining predictable levels of land use. **Map 1**, as developed by the BLM, depicts two habitat areas and provided the Task Force with an initial starting point for discussions.

Map 1. Idaho Sage-Grouse Preliminary “Priority” and “General” Habitat Areas.

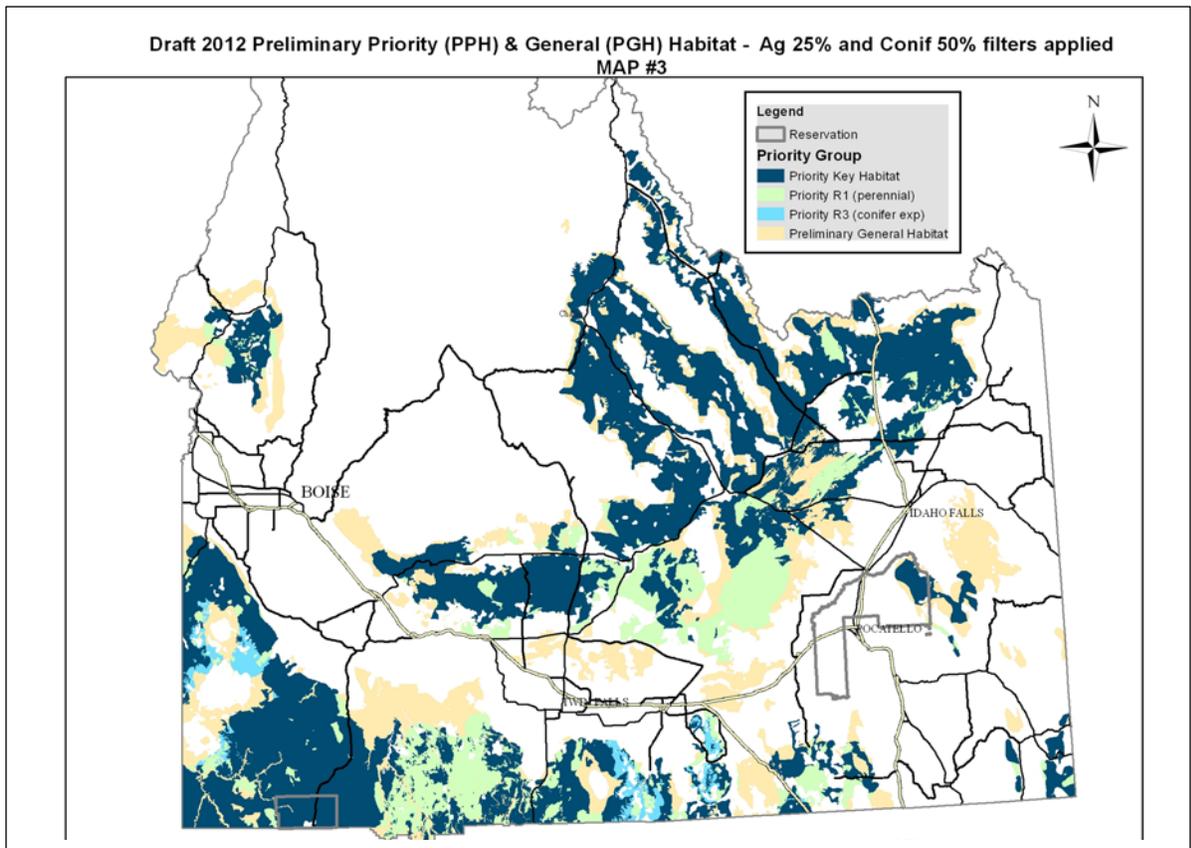


The two habitat areas in **Map 1** are referred to as preliminary “priority” habitat (“PPH”) and preliminary “general” habitat (“PGH”). BLM defines PPH as those areas having the highest conservation value to maintaining greater sage-grouse populations, while PGH is defined as areas of occupied seasonal or year-round habitat outside of “priority” habitat. (Makela and Major 2012).

The State believes this mapping approach fosters an “in or out” management regime that does not adequately take advantage of the opportunity to provide better and more precise management direction based on the quality and location of sage-grouse populations and habitats in Idaho.

The need to refine habitat areas for Idaho-specific management purposes led to the development of **Map 2**. It improves on **Map 1** by differentiating three different vegetative types within the “priority” habitat areas: sagebrush, perennial grasses and conifer encroachment. The latter two types offer opportunities for restoration of sagebrush habitat for the species.

Map 2. Refined Idaho Sage-Grouse Areas.



For the development of Idaho’s Alternative, I am adopting the Task Force’s creation of the SGMA and the three management zones: CHZ, IHZ and GHZ. These are depicted on **Map 3**.

Table 6. Map 3 Lek Legend

Map Label	Lek Route Name	Map Label	Lek Route Name
ANTCRK	Antelope Creek	LOWST	Lower Pahsimeroi West
ANTPOC	Antelope Pocket	LTLHAT	Little Hat Creek
BIGD3	Big Desert #3	LTLST	Little Lost
BIGD3	Big Desert #3	MACFL	Macon Flat
BIGD5	Big Desert #5	MEDLDG	Medicine Lodge
BIGD5	Big Desert #5	MIDHIL	Midvale Hill
BIRCK	Birch Creek	MIDMTN	Middle Mountain
BLHIRD	Bliss-Hill City Road	MKTLK	Market Lake
BLOOM	Bloomington	MONGL	Monday Gulch
BLRTR	Blair Trail	MORFT	Mores Flat
BRNBEN	Brown's Bench	NSHOS	North Shoshone
BRNCK	Brown's Creek	ORNA	Oreana
CARCAB	Carlson Cabin	PADFLT	Paddelford Flat
COTRID	Cottonwood Ridge	PICA	Picabo
COWCK	Cow Creek	PLANO	Plano
CRMCAN	Cream Canyon	RCKCK	Rock Creek
CRNCRK	Crane Creek	RCKCK	Rock Creek
CROKCK	Crooked Creek	RCKKNL	Rocky Knoll
CRWNC	Crow's Nest - Clover	REDRD	Red Road
CURLEST	Curlew East	ROSE	Roseworth
CURLN	Curlew North	ROWLD	Rowland Road
CURLS	Curlew South	RWMC	RWMC/INL
CURLW	Curlew West	SAGEH	Sagehen Flat
DISPN	Dishpan	SBDES	South Big Desert
DRYCK	Dry Creek	SHOBS	Shoshone Basin
DRYGLCH	Dry Gulch	SHPCRK	Sheep Creek
EIUSHP	EIU Sheep Creek	SHPST	Sheep Station
FINGB	Fingers Butte	SOUL	Soulen Center
FIRGR	Fir Grove	SPGGCH	Spring Gulch
GRASHIL	Grassy Hills	STIBRD	Stible Road
INLTRCT	INL/Tractor Flat	SUNCK	Sunday Creek
JACOB	Jacoby	TABBTE	Table Butte
KNYON	Kinyon	TIMM	Timmerman
LBCHCK	Lower Birch Creek	UBIGLST	Upper Big Lost
LDREST	Leadore East	UBIRCK	Upper Birch Creek
LDRWST	Leadore West	ULEM	Upper Lemhi
LIDY	Lidy	UPAHS	Upper Pahsimeroi
LINMIN	Lincoln/Minidoka	WICK	Wickahoney
LOLEM	Lower Lemhi	WINT	Winter Camp
LOPEST	Lower Pahsimeroi East	YELSRD	Yellow Sign Road

In sum, the CHZ and IHZ on **Map 3** total approximately 9.770 million acres, account for ninety percent (90%) of the known leks or breeding display areas in Idaho, and are believed to harbor the vast majority of the State’s sage-grouse populations. Evidence for this includes census data that ninety-five percent (95%) of the male sage-grouse counted at leks are in these two zones. By contrast, the GHZ encompasses approximately 5.45 million acres, on which are found ten percent (10%) of the known leks and five percent (5%) of the male sage-grouse attending leks. Thus, the GHZ is the lowest priority for conservation or restoration efforts.

The three management zones within the SGMA take into account the distribution of sage-grouse populations in Idaho. Specifically, the CHZ and IHZ focus on protecting each of the two key meta-populations in the State. These meta-populations consist of a large aggregation of

interconnected breeding subpopulations of sage-grouse that have the highest likelihood of long-term persistence. One meta-population is located north of the Snake River and includes the North Magic Valley, Big Desert, and Basin and Range areas; the other is located south of the Snake River and includes south central Idaho, the upper Bruneau-Jarbridge Plateau, and the Owyhee Uplands.

Approximately sixty-five percent (65%) of the SGMA is administered by the BLM, and another seven percent (7%) by the USFS. Any proposed actions on lands managed by the Federal government, regardless of the management zone such projects may fall in, will still require appropriate site-specific environmental analysis under the National Environmental Policy Act (“NEPA”) and any requisite site-specific decision-making, e.g. 43 C.F.R. Subpart 4160 (BLM) and 36 C.F.R. Part 251 (USFS) prior to approving proposed management actions.

Additionally, applicable resource management plan components must be followed during the planning and implementation of a project. For example, infrastructure development within the GHZ does not contain any special conservation measures for sage-grouse. However, within this management theme, some resource management plan components set sideboards or conditions for development. In particular, there may be other species listed under the ESA that mandates direction to reduce or minimize adverse effects. This direction is not inconsistent with this Alternative. Therefore, these consistent conditions would still apply to actions permissible under the Alternative and if the project cannot comply with the plan requirements, the proposed project would have to be modified, abandoned, or the specific plan component amended.

In addition to the overall desired conditions and ecosystem characteristics discussed earlier, this management zone addresses the following general conditions and uses.

III. IDAHO’S MANAGEMENT ZONES

A. CHZ

Current Condition: The CHZ encompasses approximately 5.68 million acres and supports the highest breeding densities of sage-grouse in Idaho. These areas include approximately sixty-five percent (65%) of the known active leks and are occupied by approximately seventy-three percent (73%) of male sage-grouse counted at leks throughout the SGMA. This management theme represents, and generally exceeds, the State’s base population objective for the species.

The CHZ represents strongholds for sage-grouse populations in Idaho and supports the largest populations. Thus, this zone should represent the highest priority for conservation efforts and policies to address the primary threats to the species, such as wildfire, as described in the Service’s 2010 listing determination.

Areas designated within the CHZ were mapped based on the following key data sets:

Twenty-five (25%) and fifty (50%) breeding bird density classes, which represent the top fifty (50%) of all leks in terms of male attendance, buffered at times by portions of the seventy-five (75%) class, depending on location, and the top two categories of the BLM's connectivity and persistence model (Makela and Major).³ The lek connectivity model estimates the likelihood that those leks or population are likely to persist through time (Knick and Hanser 2011).

Depending on location, additional lands beyond the 25% and 50% thresholds have been included in the CHZ to consolidate key breeding areas, to include wilderness areas and lands within national monuments, and to foster population connectivity with neighboring states. The State recognizes that these are fluid boundaries because the habitat is not static, and as new information regarding the species becomes available, it may be necessary to adjust the boundaries for the three management zones.

Desired Future Condition: Maintaining or improving the status of the species within this management zone requires Federal agencies, in conjunction with the State and local partners, to work collaboratively to increase the resiliency of the habitat to disturbances, such as wildfire, and limit habitat fragmentation and loss only to projects pursuant to valid existing rights or incremental upgrades and/or that demonstrate, among other things, a significant high value benefit to the State of Idaho as well as provide compensatory mitigation consistent with the guiding principles above.

Management Focus: Management by Federal agencies should focus on the maintenance and enhancement of the habitats, population and connectivity areas identified in this zone.

Federal agencies need to marshal existing—and target future Federal resources—to reduce the number and size of wildfires, especially in the West Owyhee Conservation Area.

Idaho landowners and sage-grouse local working groups have already invested significant efforts in the CHZ and should continue to be informed and involved as these recommendations are refined and implemented. The State encourages local landowners to continue practices that aid in meeting conservation objectives for the CHZ.

³ In 2010, the BLM entered into an agreement with the Service to model sage-grouse “breeding bird density” (“BBD”) at three scales: across the range of the species; by WAFWA sage-grouse zones; and by State (Doherty et al. 2011). The BBD analyses involve ranking leks by attendance (i.e., highest to lowest number of males counted on leks) and summing the number of males until a desired percent-population threshold is met, hence the categories used—top 25%, 50%, 75% and 100% of the population.

Table of Generally Suitable Uses and Activities in CHZ⁴

Use/Activity	Yes	No	Conservation Measures
Fire Management	X		Only human safety and structure protection shall take precedence.
Invasive Species	X		Actively manage exotic undesirable species sufficiently to prevent invasion.
Infrastructure		X	Limited exceptions are permissible.
Recreation	X		Prioritize the completion of comprehensive travel planning.
Livestock Grazing	X		Prioritize allotments for permit renewal and assessment process for allotments with declining sage-grouse populations.

As illustrated in the table above, prospective infrastructure development authorized by the State Director is presumptively prohibited unless conducted pursuant to valid existing rights or as part of an incremental upgrade. The Task Force also recommended that a limited exemption process should be available to facilitate limited situations where a project proponent can satisfy stringent criteria and provide compensatory mitigation. It is important to note that a proponent would have to meet all the criteria outlined in the regulatory language.

⁴ This table, along with the successive tables for each management zone, is for general illustrative purposes only. See Section V for Idaho’s Alternative regulatory language for a complete understanding of the prohibitions and permissions for each management zone.

As the Task Force recommended, one of the key criterion for obtaining an exemption was a project proponent's demonstration that the project would provide a high-value benefit to meet critical existing needs and/or important societal objectives to the State of Idaho. In the draft Alternative, several commenters noted a discomfort with having federal officials determine what projects meet the exemption criteria. Because this Alternative is aimed at providing special management direction for sage-grouse on lands managed by the Federal government, the State does not have the authority to make land allocation decisions. More specifically, these commenters argued that these same Federal officials are not well-positioned to determine whether a project under this exemption provides a "high value" benefit to the State.

The State agrees with this line of reasoning. Thus, the factor is retained as part of the analysis, and should this Alternative be implemented, the State intends as part of the Implementation Commission to evaluate this factor as part of its responsibility to provide the Governor recommendations on site-specific projects developed through this plan.

Recognizing that maintaining and improving sage-grouse populations within the CHZ is important to the State's overall population objective, the balance between the economic value of future infrastructure projects and conserving the species to prevent an ESA listing clearly tilts in favor of the species within this the management zone. That said, it is impossible to predict projects that could be important to the economic vitality of the State in the future. Thus, the "high value" evaluation by the Implementation Commission will be critical in balancing these interests.

B. IHZ

Current Condition: The IHZ encompasses approximately 4.09 million acres. These areas include approximately twenty-five percent (25%) of the known active leks and are occupied by an estimated twenty-two percent (22%) of sage-grouse males. This management zone generally captures high-quality habitat and populations necessary for providing a management buffer for the CHZ, connecting patches of the CHZ, and supporting important populations and habitat independent of the CHZ.

The IHZ is primarily defined by the seventy-five (75%) breeding bird density areas. Given the migratory life history of many sage-grouse populations, a portion of the birds breeding in CHZ may make seasonal use of areas within the IHZ. The IHZ also includes areas of value for migration corridors, connectivity among breeding areas, and long-term persistence of each of the two key meta-populations of sage-grouse in Idaho.

Desired Future Condition: Maintaining or improving the status of the species within this management zone requires Federal agencies, in conjunction with the State and local partners, to work collaboratively to increase the resiliency of the habitat to disturbances, such as fire, and

limit unnecessary and undue habitat fragmentation to projects that demonstrate, among other things, a high value benefit to the State of Idaho.

Management Focus: Management by Federal agencies should focus strategically on areas within this zone that have the best opportunities for conserving, enhancing or restoring habitat for sage-grouse. Management by Federal agencies should employ more aggressive wildfire and invasive species management practices to prevent further encroachment of these two primary threats into the CHZ. The IHZ should also afford project proponents greater flexibility than in the CHZ with the understanding that the project still must demonstrate, among other things, a high value benefit to the State.

Table of Generally Suitable Uses and Activities in IHZ

Use/ Activity	Yes	No	Conservation Measures
Fire Management	X		Where appropriate, develop more aggressive strategies to reduce fuel loads.
Invasive Species	X		Actively manage exotic undesirable species to prevent invasion in the CHZ without impairing sage-grouse populations.
Infrastructure	X		Permissible subject to certain criteria. Mitigate unavoidable impacts.
Recreation	X		Same as CHZ.
Livestock Grazing	X		Same as CHZ.

C. GHZ

Current Condition: The GHZ encompasses approximately 5.45 million acres. This management zone generally includes few active leks, and fragmented or marginal habitat. The GHZ also includes habitat for two isolated populations of sage-grouse in the East Idaho Uplands and West Central Idaho. While these two areas generally represent better habitat than the remainder of the GHZ, the isolated nature of these populations make it unlikely that they will contribute to the long-term persistence of the two key meta-populations in the State of Idaho. Thus, local working group efforts will be key in these areas.

Desired Future Condition: Rely on efforts of local working groups to maintain populations where applicable.

Management Focus: Management by Federal agencies should focus, to the extent practicable, on facilitating multiple-use activities in order to avoid siting conflicts in the other management zones. Management by Federal agencies should employ a more aggressive wildfire and invasive species management practices to prevent further encroachment of these two primary threats into the CHZ/IHZ.

Table of Generally Suitable Uses and Activities in GHZ

Use/Activity	YES	NO	Conservation Measures
Fire Management	X		Aggressive fire suppression techniques should be utilized.
Invasive Species	X		Employ aggressive invasive species measures in conjunction with CWMAs.
Infrastructure	X		Consistent with local resource management plans.
Recreation	X		No special application for sage-grouse.
Livestock Grazing	X		No special application for sage-grouse.

IV. COOPERATING AGENCY STATUS

The State of Idaho formally requests cooperating agency status in this process. The Governor’s Office of Species Conservation in conjunction with IDFG will serve as the State’s

representatives in this process. The Task Force will continue to serve in an advisory capacity to ensure the State's Alternative is properly analyzed.

V. IDAHO'S REGULATORY LANGUAGE FOR LANDS MANAGED BY THE FEDERAL GOVERNMENT

A. Purpose.

The purpose of this Alternative is to provide, in the context of multiple-use management, Idaho-specific direction for the conservation and management of the greater sage-grouse in lands administered by the Bureau of Land Management and the U.S. Forest Service.

B. Definitions.

The following terms and definitions apply to Idaho's Alternative:

Adaptive Regulatory Triggers: Provides a regulatory backstop where a significant and unanticipated loss of sage-grouse habitats and populations occurs by applying the conservation benefits of the CHZ to the IHZ within the relevant Conservation Area.

Infrastructure: Discrete, large-scale anthropogenic features, including but not limited to, highways, high voltage transmission lines, commercial wind projects, energy development (e.g., oil and gas development, geothermal wells), airports, mines, cell phone towers, landfills, residential and commercial subdivisions. Infrastructure related to small-scale ranch, home and farm businesses, including but not limited to, stock ponds, fences, range improvements do not meet this definition and are addressed in other portions of the Alternative or relevant resource management plans.

Sage-Grouse Management Objective for the State of Idaho: Maintain and enhance the habitat and populations of sage-grouse located within the Core Habitat Zone ("CHZ"), while strategically buffered by areas within the Important Habitat Zone ("IHZ") having the best opportunities for conserving, enhancing or restoring habitat for sage-grouse. In the first three years of implementation, the approach will emphasize limiting habitat loss in the CHZ and IHZ respectively to no more than ten percent (10%) resulting in a proportionate reduction of males counted on leks within an individual Conservation Area.

Sage-Grouse Management Area: The Sage-Grouse Management Area ("SGMA") pursuant to this Alternative identified in **Map 3** that accounts for the entire known sage-grouse population in the State of Idaho.

State Director: The Idaho State Director for the Bureau of Land Management ("BLM"). Where relevant and appropriate, the term "State Director" also means "Regional Forester" for lands subject to the management of the U.S. Forest Service.

C. SGMA.

1. *Designations.* All relevant National Forest System lands and BLM lands as designated in **Map 3** are hereby designated as the SGMA. Notwithstanding the need to make technical corrections, absent substantial and compelling evidence, these designations pursuant to **Map 3** should not be altered for at least five (5) years.
2. *Management Classifications.* Management classifications for the SGMA express a management continuum. The following classifications are established: Core Habitat Zone (“CHZ”), Important Habitat Zone (“IHZ”) and General Habitat Zone (“GHZ”).
3. *Conservation Areas.* In order to achieve the State’s Management Approach, the following Conservation Areas are established: West Owyhee Conservation Area; Southern Conservation Area; Desert Conservation Area; and Mountain Valleys Conservation Area.
4. *Maps.* The State Director and the Director of the Idaho Department of Fish and Game shall maintain and make available to the public a map of the SGMA, including records regarding any corrections or modifications of such maps pursuant to this Alternative.

D. CHZ. Management by Federal and State agencies should focus on the maintenance and enhancement of habitats, populations and connectivity in areas within this management zone.

1. *Wildfire*
 - i. Incorporate the BLM Washington Office Instruction Memorandum (“WO IM”) 2011-138 to reduce the number and size of wildfires in sage-grouse habitat.
 - ii. Only human safety and structure protection shall take precedence over the protection of sage-grouse habitat.
 - iii. Evaluate and decrease wildfire response time by twenty-five percent (25%). In order to achieve this objective:
 - a. Prioritize, maintain and improve a high initial attack success rate in suppression response and staging decisions;
 - b. Utilize available maps under (C)(4) and spatial data depicting sage-grouse habitats within this zone;
 - c. Redeploy firefighting resources not being fully utilized outside the SGMA to the extent such redeployment will not cause harm to human safety and structure protection; and
 - d. Request the necessary federal appropriations to achieve this objective.

- iv. Evaluate the current fire suppression baseline, and in conjunction with the measures below, develop a consistent plan that improves on this baseline by twenty-five percent (25%).
 - a. Federal firefighters shall ensure close coordination with State firefighters, local fire departments and local expertise to create the best possible network of strategic fuel breaks and road access to minimize and reduce the size of a wildfire following ignition;
 - b. To the extent practicable, the close coordination described in (a) should result in consistent fire response plans and mutual aid agreements necessary to achieve the management objective in (iv);
 - c. Request and place additional firefighting resources and establish new Incident Attack Centers, with particular emphasis in the West Owyhee Conservation Area;
 - d. Create and maintain effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness according to the following criteria:
 - Target establishment of fuel breaks along existing roads or other disturbances.
 - Identify and target higher-risk roads for fuel break construction and maintenance based on fire history maps.
 - Implement a strategic approach to using these roads for rapid fire response.
 - Analyze the benefits of the fuel break against the additional loss of sagebrush cover and risk on invasive weeds.
 - Fire breaks must be properly maintained.
 - e. Request the necessary federal appropriations to achieve this objective.

2. *Invasive Species*

- i. Actively manage exotic undesirable species to limit presence.
- ii. Monitor and control invasive vegetation post-wildfire treatment for at least three years.
- iii. Emphasize the use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success.

- a. Reallocate native plant seeds for Emergency Stabilization and Rehabilitation (ES&R) from outside the SGMA and the GHZ to this management zone if necessary.
 - b. Where the probability of obtaining sufficient native seed is low, non-native seeds may be used provided sage-grouse habitat objectives are met.
3. *Habitat Restoration*
 - i. Prioritize the removal of conifers through methods appropriate for the terrain and most likely to facilitate expeditious sage-grouse population and habitat recovery. To the extent possible, utilize removal methods creating the least amount of disturbance.
 - a. Efforts should focus on areas with highest restoration potential typically evidenced by low canopy cover, existing sagebrush understory, and adjacent current populations.
 - b. Refrain from using prescribed fire and conducting removal projects in juniper stands older than one hundred years.
 - c. Maximize the use of Natural Resource Conservation Service funding through permittee grants under the Environmental Quality Incentives Program (EQUIP) and Wildlife Habitat Improvement (WHIP) programs.
 - ii. In perennial grasslands, actively restore sagebrush canopy cover and the ecological functions of the site. To the extent practicable, utilize native understory.
 - a. Prioritize areas for restoration with lower risks of wildfire and exotic species invasion.
4. *Infrastructure*
 - i. The development of infrastructure authorized after the effective date of the record of decision in areas designated as CHZ is prohibited, except if developed pursuant to valid existing rights or incremental upgrade and/or capacity increase of existing development (authorized prior to the record of decision) subject to best management practices in (G).
 - a. Impacts of proposed actions authorized in (i) shall be limited to the authorized existing footprint with no more than a fifty percent (50%), depending on industry practice, increase in footprint size and associated impacts; and
 - b. Projects authorized under (i) would only be subject to compensatory mitigation if new significant and unavoidable impacts are demonstrated to be associated with the project.

- ii. Notwithstanding the limited prohibition in (4)(i), the State Director may authorize infrastructure development only in situations where the development:
 - a. Cannot be reasonably accomplished outside of the CHZ; and
 - b. Demonstrates the population trend for the species within the relevant Conservation Area is stable or increasing over a three-year period; and
 - c. Demonstrates the individual or cumulative exceptions under this provision must best reduce habitat fragmentation ensuring the impacts will not accelerate and/or cause a population decline of the species within the relevant Conservation Area; and
 - d. Co-locate with existing infrastructure to the maximum extent practicable; and
 - e. Shall mitigate unavoidable impacts through an appropriate compensatory mitigation plan.
 - iii. Proposed development authorized under (4)(ii) are subject to the applicable best management practices in (G).
 - iv. Notwithstanding the limited prohibition in 4(i), the State Director may authorize, after the record of decision, oil and gas development only under the following circumstances:
 - a. Exploration activities utilizing temporary roads are permissible provided site disturbance is minimized.
 - b. There shall be no surface use or occupancy unless the State Director finds that the surface development, based on site-specific analysis, will not accelerate and/or cause declines in sage-grouse populations within the relevant Conservation Area based on the application of the criteria in 4(ii) and the best management practices in (G).
5. *Secondary Threats*
- i. *Recreation*
 - a. Prioritize the completion of Comprehensive Transportation Management Travel Plans (“CTMTPs”) to minimize disturbance to sage-grouse populations and reduce the risk of wildfire and other habitat disturbances associated with cross-country travel.
 - b. Prior to the completion of CTMTPs, restrict vehicles to existing routes.

- c. Adopt a “restricted to designated routes” approach where appropriate to the extent such designation does not interfere with administrative use.
 - d. Discourage the creation of new roads and trails. Re-route existing routes where appropriate.
 - e. Identify and reduce activities demonstrating repeated displacement of nesting birds. Where existing routes are demonstrated to affect occupied leks, apply seasonal and time based use-restrictions tailored to address the site-specific conditions of the area.
- ii. *West Nile Virus*
- a. Reduce the risk of transmission of West Nile Virus to sage-grouse by minimizing the creation of breeding habitat for mosquitoes.
 - b. Consider the potential impacts of West Nile Virus transmission prior to permitting new ponds or reservoirs.
 - c. Minimize the construction of new ponds or reservoirs except as needed to meet important resource management and/or restoration objectives.
 - d. Non-pond/reservoir watering facilities, such as troughs and bottomless tanks, should be developed and maintained to provide high quality water that minimizes the development of habitat for mosquitoes.
 - e. Maintenance of functioning float valves and water return features should be constructed to prohibit water from being spilled on the ground surrounding the trough and/or tank.
 - f. To the extent practicable, water should be returned to the original water source to reduce suitable habitat for mosquitoes.
- iii. *Livestock Grazing Management*
- a. Incorporate the sage-grouse habitat characteristics in **Tables 3-5** and management considerations into relevant resource management plans as desired conditions recognizing that these conditions may not be achievable (1) due to the existing ecological condition, ecological potential, or the existing vegetation; or (2) due to casual events unrelated to existing livestock grazing.
 - b. Prioritize permit renewal and the land health assessments outlined in (iii)(c) in allotments with declining sage-grouse populations.

- c. Conduct fine and site scale-habitat assessments and, where appropriate, a determination of factors causing any failure to achieve the habitat characteristics in Tables 3-5. The assessment(s) shall be conducted at a resolution sufficient to document the habitat condition and will include local spatial and inter-annual variability. Any determination relative to the habitat characteristics (Tables 3-5) shall be based upon existing ecological condition, ecological potential, and existing vegetation information to ensure the assessment recognizes whether or not these habitat characteristics are achievable.
 - d. The assessment will rely on published characteristics of sage-grouse habitat and the Ecological Site Descriptions, and **Tables 3-5**, and where available and applicable, rangeland health determinations made in accordance with 43 C.F.R. 418.2(c).
 - e. After conducting the assessment in (iii)(c), if the current grazing system achieves the habitat characteristics (Tables 3-5), absent substantial and compelling information no further grazing management changes are necessary.
 - f. If the process and conditions outlined in (iii)(c) demonstrate that livestock grazing is limiting achievement of the habitat characteristics (Tables 3-5), renewed permits will include measures, including but not limited to the actions outlined in (J), to achieve desired habitat conditions. These measures must be tailored to address the specific management issues.
 - g. Adaptive management changes related to existing grazing permits should only be undertaken where improper grazing is determined to be the casual factor in not meeting habitat characteristics, specific to site capability, based upon monitoring over with appropriate spatial variability.
 - h. Where management changes are needed and necessary pursuant to (f), implement management actions that are narrowly tailored to address the specific habitat objective applied at the allotment and/or activity plan level, including but not limited to the actions outlined in (J).
- iv. *Livestock Grazing Infrastructure*
- a. To the extent practicable, reduce the impacts of fences and livestock management facilities on sage-grouse.

- b. Mark fences with permanent flagging or other suitable device to reduce sage-grouse collisions on flat to gently rolling terrain in areas of moderate to high fence densities (i.e., more than one kilometer of fence per square kilometer) located within two kilometers of occupied leks.
 - c. Identify and remove unnecessary fences.
 - d. Placement of new fences and livestock management facilities, including corrals, loading facilities, water tanks and windmills, should consider their impact on sage-grouse.
 - e. Avoid constructing new fences within one kilometer (0.6 miles) of occupied leks.
 - f. To the extent practicable, place new, taller structures, including corrals, loading facilities, water storage tanks, windmills, at least one kilometer from occupied leks.
- E. IHZ.** Management by Federal and State agencies should focus on areas within this zone that have the best opportunities for conserving, enhancing or restoring habitat for sage-grouse. Management by Federal agencies should also provide the necessary flexibility to permit high-value infrastructure projects.
- 1. *Wildfire*
 - i. Incorporate the BLM WO IM 2011-138 to reduce the number and size of wildfires in sage-grouse habitat.
 - ii. Only human safety and structure protection shall take precedence over the protection of sage-grouse habitat.
 - iii. Evaluate and decrease wildfire response time by twenty percent (20%) in the West Owyhee Conservation Area. Decrease wildfire response time in all other conservation areas by fifteen percent (15%). In order to achieve this objective:
 - a. Prioritize, maintain and improve a high initial attack success rate in suppression response and staging decisions;
 - b. Utilize available maps under (C)(4) and spatial data depicting sage-grouse habitats within this zone;
 - c. Redeploy firefighting resources not being fully utilized outside the SGMA to the extent such redeployment will not cause harm to human safety and structure protection; and
 - d. Request the necessary federal appropriations to achieve this objective.

- iv. Evaluate the current fire suppression baseline, and in conjunction with the measures below, develop a management plan that improves on this baseline by fifteen percent (15%).
 - a. Federal firefighters shall ensure close coordination with State firefighters, local fire departments and local expertise (i.e., livestock grazing permittees and road maintenance personnel) to create the best possible network of strategic fuel breaks and road access to minimize and reduce the size of a wildfire following ignition;
 - b. To the extent practicable, the close coordination described in (a) shall result in consistent fire response plans and mutual aid agreements necessary to achieve the objective in (1)(v); and
 - c. Request the necessary federal appropriations to achieve this objective.
 - v. Create and maintain effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness.
 - a. Target establishment of fuel breaks along existing roads or other disturbances.
 - b. Identify and target higher-risk roads for fuel break construction and maintenance based on fire history maps.
 - c. Implement a strategic approach to using these roads for rapid fire response.
 - d. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover and risk of invasive weeds.
 - e. Fire breaks must be properly maintained.
 - vi. Prescribe or target livestock grazing where demonstrated to be appropriate as a tool for reducing fuel loads, reducing invasive species populations and maintaining functional fire breaks.
 - a. Test the effectiveness and monitor the results on a site-specific basis through stewardship contracting.
 - vii. Reduce human-caused ignitions by coordinating with Federal, State and local jurisdiction on fire and litter prevention programs.
2. *Invasive Species*
- i. Actively manage exotic undesirable species to limit presence in the CHZ.
 - ii. Monitor and control invasive vegetation post-wildfire treatment for at least three years.

- iii. Emphasize the use of native seeds for fuels management treatment based on availability, adaptation (site potential), and probability of success.
 - a. Reallocate native plant seeds for Emergency Stabilization and Rehabilitation (ES&R) from outside the SGMA and the GHZ to this management zone.
 - b. Where the probability of success or native seed availability is low, non-native seeds may be used provided sage-grouse habitat objectives are met.
 - iv. Require best management practices for construction projects to prevent invasion.
 - v. Actively pursue eradication or control of noxious weeds and/or invasive species posing a risk to sage-grouse habitats using a variety of chemical, mechanical and other appropriate means in coordination with the local Cooperative Weed Management Area (CWMA).
 - vi. Establish an effective monitoring program to evaluate the success of weed control efforts in conjunction with the CWMAs.
3. *Habitat Restoration*
- i. Prioritize the removal of conifers through methods appropriate for the terrain and most likely to facilitate expeditious sage-grouse habitat recovery. Especially prioritize and target removal treatments adjacent to the CHZ. To the extent possible, utilize methods creating the least amount of disturbance.
 - a. Areas with highest restoration potential will typically have low canopy cover, existing sagebrush understory, and adjacent current populations.
 - b. Refrain from using prescribed fire and conducting removal projects in juniper stands older than one-hundred years.
 - c. Maximize the use of Natural Resource Conservation Service funding through permittee grants under the Environmental Quality Incentives Program (EQUIP) and Wildlife Habitat Improvement (WHIP) programs.
 - ii. In perennial grasslands, actively restore sagebrush canopy cover and the ecological functions of the site. To the extent practicable, utilize native understory.
 - a. Prioritize areas for restoration with lower risks of wildfire and exotic species invasion, especially in areas adjacent to the CHZ.

4. *Infrastructure*

- i. The State Director may authorize new infrastructure development where in the State Director's judgment the circumstances set out below exist.
 - a. Cannot reasonably be achieved, technically or economically, outside of this management zone; and
 - b. To the extent practicable, co-locate the project with existing infrastructure. In the event co-location is not practicable, the siting should best reduce cumulative impacts and/or impacts to other high value natural, cultural, or societal resources; and
 - c. Should not result in unnecessary and undue habitat fragmentation or other impacts causing a decline in the population of the species within the relevant Conservation Area; and
 - d. Mitigate unavoidable impacts through an appropriate compensatory mitigation plan; and
 - e. Comply with the applicable best management practices in (G).
- ii. For oil and gas leases issued after the effective date of the record of decision, exploration activities utilizing temporary roads shall be exempt, provided site disturbance is minimized. Surface use or occupancy is permissible if projects can demonstrate, based on site-specific analysis, that such activities will not cause declines in sage-grouse populations through implementation of the best management practices in (G). Projects authorized under (ii) must mitigate unavoidable impacts through an appropriate compensatory mitigation plan.

5. *Secondary Threats*

- i. *Recreation*
 - a. Prioritize the completion of Comprehensive Transportation Management Travel Plans ("CTMTPs") to minimize disturbance to sage-grouse and reduce the risk of wildfire and other habitat disturbances associated with cross-country travel.
 - b. Prior to the completion of CTMTPs, restrict vehicles to existing routes.
 - c. Adopt a "restricted to designated routes" approach where appropriate to the extent such designation does not interfere with administrative use.

- d. To the extent practicable, discourage the creation of new roads and trails. Re-route existing routes where appropriate.
 - e. Identify and reduce activities demonstrating repeated displacement of nesting birds. Where existing routes are demonstrated to affect occupied leks, apply seasonal and time based use-restrictions tailored to the site-specific conditions of the area.
- ii. *West Nile Virus*
- a. Reduce the risk of the transmission of West Nile Virus to sage-grouse by minimizing the creation of breeding habitat for mosquitoes.
 - b. Consider the potential impacts of West Nile Virus transmission prior to permitting new ponds or reservoirs.
 - c. Minimize to the extent practicable, construction of new ponds or reservoirs except as needed to meet important resource management and/or restoration objectives.
 - d. Non-pond/reservoir watering facilities, such as troughs and bottomless tanks, should be developed and maintained to provide high quality water that suppresses development of habitat for mosquitoes.
 - e. Maintenance of functioning float valves and water return features should be constructed to prohibit water from being spilled on the ground surrounding the trough and/or tank.
 - f. To the extent practicable, water should be returned to the original water source to reduce suitable habitat for mosquitoes.
- iii. *Livestock Grazing Management*
- a. See V.D.5.iii.
- iv. *Livestock Grazing Infrastructure*
- a. To the extent practicable, reduce the impacts of fences and livestock management facilities on sage-grouse.
 - b. Mark fences with permanent flagging or other suitable device to reduce sage-grouse collisions on flat to gently rolling terrain in areas of moderate to high fence densities (i.e., more than one kilometer of fence per square kilometer) located within two kilometers of occupied leks.
 - c. Identify and remove unnecessary fences.
 - d. Placement of new fences and livestock management facilities, including corrals, loading facilities, water tanks

and windmills, should consider their impact on sage-grouse.

- e. Avoid constructing new fences within one kilometer of occupied leks.
- f. To the extent practicable, place new, taller structures, including corrals, loading facilities, water storage tanks, windmills, at least one kilometer from occupied leks.

F. GHZ. Management by Federal agencies should focus on multiple-use management consistent with local resource management plans.

1. *Wildfire*

- i. Incorporate the BLM WO IM 2011-138 to reduce the number and size of wildfires in sage-grouse habitat.
- ii. Fire suppression efforts should be emphasized, recognizing that other local, regional, and national fire suppression priorities may take precedent.
- iii. Aggressively create and maintain effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness. The fire breaks should target areas necessary to provide a buffer between the GHZ and the other management zones.
 - a. Target establishment of fuel breaks along existing roads or other disturbances.
 - b. Identify and target higher-risk roads for fuel break construction and maintenance based on fire history maps.
 - c. Implement a strategic approach for using these roads to enable rapid fire response.
 - d. Fuel breaks must be properly maintained and sited with consideration of active leks and risk of invasive weeds.
- iv. Actively employ prescribed or targeted grazing as a primary tool for reducing fuel loads, reducing invasive species populations and maintaining functional fire breaks to the extent such activities do not adversely affect breeding habitats (i.e. occupied leks, nesting and early brood-rearing).

2. *Invasive Species*

- i. Aggressively manage exotic undesirable species sufficient to prevent invasion into other management zones.
- ii. Aggressively pursue eradication or control of noxious weeds and/or invasive species posing a risk to sage-grouse habitats using a variety of chemical, mechanical and other appropriate means in

- coordination with the local Cooperative Weed Management Area (CWMA).
- iii. Establish an effective monitoring program to evaluate the success of weed control efforts in conjunction with the CWMA.
3. *Infrastructure*
- i. A responsible official may authorize infrastructure construction consistent with the relevant land management components as provided for in (H).
4. *Secondary Threats*
- i. *Recreation*
 - a. Nothing in this Alternative shall be construed as affecting the use of motorized equipment and mechanical transport in this management zone.
 - ii. *West Nile Virus*
 - a. Minimize the creation of breeding habitat for mosquitoes in sage-grouse habitat.
 - b. Prior to permitting new ponds or reservoirs, consider the impacts of West Nile Virus transmission.
 - c. Non-pond/reservoir watering facilities, such as troughs and bottomless tanks should be developed and maintained to provide high quality water that suppresses the development of habitat for mosquitoes.
 - iii. *Livestock Grazing Management*
 - a. Nothing in this Alternative shall be construed as affecting existing grazing permits in this management zone. Grazing permits are still subject to the grazing regulations (43 C.F.R. Part 4100, including Fundamentals of Rangeland Health, 43 C.F.R. Subpart 4160.
 - iv. *Livestock Grazing Infrastructure*
 - a. Identify and remove unnecessary fences.

G. Infrastructure—Best Management Practices.

- 1. For proposed actions authorized in the CHZ and IHZ, the following best management practices are applicable:
 - i. Utilize existing roads, or realignments of existing routes to the extent possible.
 - ii. Construct new roads to minimum design standards needed for production activities.
 - iii. To the extent possible, micro-site linear facilities to reduce impacts to sage-grouse habitats.

- iv. Locate staging areas outside the CHZ to the extent possible.
 - v. To the extent possible, co-locate linear facilities within one kilometer of existing linear facilities.
 - vi. New transmission lines, excluding those lines under (viii), will be deemed co-located and/or permissible if construction occurs between July 1 and March 14 (or between July 1 and November 30 in winter concentration areas) and within one kilometer either side of existing 115-kilovolt (kV) or larger transmission lines to create a corridor no wider than two kilometers.
 - vii. New transmission lines, excluding those lines under (viii), outside of this two kilometer corridor can only be constructed where it can be demonstrated that the activity will not cause declines in sage-grouse populations or if the activity reduces cumulative impacts and/or avoids other important natural, cultural or societal resources.
 - viii. Locate essential public services, including but not limited to, distribution lines, domestic water lines and gas lines, at least one kilometer from active sage-grouse leks. If one kilometer avoidance is not possible, construct lines outside of March 15 to June 30.
 - ix. In addition to the applicable best management practices (i-viii), wind energy development, projects must also comply with the 2012 U.S. Fish and Wildlife Service's Wind Energy Guidelines.
2. For oil and gas leases issued after the effective date of the record of decision, the following best management practices are applicable:
- i. Evaluate the affected area in accordance with the process outlined in the State of Wyoming's Executive Order 2011-5.
 - ii. For development within the CHZ, surface disturbance will be limited to three percent of suitable habitat per an average of 640 acres. Development within the IHZ will be limited to five percent of suitable habitat per an average of 640 acres.
 - iii. There shall be no surface occupancy ("NSO") within one kilometer of the perimeter of occupied sage-grouse leks; provided this distance is supported by the best available science at the time the development undergoes site-specific environmental analysis.
 - iv. Activity (production and maintenance activity exempted) will be allowed from July 1 to March 14 outside of the one kilometer perimeter of a lek where brood rearing, nesting and early brood-rearing habitat is present.

- v. Areas solely used as winter concentration areas, exploration and development activity will be allowed March 14 to December 1.
- vi. Locate main roads used to transport production and/or waste products >1.5 kilometers from the perimeter of occupied sage-grouse leks. Locate other roads used to provide facility site access and maintenance >1.5 kilometers from the perimeter of occupied sage-grouse leks. Construct roads to minimum design standards needed for production activities.
- vii. New noise levels, at the perimeter of a lek, should not exceed 10dBA above ambient noise (existing activity included) from 6:00 PM to 8:00 AM during the initiation of breeding (March 1-May 15). Ambient noise level should be determined by measurements taken at the perimeter of a lek at sunrise.
- viii. Absent some demonstration to the contrary, the proposed sagebrush treatment associated with this activity will not reduce canopy cover to less than 15 percent.

H. Scope and Applicability.

1. This Alternative does not revoke, suspend, or modify any permit, contract, or other legal instrument authorizing the occupancy and use of the applicable Federal lands prior to the effective date of the record of decision and prior to the completion of any statutory or regulatory decision-making process to revoke, suspend, or modify such permit, contract or legal instrument.
2. This Alternative does not revoke, suspend, or modify any project or activity decision made prior to the effective date of the record of decision.
3. Nothing in this Alternative shall be construed as restricting mineral leases, contracts, permits, and associated activities prior to the effective date of the record of decision.
4. Nothing in this Alternative shall affect mining activities conducted pursuant to the General Mining Law of 1872.
5. For the purposes of sage-grouse management, the provisions set forth in this Alternative shall take precedence over any inconsistent land management plan component unless prescribed by statute or regulation. Land management components that are not inconsistent with this Alternative will continue to provide guidance for projects and activities within the SGMA.
6. The best management practices in (G) and other protective stipulations in this Alternative should be evaluated on a continuous basis and at a

minimum, as new science, information and data emerge regarding the habitats and behaviors of the species.

7. Nothing in this Alternative waives any applicable requirements regarding site-specific environmental analysis, public involvement, consultation with Tribes and other agencies, or compliance with applicable laws.

I. Corrections and Adaptive Regulatory Triggers.

Correction or modification of designations made pursuant to this Alternative may occur under the following circumstances.

1. *Administrative Corrections.* Administrative corrections to the map of lands identified in **Map 3** include, but are not limited to, adjustments that remedy clerical errors, typographical errors, mapping errors, or improvements in mapping technology. The State Director may issue administrative corrections after a 30-day public notice.
2. *Adaptive Regulatory Trigger.* Where two out of the following three criteria are demonstrated within a Conservation Area, excluding areas within the GHZ, the measures in (D) shall apply to the IHZ containing wintering or breeding habitat in the relevant Conservation Area:
 - i. Finite rate of change (λ) over three years starting with the baseline years 2009- 2011 is significantly less than 1.0. This is a moving average for rate of change (i.e. 2011-2013, 2012-2014, 2013-2015, etc.) when compared to 1.0 (indicating a stable population).
 - ii. Number of males on lek routes declines by >20% over a three-year period compared to 2011 values.
 - iii. A 30% or greater loss of sagebrush habitat is documented within defined breeding or winter habitat during a three-year period.
3. *Regulatory Trigger No Longer Necessary.* Where the core population data within the relevant Conservation Area meets or exceeds the 2011 values over a three-year period, areas within the IHZ are no longer subject to the CHZ management provisions.
4. *Emergency Wildfire Clause.* Where a wildfire burns 200,000 acres or more of the CHZ, and at least fifty percent of the burned acres contained important breeding or wintering habitat, the CHZ regulatory provisions in (D) shall apply to the IHZ within the appropriate Conservation Area.

- #### **J. Adaptive Management Measures for Livestock Grazing:** Based upon the assessment process, the ecological conditions, the ecological potential and the status of sage-grouse populations, the following measures could be employed singly, or in combination where appropriate, in the development and

implementation of grazing management programs. Flexibility in administering grazing programs and providing offsetting grazing options over relatively large landscapes will help successfully implement these measures.

1. Employ grazing management systems that ensure adequate nesting and early brood rearing habitat within the breeding landscape.
2. When use-pattern mapping or monitoring demonstrates an opportunity to adjust livestock distribution to benefit occupied sage-grouse breeding habitat, include as appropriate herding, salting, and water-source management (e.g., turning troughs/pipelines on/off, extending pipelines/moving troughs) in grazing programs.
3. If available and feasible, utilize exotic perennial grass seedings and/or annual grasslands to avoid breeding season of use of occupied sage-grouse habitat.
4. Modify authorized seasons of use within grazing permits to provide greater flexibility in managing livestock for the benefit of sage-grouse.
5. Where appropriate, maintain residual herbaceous vegetation at the end of the growing/grazing season to contribute to nesting and brood-rearing habitat during the coming nesting season. Table 5.
6. Insure that permittees are informed of management and movement requirements related to avoidance of recent burns, rehabilitation seedings or other restoration sites.
7. Manage grazing of riparian areas, meadows, springs, and seeps in a manner that promotes vegetative structure and composition appropriate to the site. In some cases enclosure fencing may be a viable option. However, recognize the availability and quality of desired herbaceous species may be improved by periodic grazing use of the enclosure.
8. Implement management actions (grazing decisions, allotment management plan/conservation plan development, or other agreements) to modify grazing management to meet seasonal sage-grouse habitat requirements. Employ proper grazing management by providing flexibility in scheduling the intensity, timing, duration and frequency of grazing use over time that best promotes management objectives. During drought periods, prioritize evaluating effects of drought in the CHZ relative to grouse needs for food and cover. Ensure that post-drought management allows for vegetation recovery that meets sage-grouse needs in priority sage-grouse habitat areas.
9. When using salt or mineral supplements: a) place them in existing disturbed sites, areas with reduced sagebrush cover—e.g., seedings or cheatgrass sites—to reduce impacts to sage-grouse breeding habitat, b)

- where feasible use salts or mineral supplements to improve management of livestock for the benefit of sage-grouse habitat.
10. In general, avoid constructing new fences within 2 km of occupied leks. Where feasible, place new, taller structures, such as corrals, loading facilities, water-storage tanks, windmills, etc., at least 2 km from occupied leks to reduce opportunities for perching raptors. Careful consideration, based on local conditions, should also be given to the placement of new fences or structures near other important seasonal habitats (winter-use areas, movement corridors etc.) to reduce potential impacts.
 11. New spring developments in sage-grouse habitat should be designed to maintain or enhance the free-flowing characteristics of springs and wet meadows. Analyze developed springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within priority sage-grouse habitat. Make modifications where necessary, considering impacts to other water users when such considerations are neutral or beneficial to sage-grouse.
 12. Ensure that new and existing livestock troughs and open water storage tanks are fitted with ramps to facilitate the use of and escape from troughs by sage-grouse and other wildlife. Do not use floating boards or similar objects, as these are too unstable and are ineffective. Use BMPs to mitigate potential impacts from West Nile virus.
 13. When placing new water developments in sage-grouse breeding habitat, choose sites and designs that will provide the greatest enhancement for sage-grouse and sage-grouse habitat.
 14. Avoid new water developments in higher quality native breeding/early brood habitats that have not had significant prior grazing use except in situations in which water developments may aid in better livestock distribution across the allotment and will not adversely impact the species.
 15. Identify and when feasible, establish strategically located forage reserves focusing on areas unsuitable for sage-grouse habitat restoration or lower priority habitat restoration areas.
 16. Monitor for, and treat invasive species associated with, existing range improvements.
 17. Consider initiating vegetative manipulation projects where sagebrush canopy cover exceeds optimal characteristics to promote grass and forb understory growth. These projects should only be undertaken where it can be achieved without negatively impacting the species.

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MATTHEW H. MEAD
GOVERNOR



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

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.

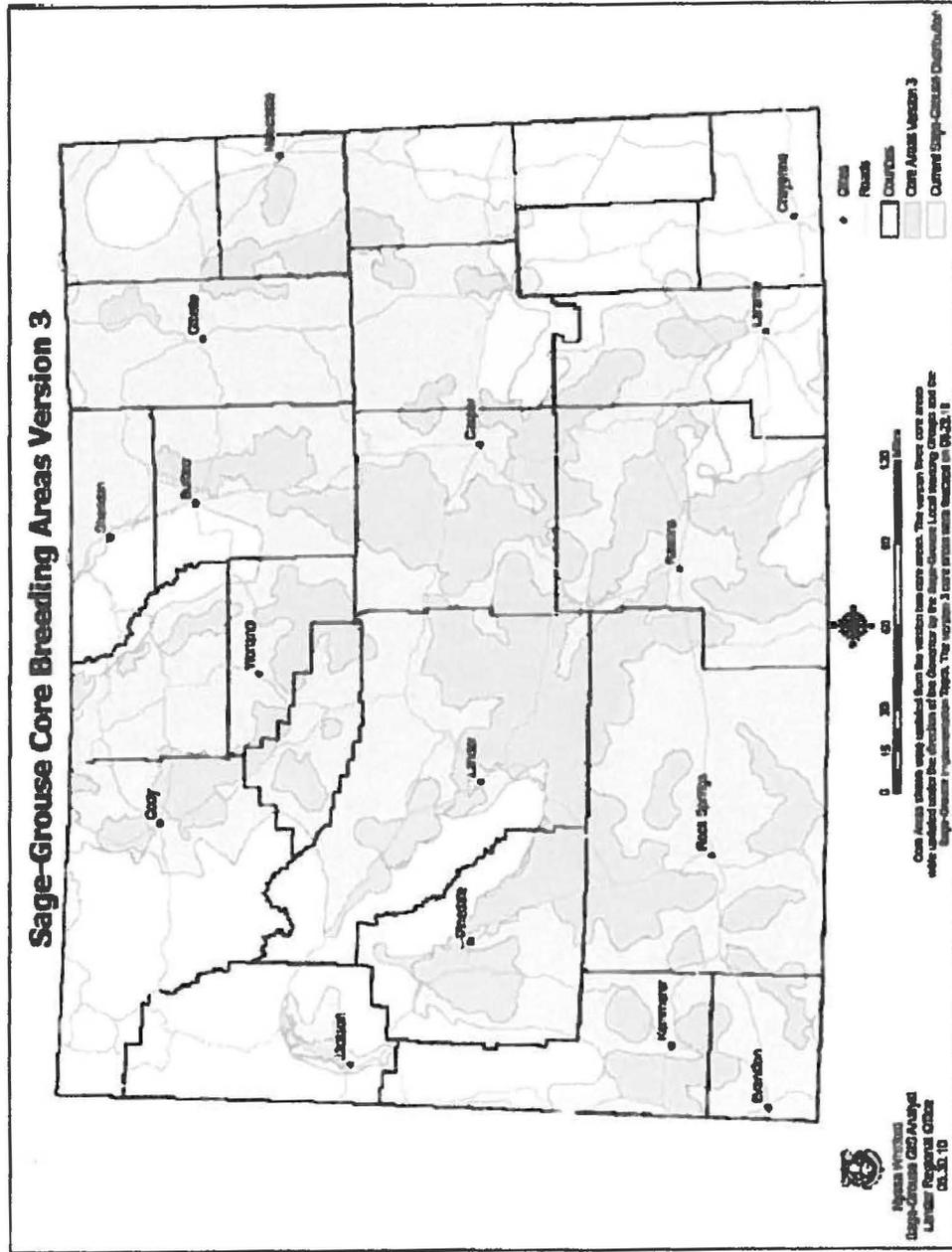
This Executive Order shall remain in effect until August 18, 2015, at which time all provisions of this Executive Order shall be reevaluated.

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

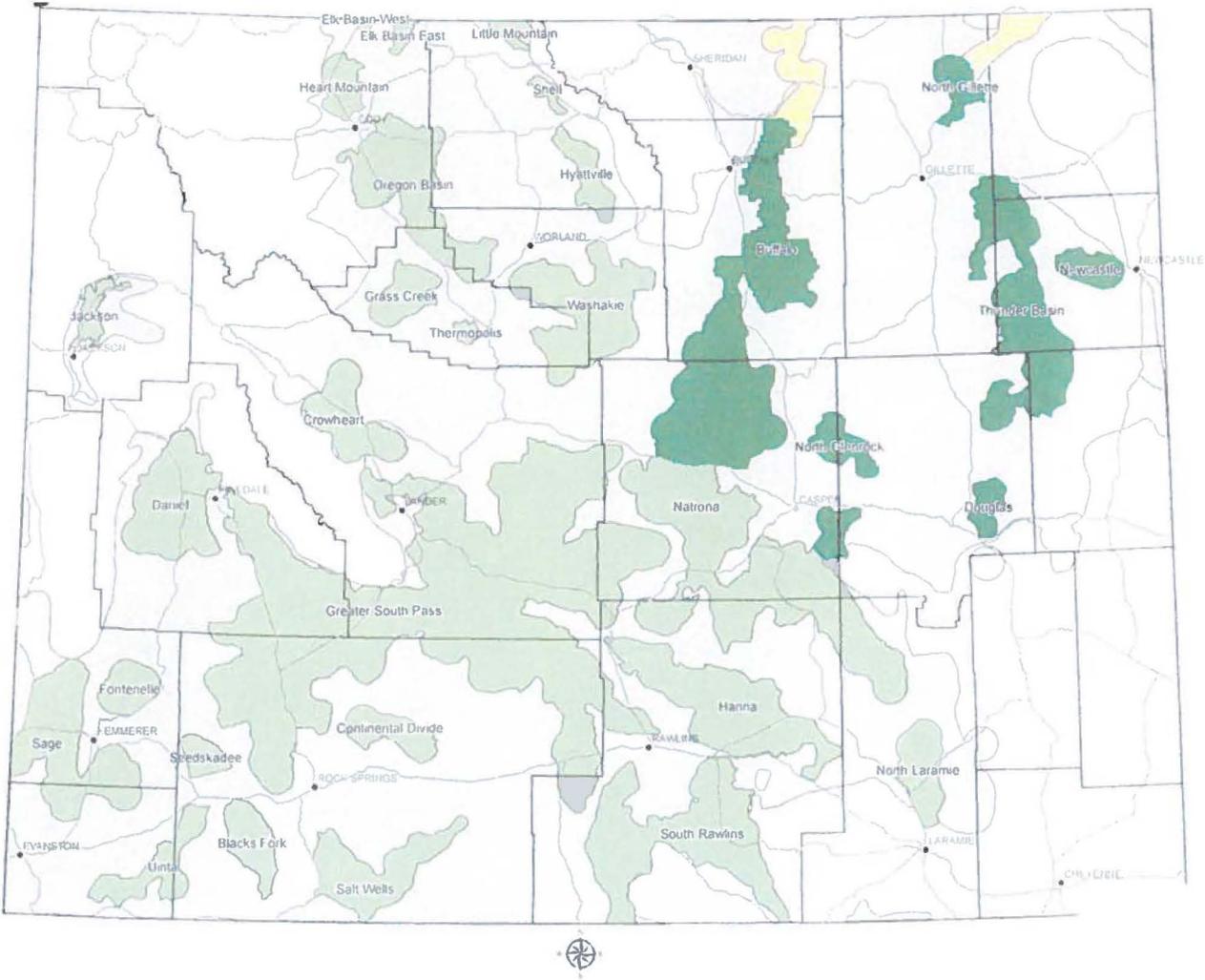
2. **Surface Occupancy:** Within 0.6 miles of the perimeter of occupied sage-grouse leks there will be no surface occupancy (NSO). NSO, as used in these recommendations, means no surface facilities including roads shall be placed within the NSO area. Other activities may be authorized with the application 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 June 30 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 WGF D 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 I 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:

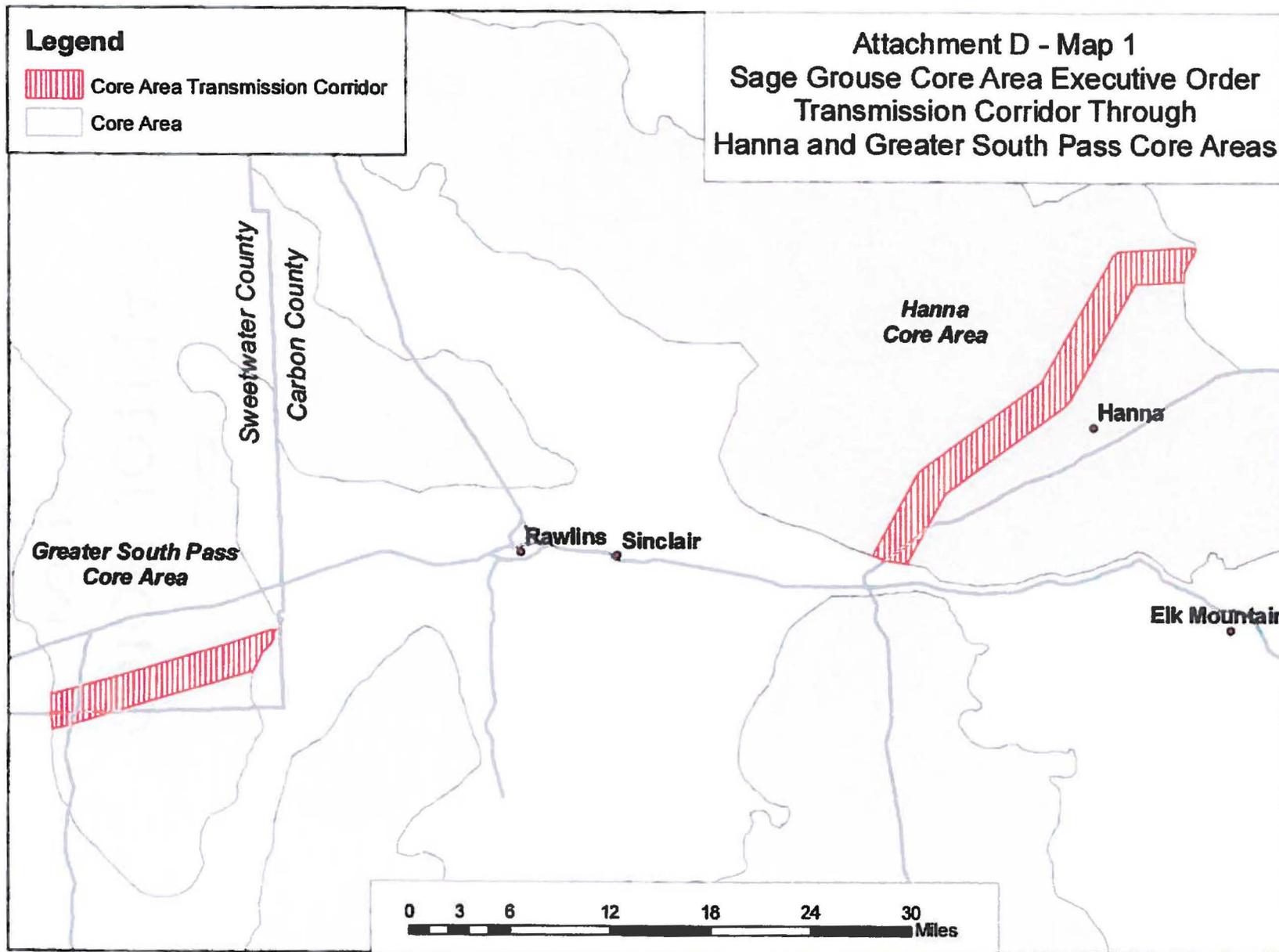
- a. Long-term removal occurs when habitat is physically removed through activities that replace suitable habitat with long term occupancy of unsuitable habitat such as a road, well pad or active mine.
- b. Short-term removal occurs when vegetation is removed in small areas, but restored to suitable 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.

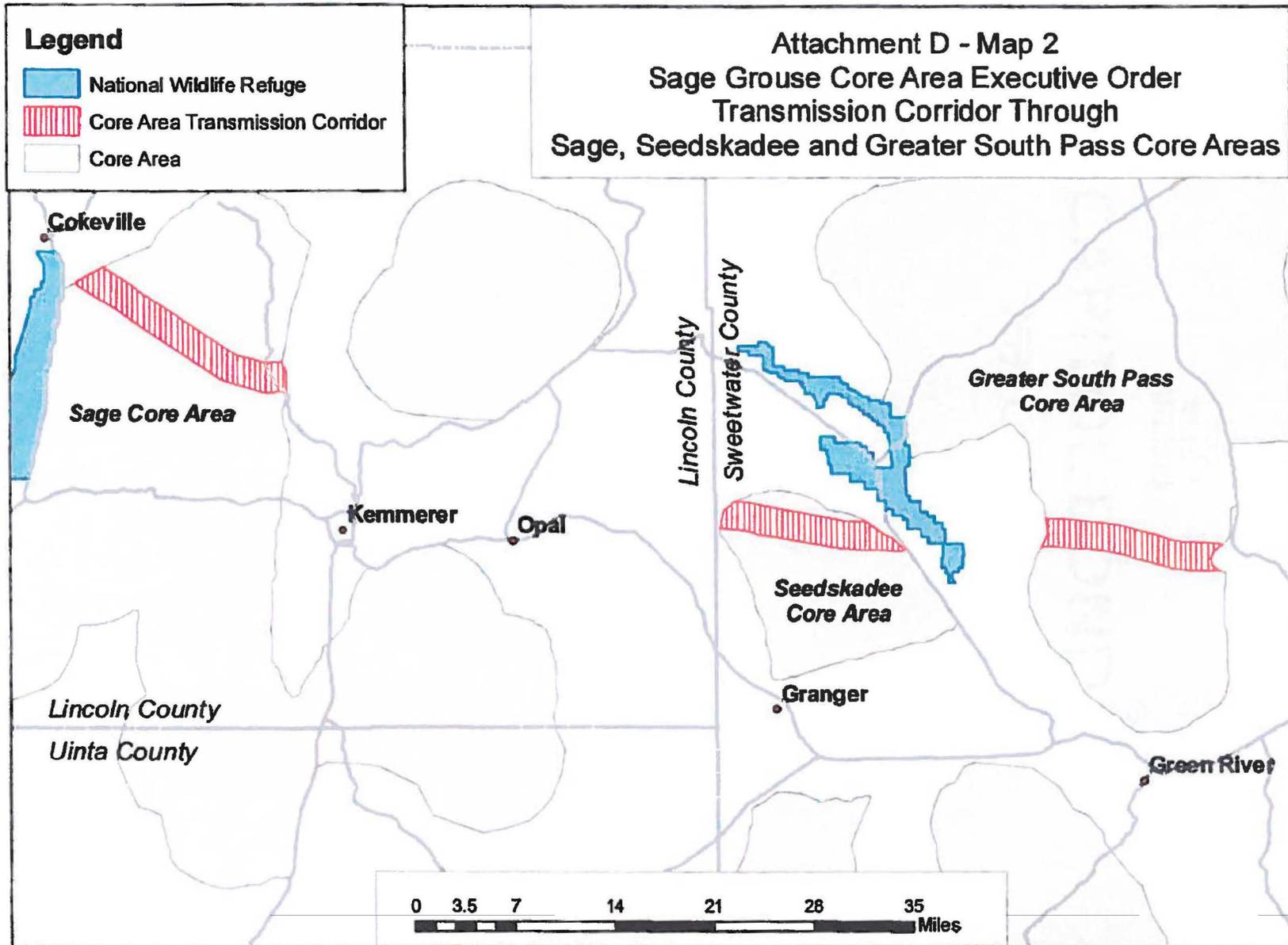
- d. Land in northeast Wyoming (Figure 1 of Attachment B) that has had sagebrush removed post-1994 (based on Orthophoto interpretation) and not recovered to suitable habitat will be considered disturbed when using the DDCT.

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 15 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.





Idaho and Southwest Montana Sub-Region Greater Sage-Grouse LUPA/EIS
October 2013



C.L. "BUTCH" OTTER
GOVERNOR

March 14, 2013

Brian Kelly
State Director
U.S. Fish and Wildlife Service
Idaho State Office
1387 South Vinnell Way
Boise, ID 83709-1657

Dear Brian,

This letter continues our discussion and collaboration on Idaho's contribution to Greater Sage-Grouse (GSG) management and conservation in order to avoid its listing under the Endangered Species Act (ESA). I greatly appreciate the personal attention and leadership you dedicated to this issue.

On December 18, 2012, Interior Secretary Ken Salazar responded to a series of questions posed by several western members of Congress about the Department of Interior's National Greater Sage-Grouse Land Use Planning Strategy (GSG Strategy). I was pleased that Secretary Salazar reiterated his commitment that "the BLM has every intention of taking actions to conserve the Greater Sage-Grouse in a manner that is *consistent with its multiple use mission* and with due regard for site specific on-the-ground considerations." (emphasis added).

I also noted with great interest that Secretary Salazar outlined the process for a Bureau of Land Management (BLM) state office to be exempted from Instruction Memorandum (IM) No. 2012-043 dated December 22, 2011. I believe IM No. 2012-043 coupled with the National Technical Team Report (NTT Report) represents a one-size-fits-all management scheme that fails to account for the site-specific information contained in my management plan. Secretary Salazar's response indicates that such an exemption can occur where "a state or local conservation mechanism has been developed with concurrence of the Fish and Wildlife Service." In short, I write to pursue the "concurrence" option for Idaho as a necessary precondition for state exemption from the national IM.

Moreover, I believe that a state-based solution for public land management – similar to Idaho's effort on roadless areas – will be a win-win for the species and the Idahoans who economically depend on access to lands managed by the federal government.

Concurrence by the Service on the Idaho approach is particularly important as your agency will carefully weigh all conservation commitments by my State and others in determining whether listing of the species is warranted under the ESA.

Idaho and Southwest Montana Sub-Region Greater Sage-Grouse LUPA/EIS

October 2013

Brian Kelly

March 14, 2013

Page 2

To briefly summarize where we are in the process, I sent you a letter in July 2012 requesting preliminary feedback on Idaho's draft Sage-Grouse Alternative. Specifically, I posed two questions fundamental to the overall structure of the plan:

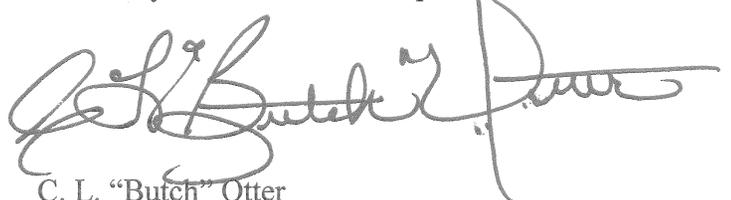
- (1) Whether the management framework – based on a thematic habitat continuum and population metrics – outlined in my Draft Alternative represents sound policy that should move forward; and
- (2) Whether the habitat zones, especially the Core Habitat Zone and Important Habitat Zone, are consistent with the U.S. Fish and Wildlife Service's understanding of the most important sage-grouse habitats in the state.

Your written response was especially encouraging and signaled that the State of Idaho was moving in the right direction in developing a sound GSG strategy. Based on this early feedback, the State took public comment, refined the draft Alternative and submitted it to the BLM for incorporation into its Strategy. *See* Governor C.L. "Butch" Otter's Greater Sage-Grouse Management Alternative, Sept. 5, 2012. ("Idaho Alternative").

Following submission to the BLM, you reaffirmed that the Service still had confidence with the aforementioned components in particular, but needed additional clarification and targeted revisions for the remainder of the Idaho management plan. Your point was taken in the spirit of collaboration, and I believe that in addition to the September 2012 Idaho Alternative, the attachment below resolves these outstanding issues, and thus provides the path for Service concurrence consistent with Secretary Salazar's policy directive. For the sake of completeness, the Idaho Alternative is adopted herein by reference, and only where specifically noted below should the Idaho Alternative be construed as revised or modified.

I have sincerely appreciated your leadership in helping the State of Idaho develop a collaborative, science-based management plan that meets the needs of the species and Idaho citizens. Of course, the Service's concurrence is a necessary and foundational part of this process, but the State of Idaho is mindful that further clarification may be beneficial as part of the Department's ongoing GSG Strategy consistent with the National Environmental Policy Act and the ESA in coordination with the State. Please let me know if you have any questions during your review. I look forward to the Service's concurrence and our continued discussions on this critically important issue.

As Always – Idaho, "Esto Perpetua"



C. L. "Butch" Otter
Governor of Idaho

Request for U.S. Fish and Wildlife Service Concurrence:

1. Thematic Conservation Approach

An effective plan for managing the greater sage-grouse must include both population and habitat metrics. The Idaho Alternative accomplishes both.¹ As to the habitat component, the Idaho Alternative at 2-3 identifies a Sage-Grouse Management Area (SGMA) that is divided into four conservation areas (CA) across the known range of sage-grouse in southern Idaho. These CAs are important for achieving Idaho's population objectives as well as to properly tailor adaptive management responses where necessary and appropriate.

There are two CAs north of the Snake River and two CAs south of the Snake River. The first CA north of the Snake River is the Mountain Valley CA, which starts at Rexburg and extends west, including sage-grouse habitat north and west of Highway 33 to Howe, Highway 33/22 to Arco, Highway 26/20/93 to Carey, Highway 20 west to Mountain Home, south from Mountain Home on Highway 51 to the Snake River. The second is the Desert CA, which is south of the Mountain Valley CA.

South of the Snake River is the West Owyhee CA, which is west of the Jarbidge River. The Southern CA is east of the Jarbidge River, and includes the East Idaho Uplands and Bear Lake Plateau. *See* Idaho Alternative at 6.

Each CA is divided into three management zones: Core Habitat Zone (CHZ), Important Habitat Zone (IHZ) and the General Habitat Zone (GHZ). Idaho Alternative at 24. These management zones were the result of the Idaho Department of Fish and Game's (IDFG) on-the-ground information provided by Dr. Jack Connelly and Don Kemner based on decades of research and monitoring data. As mentioned above, you indicated that Idaho's thematic approach *based on conservation objectives that are monitored in an adaptive management construct are fundamental attributes of the Service's own approach to strategic conservation.*² (emphasis added).

These management zones outline a suite of basic management activities that may or may not occur within a given area. Idaho Alternative at 3, 24-29. The thematic approach represents a management continuum that includes a relatively restrictive approach at one end in the CHZ and a relatively flexible approach in the GHZ. These three zones provide an array of permitted and prohibited activities. Idaho Alternative at 33-47.

¹ The Idaho Alternative is attached as Appendix I.

² "The thematic approach based on conservation objectives that are monitored in an adaptive management construct that your framework incorporates, are fundamental attributes of the Service's own approach to strategic conservation (USFWS and USGS 2006)." Letter from Brian Kelly (U.S. Fish and Wildlife Service) to Governor Otter re: "Draft Federal Alternative of Governor C. L. 'Butch' Otter for Greater Sage Grouse Management in Idaho," August 1, 2012.

At the outset of the Governor’s Task Force deliberations, the group noted the initial BLM mapping proposal (i.e., preliminary priority habitat/general habitat) as well as the National Technical Team (NTT Report) needed to be refined to reflect the state-specific concerns and the on-the-ground monitoring information. The Alternative notes, “[t]he State believes this [BLM’s] mapping approach does not adequately take advantage of the opportunity to provide better and more precise management direction based on the quality and location of sage-grouse populations and habitats in Idaho.” Idaho Alternative at 20.

Moreover, in developing these management zones, population objectives, and regulatory mechanisms, Idaho carefully considered the collaborative recommendations of the Governor’s Task Force, current Resource Management Plans, the NTT Report, the recently published volume on greater sage-grouse (*Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and its Habitats*) (co-editors Drs. Steven T. Knick and John W. Connelly), and other current and relevant scientific information. The State of Idaho did not adopt or endorse any of these sources to the exclusion of the others. To put a finer point on this issue, the state believes that all of these sources, to some degree, constitute the best available science for sage-grouse, and must be considered in our effort to preclude the need to list the species under the ESA.

Furthermore, dividing the current range into four CAs with three distinct management zones provides several important conservation benefits for the species:

- The management themes and adaptive management triggers provide a critical part of the needed direction and flexibility to address wildfire—the most significant threat to the species.
- The management themes also ensure that precious resources are directed toward dealing with the most important threats in stronghold areas.
- In conjunction with the threat of wildfire, the state adopted the Task Force’s recommendations to expand the CHZ beyond the 25% breeding bird density to include areas that may not currently meet that benchmark, but could offer solid opportunities for habitat restoration in the future. Idaho Alternative at 25.
- Using three management zones facilitates opportunities for collaboration as resource considerations can be more appropriately tailored across the range of the species.
- This thematic approach is not without precedent. The Idaho Alternative is based largely on Idaho’s successful model for managing and conserving inventoried roadless areas. In fact, the Idaho Roadless Rule has been affirmed by both the District of Idaho and the Ninth Circuit Court of Appeals.

2. State of Idaho Population Objectives

These population indicators are critical to gauging the effectiveness of the state's conservation efforts. In conjunction with the management zones, the population indicators ensure there is an appropriately tailored response to significant fluctuations in habitat and population.

The first objective is to implement regulatory mechanisms that maintain and enhance sage-grouse habitats, populations, and connectivity within the CHZ. Recognizing the impact of wildfire, the IHZ provides both important management flexibility and a strategic conservation buffer. Through the implementation of the state's proposed regulatory mechanisms, Idaho will be well-positioned to maintain a viable population of at least 65% of the sage-grouse leks for the foreseeable future. It is important to note that IDF&G estimates that approximately 95% of Idaho's known sage-grouse population is encompassed in the CHZ and IHZ themes. *See generally* Idaho Alternative at 7-9. By contrast, the GHZ only accounts for 5% of the state's total population.

The second objective is to stabilize sage-grouse habitats and populations by monitoring the effectiveness of the regulatory measures over time. A significant component of this objective is to minimize habitat loss within Core Habitat Zone (CHZ), and to a lesser extent, the Important Habitat Zone (IHZ). For more detail see Idaho's Alternative.

3. Adaptive Regulatory Triggers

The Adaptive Regulatory Triggers have been clarified and refined since the September 5th version. Idaho Alternative 9-11.³ The adaptive triggers provide a regulatory backstop to prevent further loss and stabilize habitats and populations in the CHZ, and to a lesser extent in the IHZ, where a demonstrated significant loss has either occurred over time or unexpectedly (i.e., Murphy Complex Fire). These adaptive triggers are employed when dramatic shifts in population or habitat occurs based on an average over a three year period compared to 2011 values. Additionally, these adaptive triggers place the primary and secondary threats to the species in proper context to appropriately evaluate the cause(s) of the decline.

In addition to the below description, Idaho's Alternative utilizes two types of triggers to help determine whether changes in management are necessary. This is a refinement from the September 5th version of the Idaho Alternative. The triggers are broken down into a "soft" trigger and a "hard" trigger. The "soft" trigger becomes operative when one of the following occurs:

- 10% decline in maximum number of males counted and a finite rate of change below 1.0 but not significantly on CHZ over a period of three years; or
- 10% loss of nesting and wintering habitat in a Conservation Area over a period of three years.

³ Not only do the revisions apply to the referenced narrative portions of the Idaho Alternative, but also where relevant and applicable to the regulatory language beginning on page 30.

When the monitoring information indicates that the “soft trigger” may be tripped, an Implementation Team – aided by the technical expertise of IDF&G – will assess the factor(s) leading to the decline and identify potential management actions. *See* Idaho Alternative at 7. The Implementation Team may consider possible changes in management to the CHZ. As to the IHZ, the Implementation Team may review the causes for decline and potential management changes only to the extent those factors significantly impair the state’s ability to meet the overall management objective. It is anticipated IDF&G will collect data annually and will make recommendations to the Implementation Team by August 31st for population triggers and January 15th for habitat triggers.

The “hard” trigger becomes operative when one of the following occurs:

- 20% loss in CHZ nesting wintering habitat over a period of three years; or
- 20% decline in maximum number of males counted and a finite rate of change significantly below 1 within a Conservation Area over a period of three years.

If the hard trigger becomes operative according to the monitoring information, management changes are no longer discretionary and will be implemented in the following manner:

First, the IHZ will be managed according to the CHZ provisions primarily impacting the ability to consider infrastructure projects. Like the “soft trigger”, the Implementation Team will analyze the actual cause(s) of the decline. The flow chart (Appendix II) illustrates the process used to determine which threat(s) caused the habitat or population loss.

As the illustration denotes, the Service identified wildfire, invasive species, and infrastructure as the primary threats and West Nile Virus, improperly managed grazing, and recreation as secondary threats. This adaptive trigger strategy focuses the analysis on mitigating the primary threats to the species in the CHZ. Only where the monitoring information indicates the cause(s) of the decline is not a primary threat will the Implementation Team analyze the secondary threats to the species and determine whether further management actions are needed.

Population and habitat objectives are measured against baselines are illustrated in the tables below. The baseline for habitat within each CA is the 2011 nesting and wintering habitat for the CHZ and IHZ. (See Tables 1 and 2). The population baseline is the maximum number of males counted on lek routes in 2011 within the CHZ and the average finite rate of change of population for 2009-2011 within the CHZ. It is measured the same way in IHZ. CHZ and IHZ triggers are analyzed separately. The habitat triggers are also analyzed separately from the population triggers. The foregoing represents additional clarification from Idaho’s Alternative.

Table 1. Population Trigger (for illustrative purposes only).

Conservation Area	Population Baseline	Soft Trigger (10%)	Hard Trigger (20%)
Desert			
Mountain Valley			
Southern			
Western Owyhee			

Table 2. Habitat Triggers

Conservation Area	Breeding & Wintering (acres) (baseline)	10% loss (acres) (soft trigger)	20% loss (acres) (hard trigger)
Desert	840,291	84,029	168,058
Mountain Valleys	1,640,415	164,042	328,083
Southern	568,921	56,892	113,784
West Owyhee	1,416,135	141,614	283,227

4. Wildfire/Invasive Species

This section has been refined since the September 5th version. As mentioned above, the Idaho Alternative utilizes conservation areas, management zones and adaptive triggers to maintain and enhance sage-grouse populations in the CHZ to mitigate the impacts of wildfire. This approach provides stability in the short-term to enable the more proactive measures (i.e., fuel breaks, habitat restoration) the time necessary to demonstrate positive change on the landscape.

Additionally, the Idaho Alternative organizes its regulatory measures into three categories: Prevention, Suppression, and Restoration. This change reflects the state’s intent to provide BLM with a method to prioritize wildfire management and resources, while providing flexibility to make adjustments when necessary.

During the 2013 Idaho Legislative session, Governor Otter made it a priority to provide ranchers and landowners in rural areas with the necessary tools and training to allow them to play an active role in fire prevention and suppression, especially in sage-grouse habitat. Idaho Code § 38-104B amends existing law to provide for the creation of non-profit Rangeland Fire Protection Associations (Appendix III).

In conjunction with this change in Idaho Code, the Idaho Legislature also provided the Idaho Department of Lands with additional funding to assist in the creation of four protection associations in southwest Idaho, modeled from the Mountain Home Rural Fire Protection

Association. Appendix IV provides a preliminary map depicting areas in sage-grouse habitat that are considered “no man’s lands” where these associations can help in early fire detection, suppression and prevention efforts.

5. Infrastructure

This section remains unchanged from the Idaho Alternative. The state recognizes that more detail in the mitigation policy and its implementation may be needed to achieve the overall conservation objectives. *See* Section G of the Idaho Alternative and pages 33-34, 40, 43-45.

6. Livestock Grazing on Lands Managed by the Federal Government

The State Alternative only applies to those lands managed by the Federal government that are part of the GSG Strategy. It is important, especially in the context of livestock grazing management, that the following management framework is applicable only to the extent it involves the BLM’s administration of Standard 8 of the Idaho Rangeland Health Standards (IRHS) with respect to sage-grouse. An important footnote, the IRHS do not apply to the U.S. Forest Service, and this management framework should in no way be construed as imposing those standards on the Forest Service. While this framework may benefit other sage-steppe species, those species-specific or other resources issues are not addressed herein.

Management Framework:

There are two pathways where this management framework is applicable: (1) in conjunction with scheduled term grazing permit renewals; and (2) where the adaptive regulatory trigger has been tripped (as described in section 3 above) and livestock grazing is identified as a potential causal factor.

Under the first path, this management plan provides a framework for BLM to assess Standard 8 with respect to sage-grouse as grazing permits are scheduled for renewal. As described in more detail below, if no trigger has been tripped across a CA, then the Standard 8 analysis for sage-grouse is a straightforward process. Under the second path, this adaptive framework aids in determining whether improperly managed livestock grazing may be a causal factor that potentially requires adaptive change to existing permits within a CA.

The first step in this process is to inform and educate permittees within the SGMA regarding sage-grouse habitat needs and conservation measures. These habitat needs or characteristics, as applicable, are outlined in Tables 3-5 of the Idaho Alternative (14-17).

Second, Standard 8 of the IRHS establishes a “maintain a viable population” threshold for listed species. 43 C.F.R. Subpart 4160. Consistent with the overall approach of the Idaho Alternative – namely, an outcome-based conservation strategy within an adaptive construct – the State of Idaho has identified an overall population target buttressed by regulatory mechanisms and adaptive regulatory triggers. Where these population and habitat triggers are being maintained, there is a rebuttable presumption that current grazing systems within that CA are adequate to

maintain viable sage-grouse populations. Therefore, absent compelling information, no further changes to grazing permits will be required pursuant to the Standard 8 analysis insofar as it relates to sage-grouse. In sum, if no trigger has been tripped within a CA, the allotments and pastures are presumed to have met Standard 8 with respect to sage-grouse.

This rebuttable presumption does not preclude adaptive change to grazing permits based on the other standards contained in the IRHS. Again, it is important to note that the Forest Service is not subject to the IRHS; however, the conservation objectives established in the Idaho's Alternative should meet the applicable standards in National Forest Management Act (NFMA).

If an adaptive regulatory trigger is tripped consistent with the process outlined above, and livestock grazing is identified as a potential limiting factor, the presumption that the current grazing operations within the Conservation Area have met Standard 8 with respect to sage-grouse will no longer be applicable.

Following such a determination, the following process will be utilized:

BLM will individually analyze those allotments and pastures within the relevant Conservation Area. Given limited agency resources, prioritization will be given to areas that have the potential to provide the greatest benefit to sage-grouse. Allocation of resources should be concentrated on allotments within the CHZ that have declining sage-grouse populations. Following those permits within the CHZ, resources will be further prioritized to allotments within the IHZ with breeding habitats that have decreasing lek counts. (*See Flow Chart, Appendix V*). Sage-grouse populations that are stable or trending upward will be a lower priority for permit renewal and the adaptive assessment process.

The assessment/determination process for sage-grouse pursuant to Standard 8 must rely on published characteristics of sage-grouse habitat and the Ecological Site Descriptions, existing vegetation, habitat inventories/assessments (Stiver et al. 2010), and where available, state and transition models that describe vegetation and other physical attributes for sage-grouse. The related characteristics within the categories shown below will also be included. These characteristics indicate the ability of a given area to provide sage-grouse habitat.

Category 1: The grazing allotment (or any pasture/significant area therein) has the existing vegetation and existing ecological condition (seral state) to provide sage-grouse habitat

Category 2: The grazing allotment (or any pasture/significant area therein) has the ecological potential to provide sage-grouse habitat.

Where an allotment or pasture meets one of these Categories above, Tables 3-5 (Idaho Alternative at 14-16) will be incorporated into relevant resource management plans as the desired conditions with the understanding that these desired conditions may not be achievable: (a) due to the existing ecological condition, ecological potential or the existing vegetation; or (b) due to causal events unrelated to existing livestock grazing. Allotments will only be managed for

the primary seasonal habitat that it has the potential to support. Typically, summer habitats will be managed to provide the conditions described in Table 3; winter Table 4; and breeding habitats in Table 5.

Based on these habitat characteristics, BLM will conduct fine and site scale-habitat assessments to help inform grazing management. Where necessary, a determination of factors causing any failure to achieve the habitat characteristics (Tables 3-5) will be conducted at a resolution sufficient to document the habitat condition. This determination will include consideration of local spatial and inter-annual variability. A determination of issues attributable to livestock grazing management shall not result from one year of data at a specific location within an allotment.

If the process and conditions outlined above demonstrate that livestock grazing is limiting achievement of the habitat characteristics (Tables 3-5), renewed permits will include measures, including but not limited to the actions outlined in (Idaho Alternative, Section J at 46-48) to achieve desired habitat conditions. These measures must be tailored to address the specific management issues associated with seasonal habitat limitations identified in the fine-scale assessments.

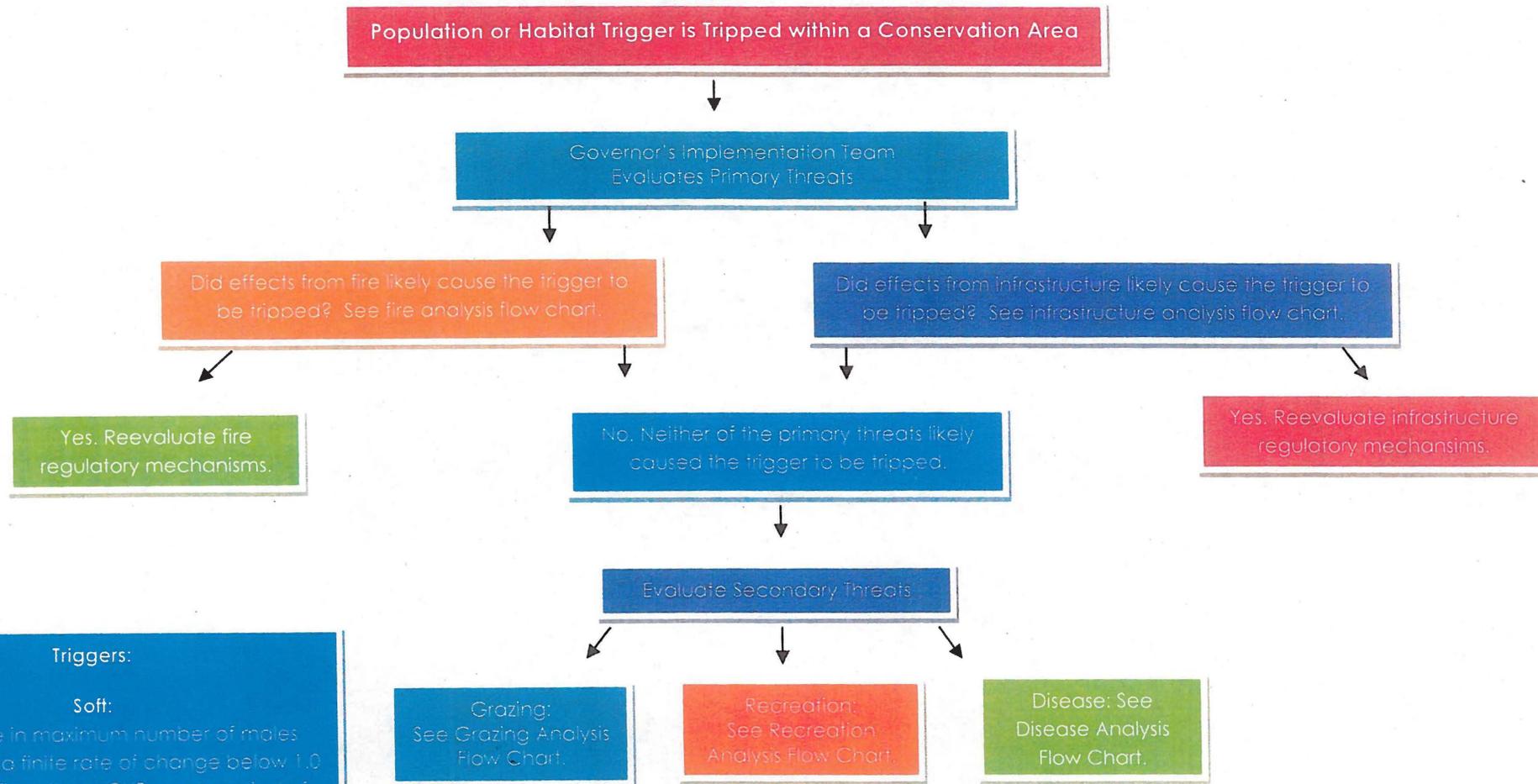
Additionally, adaptive management changes related to existing grazing permits should only be undertaken if improper grazing is determined to be the causal factor in not meeting habitat characteristics, specific to site capability, based upon monitoring over time with appropriate site variability.

The Implementation Team will maintain oversight capabilities throughout the process and will be given the ability to review proposed management changes, the implementation of conservation measures, and the on-the-ground monitoring to ensure the measures are appropriately applied.

APPENDIX I: IDAHO ALTERNATIVE
Previously Included

APPENDIX II: ADAPTIVE TRIGGER STRATEGY

Appendix II: Adaptive Trigger Strategy
Determine What Caused a Hard Trigger to Become Operative and What Management Actions are Necessary



Triggers:

Soft:
10% decline in maximum number of males counted and a finite rate of change below 1.0 but not significantly on CHZ over a period of three years; or
10% loss of nesting and wintering habitat in a Conservation Area over a period of three years.

Hard:
20% loss in CHZ nesting wintering habitat over a period of three years; or
20% decline in maximum number of males counted and a finite rate of change significantly below 1 within a Conservation Area over a period of three years.

APPENDIX III: IDAHO RANGELAND FIRE PROTECTION ASSOCIATIONS

LEGISLATURE OF THE STATE OF IDAHO
Sixty-second Legislature First Regular Session - 2013

IN THE HOUSE OF REPRESENTATIVES

HOUSE BILL NO. 93

BY RESOURCES AND CONSERVATION COMMITTEE

AN ACT

1
2 RELATING TO FOREST AND RANGE FIRES; AMENDING CHAPTER 1, TITLE 38, IDAHO CODE,
3 BY THE ADDITION OF A NEW SECTION 38-104B, IDAHO CODE, TO PROVIDE FOR NON-
4 PROFIT RANGELAND FIRE PROTECTION ASSOCIATIONS, TO DEFINE A TERM AND TO
5 PROVIDE PROCEDURES.

6 Be It Enacted by the Legislature of the State of Idaho:

7 SECTION 1. That Chapter 1, Title 38, Idaho Code, be, and the same is
8 hereby amended by the addition thereto of a NEW SECTION, to be known and des-
9 ignated as Section 38-104B, Idaho Code, and to read as follows:

10 38-104B. NONPROFIT RANGELAND FIRE PROTECTION ASSOCIATIONS. (1) "Non-
11 profit rangeland fire protection association" means a nonprofit corporation
12 or nonprofit unincorporated association, that has entered into an agreement
13 for the detection, prevention or suppression of forest and range fires with
14 the state of Idaho or any agency of the state of Idaho pursuant to title 38,
15 Idaho Code.

16 (2) A group of rangeland owners wishing to establish a rangeland fire
17 protection association shall petition the director of the department of
18 lands. The director may accept petitions where:

19 (a) Petitioners meet the requirements established by the director con-
20 cerning the legal status of the association, liability insurance and
21 governing and managing structure; and

22 (b) Petitioners demonstrate financial ability to form a rangeland fire
23 protection association; or

24 (c) Adequate state funding exists, as determined by the director, to
25 assist in the initial establishment of the association.

26 (3) Prior to entering into an agreement, and annually thereafter, the
27 director shall review and inspect the association for the following:

28 (a) The governing and managing structure of the association;

29 (b) The adequacy of liability insurance; and

30 (c) The training of all association personnel.

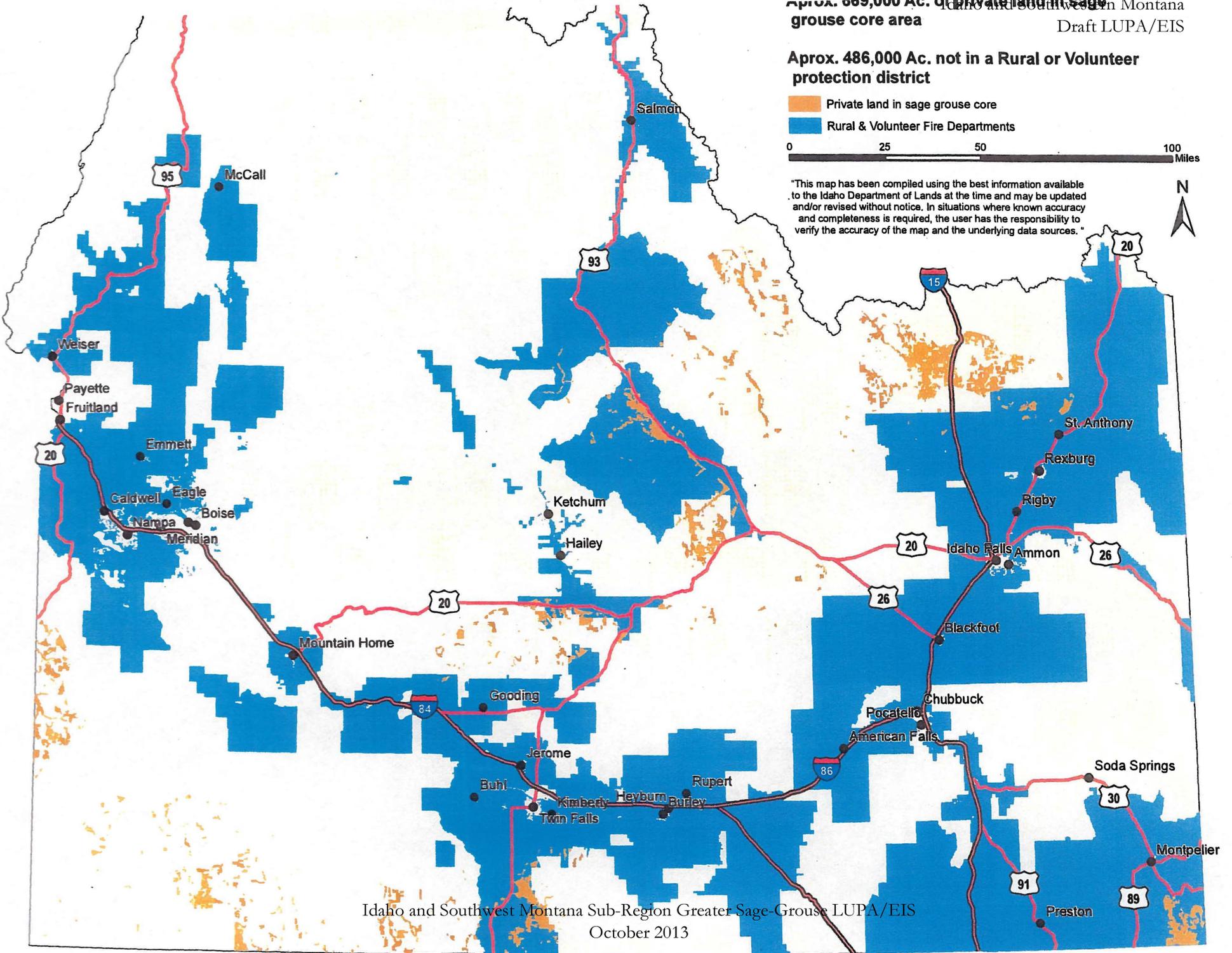
APPENDIX IV: RFPA MAP

Approx. 486,000 Ac. not in a Rural or Volunteer protection district

- Private land in sage grouse core
- Rural & Volunteer Fire Departments



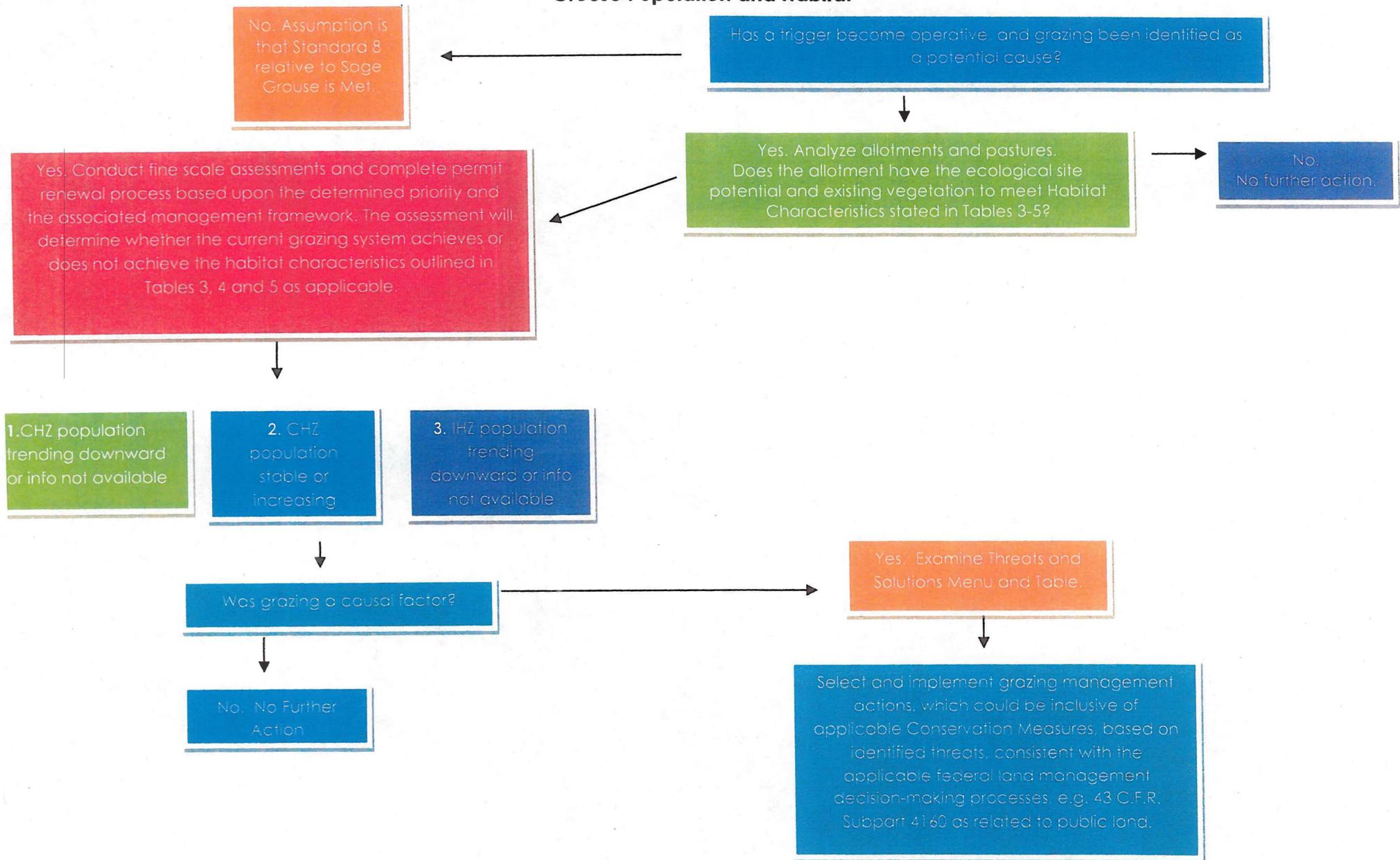
"This map has been compiled using the best information available to the Idaho Department of Lands at the time and may be updated and/or revised without notice. In situations where known accuracy and completeness is required, the user has the responsibility to verify the accuracy of the map and the underlying data sources."



Idaho and Southwest Montana Sub-Region Greater Sage-Grouse LUPA/EIS
 October 2013

APPENDIX V: LIVESTOCK MANAGEMENT FRAMEWORK

Appendix V: Livestock Grazing on Lands Included Within Greater Sage-Grouse Strategy Determine Whether Current Grazing Practices Within a Conservation Area are Adequately Maintaining Viable Sage Grouse Population and Habitat





United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Idaho State Office
1387 South Vinnell Way
Boise, Idaho 83709-1657



FISH AND WILDLIFE SERVICE

Idaho Fish and Wildlife Office
1387 South Vinnell Way, Room 368
Boise, Idaho 83709

MAR 22 2013

Governor C.L. "Butch" Otter
Idaho State Capitol Building
Boise, Idaho 83720

Dear Governor Otter,

We would like to reiterate our appreciation for your leadership with respect to the conservation of Greater sage-grouse in Idaho and, in particular, your work forming and supporting the collaborative work of the Idaho sage-grouse task force. The commitment of the task force, your staff, the Idaho Office of Species Conservation and the Idaho Department of Fish and Game to conserve Greater sage-grouse in a manner that respects multiple use of the land and contributes to a future where listing the species under the Endangered Species Act (ESA) is unnecessary, is a commitment we share. We write today to reassure you of this commitment with respect to the revisions you have made to the State of Idaho Alternative that was transmitted to the U.S. Fish and Wildlife Service (FWS) on March 14, 2013.

The FWS and Bureau of Land Management (BLM) each have a separate and distinct role to play in the review of the State's plan. Although FWS has been working closely with the State on specific revisions, the formal review for concurrence that you have requested will allow FWS to determine whether the State alternative or parts thereof are consistent with and will meet the conservation objectives outlined in the Conservation Objectives Team report. Such a determination will provide a basis for BLM to consider potential interim measures based on the State alternative that can be implemented in a manner consistent with the bureau's multiple-use mandate and organizational capacity.

At this time, the FWS and BLM have not completed their respective detailed analysis of the State's revisions to determine adequacy and implementation/capacity possibilities, respectively. At first glance, much of the State's plan contains direction consistent with the FWS's long-term needs to ensure the conservation of sage-grouse and BLM's multiple-use mandate. There are also some aspects of the plan which both BLM and the FWS in Idaho believe need clarification and refinement.

The FWS and the BLM are jointly committed to work in partnership with the State to achieve such clarity and refinement. We look forward to convening with your team and hope to do so early next week. It is our intent that through this partnership the Idaho BLM, consistent with organizational capacity, would be able to adopt those portions that are aligned with current policy/regulations as interim direction for Greater sage-grouse management on Idaho's public lands. Idaho BLM also commits to continue to fully analyze the State alternative in their subregional Sage Grouse EIS to be completed by December, 2014.

Sincerely,



Steven A. Ellis
BLM Idaho State Director



Brian T. Kelly
FWS Idaho State Supervisor



United States Department of the Interior

Fish and Wildlife Service

Idaho Fish And Wildlife Office

1387 S. Vinnell Way, Room 368

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Idaho and Southwestern Montana

Draft



The Honorable C.L. "Butch" Otter
Governor of Idaho
State Capitol
Boise, Idaho 83702

APR 10 2013

Dear Governor Otter:

Thank you for your letter of March 14, 2013 requesting U.S. Fish and Wildlife Service (Service) "concurrence" in regards to Idaho's Greater sage-grouse (GRSG) conservation strategy (Strategy). Before the Service responds to this request, we would like to express our continued appreciation for your leadership in guiding the collaborative approach in which your staff in the Governor's Office, the Office of Species Conservation and the Idaho Department of Fish and Game has worked with us to refine the State's approach to conserving GRSG in Idaho.

The Service remains impressed with and supportive of the science-based adaptive conservation strategy for GRSG you have crafted collaboratively in Idaho, for Idaho-specific needs. In brief, the foundation of the Strategy and most of the specific elements that complete it, are solid and are grounded in scientific concepts and approach important to both the Service and Department of the Interior. While there is much about the current draft that the Service supports; there remain elements that need refinement, clarification, or need to be incorporated into the Strategy for the Service to conclude the entire strategy is consistent with the Service's Greater sage-grouse Conservation Objectives Team (COT) report.

A detailed response to your inquiry is attached. In summary, the integrated nature of the Strategy makes it difficult to "concur" with specific elements as most are interrelated and depend on other elements of the Strategy to function effectively. Nonetheless, our review revealed that the 4 foundational elements of the Strategy (Habitat Zones, Conservation Areas, Population Objective and Adaptive Triggers) are consistent with the COT as is the Livestock Grazing Management element. Therefore, this determination of consistency with the COT reflects "concurrence" for these elements, with the necessary elements noted in our detailed comments (see attachment), for the purpose of BLM IM 2012-043. This "concurrence" should not be construed as being automatically implementable by the BLM. The Service looks forward to working with your Task Force, and BLM as appropriate, to refine, clarify and add aspects of the Strategy as needed for similar support of, for example, the Wildfire Management and Infrastructure elements; and the Implementation Team/Commission. The latter, while an element of the Strategy that that

needs clarity and refinement is an issue the Service believes is easily addressed. There are numerous examples of such bodies, including as the State has verbally referenced, the process used on the Idaho Roadless Rule. The Service looks forward to assisting the State craft such a process for the Strategy.

Conservation of GRSG is a challenge. It is a challenge due to the geographic scale of the issue; the need of the species for large intact undisturbed geographies of habitat; the difficult nature of the threats in the Great Basin portion of the range; and the relevance of the habitat in questions to myriad conservation and economic needs and interests. Long-term conservation of GRSG will require a strong and sustained commitment by stakeholders across multiple jurisdictions to work together collaboratively. It is for these reasons that the Service commends the State of Idaho for acknowledging and crafting a Strategy that on one hand details proactive conservation actions to address the threats on the landscape, but equally important embraces the uncertainty of how those threats will play out on the landscape and how they will affect GRSG over time by crafting a robust, outcome based scientific strategy that is collaborative and adaptive. This balance between proactive conservation design/actions based on empirical data and assumptions, with a feedback loop from monitoring to inform adaptation in design/action, with stakeholders in the decision loop as an integral part of that process, is a fundamental component of the both the Strategic Habitat Conservation approach the Service employs, and Adaptive Management that the Department of the Interior employs.

We hope this review is helpful. The Service looks forward to continuing our role in this process of on-going refinement of the Strategy, its implementation over time, and as part of the adaptive process it embraces.

Sincerely,



Brian T. Kelly
Idaho State Supervisor

cc: Idaho BLM, State Director (S. Ellis)
Idaho Department of Fish and Game, Director (V. Moore)
Idaho Office of Species Conservation, Administrator (D. Miller)
U.S. Forest Service, Region 4, Deputy Regional Forester (M. Finley)

C.L. "Butch" Otter, Governor
State of Idaho
Request for State sage-grouse plan concurrence

ATTACHMENT

Purpose of the Service's Comments

We want to be clear regarding the purpose of our comments. First, our comments serve to continue the collaborative and iterative process we have been engaged in with you. We see this review as an important "check-in" and continuation of that process to ensure the Strategy is ultimately best positioned to contribute to a future where listing GRSG under the ESA is unnecessary.

Our comments also provide the requested feedback regarding "concurrence" as referenced in BLM Instructional Memorandum 2012-043. While the Service and BLM are both Department of the Interior Agencies, and we together with the State of Idaho and other partners, are collaborating in the conservation of GRSG; the BLM and Service have different legal authorities and policy requirements. As such, any "concurrence" we may offer on elements of the Strategy should not be construed a priori as being implementable by the BLM. That is a determination BLM must make. The Service acknowledges and respects BLM authority in this regard. The Service stands ready to assist the State and BLM in BLM's approval process where appropriate (e.g., Service review of elements of the Strategy that are modified to be implementable by BLM). Our comments on the Strategy at this juncture are not part of the on-going BLM process to amend and or revise various Resource Management Plans across the range of GRSG. That review process will be completed separately.

Service support of the Strategy in part or whole should not be interpreted as a decision by the Service commensurate with a listing decision under the Endangered Species Act (ESA). That determination will be made when the Service formally reviews the status of the species in 2015. However, our purpose in developing the COT report was to guide the States in the development of conservation actions and strategies so that when we review those efforts in 2015 they would contribute to the conservation of the species in a manner that collectively would address threats such that listing would not be necessary. It is for this reason, our review of the Strategy herein is provided in the context of the COT report.

Components of the Strategy

We frame our review in the context of the three primary elements of the strategy: (1) Foundational Elements, (2) Specific Elements, and (3) Implementation Team/Commission. Foundational elements of the Strategy are those that transcend specific management and conservation actions or reactive adaptive processes once population or habitat triggers are tripped. We refer to four Foundational Elements: Thematic Approach, Conservation Areas, Adaptive Triggers, and Population Objective. Specific Elements identified in the Strategy are those that target specific threats including: wildfire, invasive species, and infrastructure, as primary threats; and recreation, West Nile virus, improper livestock grazing management, and livestock grazing infrastructure as secondary threats. The Implementation Team/Commission

referenced in the Strategy is meant to ensure proper action is taken when a trigger is tripped. As such, for the purposes of our review, we will evaluate the Implementation Team/Commission as a separate operational element of the strategy.

Foundational Elements

Our review of the Strategy revealed a thoughtful, science-based and outcome-driven adaptive management approach to the conservation of GRSG in Idaho. This approach is consistent with the COT report. The Thematic Approach, Conservation Areas, Adaptive Triggers, and Population Objectives are consistent with the COT report and the Service strongly supports these aspects of the State's Strategy.

Examples of how the four Foundational Elements of the Strategy are consistent with the General Conservation Objectives and Specific Conservation Objectives related to Priority Areas for Conservation (PACs) in the COT report include:

1. The designation of a Core Habitat Zone (CHZ) of approximately 5.5 million acres which by itself is currently home to approximately 73% of the male GRSG in Idaho. The CHZ captures the COT report intent of avoiding development in priority areas for conservation (PACs). The Strategy reflects that the development of infrastructure (a primary threat to GRSG) is prohibited in CHZ; with a process for limited exceptions. The Service commends the State for ensuring that any exceptions to the prohibition to infrastructure in CHZ, must meet the conservation standard in the Important Habitat Zone (IHZ; see discussion in next paragraph). While we support the configuration and intent of the CHZ, we look forward to working with the State to clarify how exceptions are determined and specific mitigation strategies if exceptions occur are implemented (see Specific Elements and Implementation Team/Commission headings, below).
2. The designation of an Important Habitat Zone (IHZ), of approximately 4 million acres which by itself is currently home to 22% of the male GRSG in Idaho. The IHZ also captures the COT report intent of stopping the population decline in that while infrastructure is permitted; it is permitted in a way that must demonstrate it will not affect the population trend for the Conservation Area in question. IHZ serves an equally important role in the Strategy as it can serve to buffer loss of habitat due to fire (see #5).
3. The Strategy's use of a measureable population objective, and utilizing monitoring to ensure that objective is met; and setting metrics that trigger changes in practices or review of current practices to ensure the Strategy's conservation objective is met long-term.
4. The use of four separate Conservation Areas in which the adaptive triggers are individually applied adds an increased level of sensitivity to change, that we expect to translate to more timely changes in management if necessary, which will translate to an enhanced ability to ensure the population objective of the

Strategy is met state-wide (the Service appreciates and concurs with the State’s desire to have additional peer review of the adaptive triggers).

5. The use of a “hard trigger” that, if tripped, requires IHZ be managed as CHZ, with infrastructure development subject to the same standards in both zones. In essence, if applied to all Conservation Areas, the CHZ would almost double in size. This would add the conservation benefit of CHZ to IHZ until no longer necessary.
6. The COT report also references the importance of incentive-based conservation actions in developing a conservation strategy. The foundational elements of the Strategy provide a context for incentivizing actions to maintain population numbers and intact habitat; and help ensure the conservation and restoration of GRSG in Idaho. The structure of these foundational elements of the Strategy (and specific elements consistent with the COT report and others as they are refined) will help provide stakeholders predictability with regard to GRSG conservation needs.

Specific Elements

Livestock Grazing Management: This specific element of the Strategy is consistent with the COT report. The Service supports this aspect of the Strategy because it requires Idaho Rangeland Health Standards (IRHS) be met and it does so in the context of the Strategy. The COT report identifies that if the riparian (IRHS 2) and upland (IRHS 4) rangeland health standard is met, that is the minimum needed to address the threat of grazing on GRSG based on our expertise under the ESA. To achieve this, the Strategy provides an adaptive management process by which adjustments in grazing based on ecological site potential and habitat characteristics would be prioritized as needed outside of normally scheduled permit renewals based on population triggers and cause of declines within each Conservation Area in the Strategy. Additionally, the adaptive management approach the Strategy provides an important framework for deciding what, in addition to IRHS 2 and 4, might be required under IRHS 8 (Threatened, Endangered or Sensitive Species) for GRSG conservation.

As noted above, the COT also references the importance of incentive-based conservation actions in developing a conservation strategy. The Service believes the Livestock Grazing Management Element address the conservation needs of GRSG while providing an important incentive to permittees to be good stewards.

An additional important benefit to the Service of the Livestock Grazing Management element is that the regulation of improper grazing as a threat to GRSG when permits had not yet been analyzed by BLM to meet IRHS for GRSG (IRHS 2, 4; and 8 as needed) would be accomplished through the Strategy on an as needed basis based on population status. This approach is in contrast to requiring all individual permits be conditioned to meet IRHS 2, 4 and 8 (as needed), by the time the Service makes its listing determination—a goal that is likely not achievable. To be clear, the Service supports

adherence to IRHS. Our support for the approach of this element is due to it being a wise approach for regulating the appropriate conservation action for the secondary threat of improper grazing to GRSG where needed, until IRHS necessary for GRSG conservation are achieved at the management area scale. This adequacy of regulatory mechanisms under ESA is an important consideration. Pending more clarity in how the Implementation Team/Commission is staffed and operates once a trigger is tripped; the Service would expect to fully support this element of the Strategy. While we would defer to the BLM on their permit-specific application of these triggers in the context of requirements to enhance and restore rangelands under Federal Lands Policy and Management Act (FLPMA), the Service supports the Livestock Grazing Element in the interim as long as no triggers have been tripped within a Conservation Area.

Infrastructure: The specific actions in the infrastructure element are consistent with the COT pending a clearer understanding how the Implementation Team/Commission operates to determine exceptions to CHZ development, development in IHZ, and how referenced mitigation of impacts will work.

Mitigation: Mitigation is referenced in multiple elements in the Strategy but there is no explanation of the how mitigation for impacts in CHZ, IHZ and potentially GHZ will work. The Service is aware of preliminary work by your Task Force and the work of the Idaho Sage-grouse Advisory Council and this element and encourages the State to build on these efforts for this element of the Strategy.

Restoration: The Service recognized in our letter of August 1, 2012, that one of the many strengths of the Strategy is that habitat in need of restoration was included in and adjacent to CHZ as a priority commitment for restoration and to expand Core habitat. However, the Strategy is largely silent on the important relationship between mitigation and restoration for restoration to occur; what constitutes habitat that is lost versus gained back; and restoration monitoring. The need for how direct and indirect loss of habitat is quantified and what constitutes restored habitat is a missing component of the habitat trigger as well.

Wildfire Management: Wildfire and invasive species associated with fire are the greatest threat to long-term persistence of GRSG in the Great Basin and the threat most difficult to manage. The Strategy has been refined to help manage this threat in a significant way. The addition of legislative changes and funding to support the creation of Rural Fire Districts (RFDs) is a significant addition to the Strategy and one the Service supports and that is consistent with the COT report. Viewing wildfire management in the context of Prevention, Response and Restoration and tailoring actions within each is likewise an important refinement. The Service looks forward to working with the State and other partners to help establish more RFDs; and to identify more specific actions under each category of Prevention, Response and Restoration.

One aspect of the strategy that is not a specific fire management action but that the Strategy notes and the Service likewise acknowledges as one of the strongest attributes of the Strategy is how the overarching construct of the Strategy is designed with fire in

C.L. "Butch" Otter, Governor
State of Idaho
Request for State sage-grouse plan concurrence

mind. The conservation objective of maintaining between 95% and 73% of the males on leks, the establishment of refined habitat triggers that catch declines and adapt practices earlier and by Conservation Area, the identification of areas in need of restoration, the commitment to IRHS are all mechanisms to reduce fire, buffer the effects of fire, and provide for refinement in management in an adaptive construct to reduce the effects of fire in the long term.

Management on non-Federal Property: The Strategy to date has focused on Federal properties. This is understandable due to the ongoing Resource and Land Use Management Plan revisions and amendments underway by BLM and the U.S. Forest Service. The Service looks forward to working with the State to ensure the Strategy applies where necessary and appropriate to all properties with adequate state or local regulatory mechanisms.

Implementation Team/Commission

Many of the specific elements of the Strategy are in the Service's view conditionally consistent with the COT pending more clarity how the Implementation Team/Commission is staffed and operates; and how it interacts with scientific support. Because the Strategy is an outcome-based, adaptive strategy, its efficacy is achieved through a balance between proactive actions and reactive steps to adapt and or change actions if necessary. Therefore, the Service needs to understand in more detail how the Implementation Team/Commission functions to evaluate data and inform decisions to adapt management that ensure the Strategy objective is met (e.g., see Infrastructure, above).

Summary

In summary the Strategy is a robust approach to conserving GRSG in the Great Basin. Many components of the Strategy are strong, in particular the underlying foundational elements and grazing management; with wildfire and infrastructure similarly strong pending additional clarity and refinement as noted. The State of Idaho and the stakeholders on the Governor's Task Force have done remarkable work in a compressed timeframe as these aspects of the plan address threats to GRSG in the Great Basin in a way that gives the Service more regulatory certainty, stakeholders more operational certainty, and provides for the conservation of GRSG and sage-brush in Idaho that helps ensure more resiliency to large wildfires. The elements of the Strategy that the Service would welcome more conversations with the State to refine, add or clarify in the Strategy include non-federal properties, restoration, mitigation, and the operation of the Implementation Team/Commission.



United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Idaho State Office
1387 South Vinnell Way
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In Reply Refer To:
1785 (930)

MAY 06 2013

The Honorable C.L. "Butch" Otter
Governor of Idaho
P.O. Box 83720
Boise, Idaho 83720

Dear Governor Otter:

I appreciate the continued coordination and partnership with the State of Idaho in conserving sage-grouse. The purpose of this letter is to describe Idaho Bureau of Land Management's (BLM) progress in considering the State of Idaho's Sage-grouse Plan (the Idaho Plan) as submitted to the U.S. Fish and Wildlife Service (FWS) on March 14, 2013. This letter will address consideration of Idaho's Plan as both an alternative in the Idaho/S.W. Montana Sub-regional Environmental Impact Statement (EIS) and as potential interim guidance to supplant BLM IM 2012-043.

First and foremost, I share your goal of a science-based approach to amending resource management plans in Idaho by 2014 so that it becomes unnecessary to list the sage-grouse under the Endangered Species Act. It is essential that we accomplish the EIS and associated resource management plan (RMP) amendments on schedule so that the FWS can fully consider BLM's amended RMPs as it assesses threats to the species and adequacy of regulatory mechanisms in 2015.

There are two pathways for considering Idaho's Plan for BLM administered lands: 1) through the sub-regional EIS and RMP amendment process planned for completion in 2014, and 2) as potential interim management as outlined in IM 2012-043.

Idaho's Plan & the Sub-Regional EIS and RMP Amendment Effort

As noted in my letter of August 30, 2012, Idaho's Plan is one of six alternatives being fully analyzed in the Draft EIS (DEIS) to be released for public comment this fall. Our regulations for implementing the National Environmental Policy Act (NEPA) require federal agencies to "rigorously explore and objectively evaluate all reasonable alternatives." Our EIS planning team continues to work closely with staff from the Office of Species Conservation and Idaho Department of Fish and Game as cooperating agencies to incorporate State input into development of the DEIS.

An immediate priority for our EIS effort is to ensure that Idaho's Plan is fully understood by our analysis team, accurately analyzed as an alternative in the DEIS, and fully disclosed to facilitate public comment. Our review of the March 14 version of Idaho's Plan has identified several elements for which we are seeking additional clarification, including the sections describing the adaptive management triggers, the wildfire suppression and emergency clause, and the direction for infrastructure development. We are in the process of clarifying those issues with your staff at this time.

As we conduct our cumulative effects analysis of past, present, and reasonably foreseeable actions, we will need to analyze activities on both federal and non-federal lands. This requires our understanding of Idaho's existing and proposed management of state lands intermingled within and adjacent to federal public lands. At this time, BLM still needs more assistance on that front so that we can complete the DEIS on schedule.

In order to insure that Idaho's Plan is properly considered and analyzed as an alternative in the DEIS planned for release this fall, Idaho BLM must receive any clarifications/additional details no later than June 30, 2013.

Idaho's Plan & its Potential to Inform Interim Guidance

As noted in my letter to you dated March 22, 2013, upon concurrence by the FWS, Idaho BLM will consider adopting Idaho's Plan as interim guidance so long as the proposed interim measures can be implemented in a manner consistent with our multiple use mandate, current policy and regulations, and consistent with organizational capacity (current funding and staffing).

Our preliminary review of Idaho's Plan has identified elements that fit within existing regulations and policy, would not require new NEPA, and are within our current funding and staffing capability to implement. These include: 1) some of the Best Management Practices for infrastructure and wildfire suppression/restoration, 2) parts of the invasive species direction, 3) the general characteristics of habitat as indicators, and 4) identification of a sage-grouse management area divided into four conservation areas. We have initiated discussions with your staff regarding these potential interim management measures with the goal of reaching closure this summer.

Our preliminary review of Idaho's Plan has also identified portions of the Plan which are not consistent with direction in our current RMPs and would require new analysis under NEPA before they could be considered for implementation as interim guidance. These portions include the adaptive management triggers (population and habitat thresholds), the livestock grazing management framework and standards, and the infrastructure direction and exemption process. We are unable to dedicate staffing to complete the new NEPA necessary for adopting these portions as interim management without impacting our ability to complete the EIS and RMP amendments by 2014. We remain committed to analyzing all of these potential management solutions and corresponding actions as part of the EIS.

We are very appreciative of the State's support for the Rangeland Fire Protection Associations and are committed to close coordination between Idaho BLM and the State of Idaho in reducing the threat of wildfire, the primary threat to sage-grouse habitat in Idaho. We are actively working with the Idaho Department of Lands and the Rangeland Fire Protection Associations to leverage our collective effectiveness in preventing, suppressing, and reducing the impacts of wildfire on sage-grouse habitat. We continue to work closely with Idaho Department of Fish and Game when taking emergency stabilization and rehabilitation actions following wildfire.

Thank you for your leadership in advancing conservation of sage-grouse and close coordination with Idaho BLM regarding public land management in Idaho.

Sincerely,



Steven A. Ellis
State Director

The following questions were posed to the State of Idaho during a coordination meeting on April 30th, 2013. At a subsequent follow-up meeting on May 2nd, 2013 attended by Don Kemner (IDF&G); Cally Younger (OSC); Dustin Miller (OSC); and Brent Ralston (BLM), many of these questions were discussed and answered – see noted answers within table; others required additional follow-up and were part of the overall state response received by BLM on July 1st, 2013, and subsequently incorporated into the State Alternative (Alternative E).

State Plan Language		BLM/FS Questions for Analysis
<p>Manage sage-grouse habitats to achieve the conditions described in Tables 3, 4 & 5 of the Governors Alternative, where appropriate, recognizing these conditions may not be achievable in all areas due to the existing ecological condition, ecological potential or the existing vegetation; or to causal events unrelated to existing livestock grazing.</p>		<ol style="list-style-type: none"> 1. Are these desired conditions or standards? These are desired conditions to help guide management; they are not standards or requirements. 2. Apply when and where achievable? If so curtail management stressors until achieved? Or only allow management that does not impede achievement? Or apply management as long as progress toward achievement is being made? As desired conditions management would continue with the potential to adjust management where necessary to achieve or move towards achievement of these conditions.
<p>Develop a consistent wildfire suppression plan that improves on the wildfire suppression baseline by twenty-five percent (25%) through: a. Ensuring close coordination with Federal and State firefighters, local fire departments and local expertise to create the best possible network of strategic fuel breaks and road access to minimize and</p>		<ol style="list-style-type: none"> 3. What is the wildfire suppression baseline derived from? 4. Is there specific rationale for 25% or 15%? Do these

State Plan Language		BLM/FS Questions for Analysis
<p>reduce the size of a wildfire following ignition;</p> <p>b. Developing consistent fire response plans and mutual aid agreements necessary to achieves a 25% improvement in the fire suppression baseline;</p> <p>c. Requesting and placing additional firefighting resources and establish new Incident Attack Centers, with particular emphasis in the West Owyhee Conservation Area;</p> <p>d. Creating and maintaining effective fuel breaks in strategic locations that will modify fire behavior and increase fire suppression effectiveness according to the following criteria:</p> <ul style="list-style-type: none"> • Targeting establishment of fuel breaks along existing roads or other disturbances. • Identifying and targeting higher-risk roads for fuel break construction and maintenance based on fire history maps. • Implementing a strategic approach to using these roads for rapid fire response. • Analyzing the benefits of the fuel break against the additional loss of sagebrush cover and risk on invasive weeds. • Maintaining fire breaks to meet objectives. <p>e. Requesting the necessary federal appropriations to achieve this objective.</p>		<p>represent environmental thresholds related to wildfire?</p> <p>5. How would the 15% or 25% be measured? Is this an improvement in response time or an increase in chains per hour of firefighter capability?</p> <p>6. Is there some measurable way to determine higher risk roads for fuel breaks?</p>
<p>Utilize and employ more aggressive wildfire and invasive species management practices to prevent further encroachment of these two primary threats into the CHZ on Federal lands.</p>		<p>7. Are there specific techniques or approaches in mind here? There are no specific actions in mind presently but the advent of new practices and techniques which better address the threat are valid for consideration as they are developed.</p>
<p>Decrease wildfire response time by twenty-five percent (25%) through:</p> <p>a. Prioritizing, maintaining and improving a high initial attack success</p>		<p>8. Is this referring to average response time?</p>

State Plan Language		BLM/FS Questions for Analysis
rate in suppression response and staging decisions; b. Utilizing available Sage-Grouse Management Area maps and spatial data depicting sage-grouse habitats within this zone in accordance with action # 31; c. Redeploying firefighting resources not being fully utilized outside the SGMA to the extent such redeployment will not cause harm to human safety and structure protection; and d. Requesting the necessary federal appropriations to achieve this objective.		9. How is this measured? Data available to measure this? 10. Redeployment of resources not needed occurs all the time - is there some measurable way to describe this?
Develop more aggressive strategies to reduce fuel loads, where appropriate.		11. Specific techniques or practices in mind? <i>See #7.</i> 12. Is there some target amount? <i>There is no specific target identified.</i>
Prioritize permit renewal and land health assessment processes for allotments with declining sage-grouse populations.		13. Is this within the 10-year schedule or in addition to the 10-years schedule? For example permit in place for 4 years and GRSG populations declining does this reinitiate permit evaluation or does existing permit run the course of 10-year authorization and then become high priority for renewal in year 10? <i>This would apply when adaptive regulatory triggers have been tripped and where the Implementation Task Force has determined that grazing</i>

State Plan Language		BLM/FS Questions for Analysis
		<p>is a causal factor.</p> <p>14. How does evaluation of causal factors figure in to Permit Renewal NEPA priorities?</p>
<p>Establish strategically located forage reserves focusing on areas unsuitable for sage-grouse habitat restoration or lower priority habitat restoration areas when feasible.</p>		<p>15. Since most BLM land is under permit are there State lands under consideration for these areas or is this contingent on BLM permit revocation or voluntary relinquishment? There are no specific state lands under consideration at this point.</p>
<p>Objective 1: Implement the regulatory mechanisms to maintain and enhance sage-grouse habitats, populations and connectivity in areas within the CHZ, buffered by strategic areas within IHZ, dominated by sagebrush.</p>		<p>16. How are strategic areas defined/identified? This implies a subset of IHZ and that the entire IHZ would not be the strategic buffer area. The strategic areas are the IHZ within the same CA as the CHZ.</p>
<p>Designate CHZs as ROW avoidance areas with limited exemptions permissible.</p>		<p>17. What is the exemption process?</p>
<p>Prohibit the development of infrastructure, except if developed pursuant to valid existing rights or incremental upgrade and/or capacity increase of existing development (authorized prior to the record of decision) subject to best management practices in Gov. Alt Section G.</p> <p>a. Limit impacts of proposed actions to the existing authorized footprint with no more than a fifty percent (50%), depending on industry practice, increase in footprint size and associated impacts;</p>		<p>18. How is this footprint measured? Includes only the acres physically disturbed (tower footings) or includes area of impact (some sort of buffer area)? There is a tie to the COT Report – is this suggesting something other</p>

State Plan Language		BLM/FS Questions for Analysis
<p>and b. Include compensatory mitigation if new significant and unavoidable impacts are demonstrated to be associated with the project."</p>		<p>than COT approach? This approach is similar to the COT and would include the defined ROW width – not the potentially broader impact area.</p>
<p>Increase resiliency of the habitat to disturbances, such as wildfire, and limit habitat fragmentation and loss only to projects pursuant to valid existing rights or incremental upgrades and/or that demonstrate, among other things, a significant high value benefit to the State of Idaho as well as provide compensatory mitigation consistent with the guiding principles in coordination with Federal, State and local partners.</p>		<p>19. Is there a process for assigning and assessing compensatory mitigation?</p>
<p>Co-location of new transmission lines occurs when construction falls between July 1 and March 14 (or between July 1 and November 30 in winter concentration areas) and within one kilometer either side of existing 115-kilovolt (kV) or larger transmission lines to create a corridor no wider than two kilometers.</p>		<p>20. Co-location seems to address a long term impact of presence whereas seasonal restrictions seem to address construction activities? Do these need separated? These are separate and can be separated retaining both the co-location aspect and the timing restriction aspect.</p>
<p>Evaluate areas affected by fluid mineral development in accordance with the process outlined in the State of Wyoming’s Executive Order 2011-5.</p>		<p>21. Is this process applicable in Idaho? 22. Are the definitions of suitable habitat the same? If so how much CHZ, IHZ and GHZ are considered suitable? The definitions would follow those identified by Connelly 2000.</p>

State Plan Language		BLM/FS Questions for Analysis
		23. Inclusion of wildfire as a component for Density Disturbance Calculation Tool (DDCT) – is this appropriate for Idaho?
Limit surface disturbance development within the CHZ to three percent of suitable habitat per an average of 640 acres.		24. How is disturbance defined? Only anthropogenic disturbance? Ties back to Wyoming Executive Order which includes a definition.
		25. Various buffers for different activities – 2 km for transmission, 1 km for distribution, 1.5 for roads, etc. What are these based on – can citations be provided. Differs from buffers considered for DDCT out of Wyoming Executive Order.
<p>September 5th, 2012 Version: Apply adaptive management measures for livestock grazing (following table) singly, or in combination where appropriate, in the development and implementation of grazing management, based upon the assessment process, the ecological conditions, the ecological potential and the status of sage-grouse populations. Maintain flexibility in administering grazing programs and providing offsetting grazing options over relatively large landscapes to successfully implement these measures.</p> <p>March 14th, 2013 Version: There are two pathways where this management framework is applicable:</p> <ol style="list-style-type: none"> 1) in conjunction with scheduled term grazing permit renewals; and 		<p>26. Apply during the 10-year renewal process or in addition to the 10-year renewal process – i.e. year 4 based on monitoring? See # 13.</p> <p>27. Need to reconcile language and intent from September 5th, 2012, Alternative version with March 14th, 2013 additions.</p> <p>28. Since individual allotments do not encompass an entire</p>

State Plan Language		BLM/FS Questions for Analysis
<p>2) where the adaptive regulatory trigger has been tripped and livestock grazing is identified as a potential causal factor.</p> <p>Where populations and habitat triggers are being maintained the current grazing systems within that CA are adequate to maintain viable sage-grouse populations. If no trigger has been tripped within a CA, the allotments and pastures are presumed to have met Standard 8 with respect to sage-grouse.</p> <p>If an adaptive regulatory trigger is tripped and livestock grazing is identified as a potential limiting factor then the presumption that the current grazing operations within the Conservation Area have met Standard 8 with respect to sage-grouse will no longer be applicable. BLM will individually analyze those allotments and pastures within the relevant Conservation Area and prioritization will be given to areas that have the potential to provide the greatest benefit to sage-grouse.</p> <p>Allotments will only be managed for the primary seasonal habitat that it has the potential to support.</p> <p>The Implementation Team will maintain oversight capabilities throughout the process and will be given the ability to review proposed management changes, the implementation of conservation measures, and the on-the-ground monitoring to ensure the measures are appropriately applied.</p>		<p>Conservation Area is there a mechanism whereby if desired conditions have not been achieved grazing permits would be adjusted to achieve those conditions whether or not the Conservation Area trigger has been tripped? Yes, according to IRHS processes.</p> <p>29. What is the difference or relation between a causal factor and a potential limiting factor? They are the same.</p> <p>30. How does the Implementation Team concept fit in with BLM management responsibilities?</p>
<p>Adaptive Regulatory Triggers are broken down into a “soft” trigger and a “hard” trigger. The “soft” trigger becomes operative when one of the following occurs:</p> <ul style="list-style-type: none"> • 10% decline in maximum number of males counted and a finite rate of change below 1.0 but not significantly on CHZ over a period of three years; or • 10% loss of nesting and wintering habitat in a Conservation 		<p>31. What is meant by “but not significantly on CHZ” Should read ‘not significantly below 1.0’.</p> <p>32. Who is the Implementation Team? How do BLM and USFS staff and managers</p>

State Plan Language		BLM/FS Questions for Analysis
<p>Area over a period of three years</p> <p>When the monitoring information indicates that the “soft” trigger may be tripped, an Implementation Team – aided by the technical expertise of IDF&G – will assess the factors leading to the decline and identify potential management actions. The Implementation Team may consider possible changes in management to the CHZ. As to the IHZ, the Implementation Team may review the causes for decline and potential management changes only to the extent those factors significantly impair the state’s ability to meet the overall management objective. It is anticipated that IDF&G will collect data annually and will make recommendations to the Implementation Team by August 31st for population triggers and January 15th for habitat triggers.</p> <p>The “hard” trigger becomes operative when one of the following occurs:</p> <ul style="list-style-type: none"> • 20% loss in CHZ nesting wintering habitat over a period of three years; or • 20% decline in maximum number of males counted and a finite rate of change significantly below 1.0 within a Conservation Area over a period of three years. <p>If the “hard” trigger becomes operative according to the monitoring information, management changes are no longer discretionary and will be implemented in the following manner:</p> <ol style="list-style-type: none"> 1) The IHZ will be managed according to the CHZ provisions primarily impacting the ability to consider infrastructure projects. Like the “soft” trigger, the Implementation Team will analyze the actual causes of the decline. 2) The adaptive trigger strategy focuses the analysis on mitigating the primary threats to the species in the CHZ. Only where the monitoring information indicates the cause(s) of the decline is 		<p>participate on, interface with, and make decisions for the Implementation Team?</p> <p>33. What happens if appropriate data is not available or collected for a period of time?</p> <p>34. What are the management changes as a result of “soft” triggers being tripped – these are important for description in the Draft EIS.</p> <p>35. Is the habitat “hard” trigger referring to nesting or (and?) wintering habitat? Both habitat types.</p> <p>36. When a “hard” trigger is tripped will only the primary cause be addressed? What about other contributing factors? For example fire causes the “hard” trigger to be tripped; according to the flow chart only fire regulatory mechanisms would be evaluated. When would the cumulative impacts of other activities, i.e. development be considered?</p> <p>37. Table 1 does not include regulatory trigger</p>

State Plan Language		BLM/FS Questions for Analysis
<p>not a primary threat will the Implementation Team analyze the secondary threats to the species and determine whether further management actions are needed.</p>		<p>thresholds? When will these be defined? 38. Table 2 – defined acres of habitat within the various Conservation Areas – what is the data source and are these mapped?</p>
<p>Objective 2: Initiate a management review of the regulatory approach to assess causal factors for declines if a 10% loss of habitat loss occurs within the first three years of implementation. IDFG would lead the review in coordination with the Governor’s Office of Species Conservation and other relevant State and Federal agencies. The review would include a determination of whether the loss is based on a population-related decline (e.g., West Nile virus, drought) or is driven by habitat loss. If the loss is habitat-driven, the review team will assess the effectiveness of current best management practices, funding levels and restoration efforts in order to preclude the triggering of the adaptive regulatory triggers.</p>		<p>39. How is this process defined and executed?</p>
		<p>40. How does monitoring and assessment determine management changes? 41. Who is responsible for collection? 42. What data will be collected? The cycle of responsibilities and monitoring with regard to the adaptive management strategy needs fully described.</p>

OFFICE OF SPECIES CONSERVATION

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Governor



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DUSTIN T. MILLER
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304 North Eighth Street, Suite 149
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July 1, 2013

Steve Ellis
State Director
Bureau of Land Management
Idaho State Office
1387 South Vinnell Way
Boise, ID 83709

Dear Steve,

This letter is in response to your May 6, 2013 request for further clarification of certain components of the September 2012 draft of the Governor Otter's Sage-Grouse Conservation Alternative (Governor's Alternative) for purposes of the Bureau of Land Management's (BLM) and US Forest Service's (USFS) analysis under the National Sage-Grouse Planning Effort. As you are aware, over the past two months the State of Idaho has worked diligently to clarify and refine components of the Governor's Alternative to better assist the BLM and USFS in their analysis under the National Environmental Policy Act (NEPA).

As you know, in December 2011 Secretary of the Interior Ken Salazar invited western governors to create state-specific sage-grouse conservation plans that could be implemented as interim management, provided that "concurrence" is granted from the Service, and incorporated as alternatives in the federal land-use planning effort. In response, Governor Otter created a Sage-grouse Task Force through Executive Order 2012-02. This Task Force began meeting in March 2012 and developed recommendations on actions needed to preclude a listing of greater sage-grouse in Idaho while maintain predictable levels of land-use activity. From those recommendations, the Governor's Alternative was drafted and submitted to the BLM and USFS for consideration in the Idaho and Southwest Montana Sub-regional EIS. In accordance with Secretary Salazar's December 2011 request, the Governor began seeking concurrence from the Fish and Wildlife Service. In March 2013, the Governor submitted a concurrence request to Brian Kelly, Idaho State Director for the Service. In April, 2013, Brian Kelly responded very positively to the Governor's Alternative and was willing to "concur" with the Governor's

Conservation Areas, the three zone habitat structure, the conservation objectives, the adaptive trigger strategy, and the grazing strategy. He stated the Governor's approach would provide needed benefits for sage-grouse and sage-grouse habitat.

In our continuing commitment to multi-agency collaboration, we have attached thorough explanations to the questions you asked us in May 2013. Some measures that may have appeared vague or incomplete have been refined and clarified along with additional actions needed to proactively deal with wildfire within sage-grouse habitat.

For the purposes of the NEPA analysis, the State requests BLM to consider the Governor's Alternative dated September 5, 2012, the Governor's March 13, 2013 request for concurrence, the concurrence letter from the Service to Governor Otter dated April 8, 2013 and the following attachments. The September 2012 Alternative is adopted herein by reference, and only where specifically noted in the March 2013 Concurrence request and in this letter should the Governor's Alternative be construed as revised or modified. Additionally, please refer to Idaho's Mitigation Framework, attached, for further explanation of the Governor's Compensatory Mitigation Strategy.

Sincerely,



Dustin T. Miller

Request for clarification or refinement of Governor Otter's Alternative for Sage-Grouse
Management
07/01/13

Proposed Implementation of Governor Otter's Management Plan

In addition to the description of this implementation scheme in the Governor's Alternative at 7, 19 and 27, and Governor Otter's March 2013 request for concurrence at 4, 7 (Appendix II), the below narrative provides more detail for the implementation of Governor Otter's Sage-grouse Conservation Alternative (Governor's Alternative). As mentioned previously, this process is modeled after the Idaho Roadless Rule implementation framework.

Should the Bureau of Land Management (BLM) select the Governor's Alternative as the final decision, the State of Idaho is proposing the following steps:

- Enter into a Memorandum of Understanding (MOU) between the BLM, U.S. Forest Service, and the State of Idaho establishing the State as a cooperating agent to implement the final decision.
- As part of the state's responsibility under the MOU, Governor Otter would issue an Executive Order (under state law, an EO has the force and effect of law) establishing an Implementation Task Force to meet the state's role and responsibilities under the MOU. This task force would be similar in composition to Governor Otter's Sage-Grouse Task Force pursuant to Executive Order 2012-02.
- The Implementation Task Force would be tasked with providing Governor Otter advice and counsel on at least the following issues: (1) analyzing the annual sage-grouse monitoring data to determine whether an adaptive response is appropriate and necessary given the population and habitat objectives provided in the Governor's Alternative; (2) providing input during the National Environmental Policy Act (NEPA) process for on-the-ground infrastructure projects; and (3) prioritizing habitat restoration opportunities. The Implementation Task Force would submit these recommendations to the Governor, and based on his review and concurrence, will transmit these recommendation to the appropriate agency as part of the underlying NEPA analysis. The ultimate decision involving public land management would fall to the appropriate agency.
- The Implementation Task Force will make recommendations based on the data and recommendations provided by a science subcommittee led by the Idaho Department of Fish and Game (IDFG). The Implementation Task Force may solicit outside experts if necessary.

Process for Determining Whether an Adaptive Response is Necessary

As the U.S. Fish and Wildlife Service (Service) stated in its Concurrence Letter in April 2013, one of the most significant components of the Governor's Alternative is the adaptive management construct. The "trigger" approach makes this component work through monitoring habitat and population data and allowing for changes in management when necessary. The trigger strategy has been amended since the September 5th, 2012 draft and those changes are noted in the Governor's March 2013 concurrence request. As is discussed in further detail below, population and habitat data are collected and analyzed by the IDFG and presented to the Implementation Task Force. "Tripping a trigger," whether at the lower "soft" trigger, or the "hard" trigger will lead the Implementation Task Force to initiate potential management changes.

1. Data Collection by Idaho Fish and Game

The IDFG has been collecting sage-grouse population data since at least 1951. The lek routes referenced in the Alternative are all routes that were conducted during the 2011 baseline year. Leks on these routes represent 21% of all known leks. In addition, individual leks not associated with routes but counted in two consecutive years (e.g. 577 leks in 2013 equals 26% of all known leks) are combined with lek routes counts to calculate population growth (finite rate of change) for a habitat management zone. These counts combined represent approximately half of the known leks in Idaho and are distributed across the bird's range.

Population Data Collection: For purposes of determining whether an adaptive regulatory trigger is necessary, the Governor's Alternative identifies two primary methods:

- Number of males counted on lek routes as identified on page 8 of the Governor's Alternative.
- Number of males counted on individual leks not assigned to a lek route in the Governor's Alternative (as resources allow). This information is useful in the lambda population trigger.

Population data is collected by counting male sage-grouse attending leks per protocols for weather conditions, time of day, time of year, what constitutes a lek, time between counts (e.g. 7-10 days), etc. Maximum number of males observed on lek route(s) over 3-4 counts during the spring is used to monitor sage-grouse population trend in a habitat management zone. Lek data can be used to assess population trends over time (Garton et al. 2011) but counts for a single year may not reflect trends very well because of variation of male attendance at leks caused by severity of the previous winter, weather, timing of counts during spring, and a variety of other factors (Emmons and Braun 1984, Hupp 1987, Baumgart 2011). Therefore, maximum number

of males counted is averaged over three consecutive years and compared to the 2011 baseline.

Habitat Data Collected

- Acres of nesting and wintering habitat lost (due to wildfire, invasive species expansion, infrastructure development, and/or other secondary threats).
- Acres of nesting and wintering habitat gained (due to restoration or natural succession).

Habitat and Population Restoration Data Collection

- Acres protected (e.g. conservation easements or Phase 1 juniper treated).
- Feet of fence marked.
- WNV mosquito habitats treated or eliminated.

IDFG will continue to be responsible for collecting sage-grouse population data and compiling habitat data into useable forms (e.g. maps and/or tables of annual wildfire, juniper removal, and other habitat changes). This information will be collected throughout the year and will be presented to the Implementation Task Force on at least an annual basis. Further discussion between the State, BLM, and USFS is necessary to determine who will collect necessary habitat data.

2. Determination of Adaptive Response

Based on the annual report and the recommendations of the subcommittee, the Implementation Task Force will consider whether an adaptive regulatory trigger is necessary to maintain a viable population of the species. (See Alternative and Concurrence Request defining “soft” and “hard triggers”). Of particular note, the September Alternative proposed an “Emergency Wildfire Clause”. This clause has been removed as the better defined triggers will likely lead to the same management response.

If the annual report indicates that a “soft trigger” has been tripped within a particular conservation zone there is no required adaptive response. The “soft trigger” is an early warning system that permits the Task Force the discretion to identify and recommend best management practices before an adaptive regulatory response becomes necessary. By contrast, if the information indicates that a “hard trigger” has been tripped within a particular conservation zone, the decision to recommend the appropriate adaptive regulatory response is no longer discretionary.

In the process of determining whether a trigger has been tripped, the Implementation Task Force will attempt to identify the cause(s) for the decline. This analysis will first examine the primary threats to the species (e.g., wildfire, invasive species and infrastructure); and only where the primary threats are not responsible for the decline will the Implementation Task Force analyze the secondary threats to the species.

3. Consequences of an Adaptive Trigger

If a soft trigger trips in the Core Habitat Zone, the Implementation Task Force may consider making the following recommendation to the Governor. Recommendations could be, but not limited to:

- Increase monitoring and evaluation of sage-grouse populations in Core Habitat Zone.
- Implement Core Habitat Zone management strategy in corresponding Important Habitat Zone of the same Conservation Area.
- Implement Core Habitat Zone BMPs in corresponding Important Habitat Zone of the same Conservation Area.
- Not allow any new (large) infrastructure development within the Core Habitat Zone (no exceptions allowed).
- Reallocate resources to focus on primary threats in the Core Habitat Zone (e.g. direct resources from other parts of the state to the area of concern).
- Reallocate resources to focus on secondary threats in the Core Habitat Zone (e.g. direct resources from other parts of the state to the area of concern).

If a soft trigger trips in the Important Habitat Zone, the Implementation Task Force may consider making the following recommendations to the Governor. Recommendations could be, but not limited to:

- Increase monitoring and evaluation of sage-grouse populations in area of concern.
 - Implement Core Habitat Zone management strategy in the Important Habitat Zone.
 - Implement Core Habitat Zone BMPs in the Important Habitat Zone.
 - Not allow any new (large) infrastructure development in Core Habitat Zone (no exceptions allowed) of the same Conservation Area.
 - Apply Core Management Zone criteria for all primary threats, and/or all secondary threats to the Important Habitat Zone.
 - Reallocate resources to focus on primary threats in the Important Habitat Zone (e.g. direct resources from other parts of the state to the area of concern).
 - Reallocate resources to focus on secondary threats in the Important Habitat Zone (e.g. direct resources from other parts of the state to the area of concern).
- If a “hard trigger” becomes operative in particular Conservation Area, the following consequences are no longer discretionary:

- First, the IHZ within that Conservation Zone will be managed according to the CHZ regulations primarily impacting the ability to consider infrastructure projects. See Concurrence Response at 5 noting the benefit to the species should this action be required.
- Second, if the cause is related to wildfire or invasive species, the Implementation Task Force will consider additional best management practice to prevent further loss of core habitat within that Conservation Zone.
- Third, only if a primary threat is not the cause(s) for the decline will the Implementation Task Force analyze secondary threats and determine the appropriate management response. The Service identified wildfire, invasive species, and infrastructure as the primary threats and West Nile Virus, improperly managed grazing, and recreation as secondary threats. This adaptive trigger strategy focuses the analysis on mitigating the primary threats to the species.

Wildfire

Under the wildfire section within the Governor's Alternative for the CHZ, IHZ and GHZ, the State of Idaho desires to replace reference to the incorporation of BLM WO IM 2011-138 with BLM's updated Instruction Memorandum referenced as BLM WO IM 2013-128.

The original intent of the State of Idaho through the Governor's Alternative was to decrease the wildfire response time from the current baseline of response time by 25%. This measure was an effort to arrive at an adequate regulatory mechanism necessary for precluding a listing.

However, recognizing the difficulty in measuring this, and based on further conversations with the Service, BLM and Forest Service, the State wishes to remove that objective and replace it with the below refinement.

Wildfire is a difficult threat to prevent and control. However, the adaptive construct of Governor's Alternative provides a mechanism to prevent sage-grouse from any likelihood of becoming endangered in the foreseeable future. The short-term use of triggers and zones will provide the time to develop more proactive measures that demonstrate long-term success on the landscape.

Attached to this letter is a spreadsheet that will aid in developing a consistent wildfire suppression plan that improves upon the current baseline. Close coordination with federal, state, and private firefighting personnel, local fire departments and local expertise including Rangeland Fire Protection Associations (RFPAs) is crucial to continually improving strategies for initial attack and developing comprehensive fuel break strategies to minimize and reduce the size of wildfires threatening the CHZ and IHZ following ignition.

The employment of specific, more aggressive wildlife and invasive species management practices to prevent further encroachment into the CHZ and IHZ should be driven by local planning efforts at the field office and ranger district level. As referenced above, the creation of RFPAs throughout the Sage-Grouse Management Area (SGMA) is a regulatory mechanism that

will ensure better and faster initial attack on wildfires threatening the CHZ and IHZ through the employment of additional trained firefighters and resources in rural parts of the SGMA. From a regulatory mechanism standpoint, Idaho Code Chapter 1, Title 38 was recently amended to allow for the creation of Rural Fire Protections Associations (RFPAs). Additionally, this spring the Idaho Legislature authorized funding to help cover start-up costs for 4 RFPAs in southwest Idaho.

The emphasis for fuel break prioritization should be in areas within the Wildland-Urban Interface (WUI) where human life and safety are at risk. For instance, the Boise District BLM is currently in the planning phase of a fuel-break project within the Interstate-84 corridor between Boise and Mountain Home, Idaho referred to as the “Paradigm Project”. The idea behind the project is to strategically place and improve upon fuel breaks within this corridor, therefore keeping wildfires to more manageable sizes thus requiring fewer firefighting resources. The State of Idaho supports this project, as well as other similar fuel-break projects designed to secure the WUI and free up firefighting resources to be focused on providing initial attack on wildfires in areas that have the potential to impact greater sage-grouse habitat within the CHZ and IHZ. After securing the WUI, prioritization of fuels breaks should go to areas of high human ignition based upon ignition data and maps produced by BLM districts and field offices. The attached spreadsheet provides conservation measures to be incorporated into the Governor’s Alternative regarding prevention, suppression, and restoration activities. One crucial component of this is the utilization of grazing as an effective management tool in reducing fuel loading on BLM and Forest Service lands. The State of Idaho encourages the BLM and the Forest Service to employ this effective fuels management tool, particularly within areas of high fuel loading that are at high risk of wildfire threatening the CHZ and IHZ.

Infrastructure Development

Exemptions for ROW avoidance areas within CHZ will be analyzed by the Implementation Task Force as part of that site-specific NEPA analysis. The Task Force will assess project proposals and their mitigation packages, if required, to determine whether to recommend an exemption for the governor’s consideration. The Task Force will use the following criteria to make these assessments, which are outlined on page 33 of the Governor’s Alternative:

- Is the project developed pursuant to a valid existing right?
- Is the project an incremental upgrade/capacity increase of existing development ? (authorized prior to the record of decision) subject to best management practices, outlined in G, pgs 43-45).
- For new development, can the project be reasonably accomplished outside the CHZ? Can the development co-locate with existing infrastructure to the maximum extent practicable?

- Can the project proponent demonstrate the population trend for the species within the relevant Conservation Area is stable or increasing over a three year period?
- Will this project benefit the state of Idaho?
- Compensatory mitigation will be assessed according to Idaho’s Mitigation Framework, which is attached to this document.

If the project proponent responds satisfactorily, the Implementation Task Force will recommend to the Governor that the project should be permitted. The Governor will consult with the BLM or USFS on the Implementation Task Force’s recommendation, which BLM or USFS must use in its consideration of the project’s permit application. All other questions outlined on page 33-34 of the Governor’s Alternative will be included in the more in depth NEPA analysis of the project.

Livestock Grazing

The Livestock Grazing Framework was amended for the Governor’s March 2013 Concurrence Request, to ensure this component remains consistent with the Idaho Rangeland Health Standards (IRHS) and the Conservation Objectives Team (COT) Report. In the Service’s April 2013 response to the Governor’s Concurrence Request, Brian Kelly expressed his support for this component because of its consistency with the COT report as well as the requirement that IRHS be met within the context of the Governor’s overall adaptive management strategy.

There are two pathways where this management framework is applicable: (1) in conjunction with scheduled term grazing permit renewals; and (2) where the adaptive regulatory trigger has been tripped (as described in section 3) and livestock grazing is identified as a potential causal factor. See Concurrence Request at 6.

Under the first path, the Governor’s Alternative provides a framework for BLM to assess Standard 8 and Standards 2 and 4 based on the Conservation Objectives Team Report (COT Report) with respect to sage-grouse. As described in more detail below, if no trigger has been tripped across a Conservation Area, the Standard 8 analysis for sage-grouse should be a straightforward process.

Standard 8 of the IRHS establishes that the habitat important to threatened and endangered plants and animals meet a “maintain a viable population” threshold with respect to livestock grazing. 43 C.F.R. Subpart 4160. Consistent with the overall approach of the Governor’s Alternative, utilizing an outcome-based conservation strategy within an adaptive construct, the State of Idaho has identified an overall population target buttressed by regulatory mechanisms and adaptive regulatory triggers. Where these population and habitat triggers are being maintained within a Conservation Area, there is a rebuttable presumption that current grazing systems are adequate to maintain viable sage-grouse populations; and therefore, absent compelling information, no further changes to the grazing systems will be required pursuant to the Standard 8 analysis with respect to sage-grouse.

This rebuttable presumption *only relates* to sage-grouse management; it does not extend to other relevant issues in the Standard 8 analysis. Moreover, it does not preclude adaptive change to grazing permits based on the other standards contained in the IRHS. Again, it is important to note that the Forest Service is not subject to the IRHS; however, the conservation objectives established in the Governor's Alternative meets the applicable standards in NFMA.

If an adaptive regulatory trigger is tripped consistent with the process outlined above, and livestock grazing is identified as the potential limiting factor, the presumption that the current grazing operations within the Conservation Area have met Standard 8 with respect to sage-grouse will no longer be applicable. Following such a determination, the process outlined in the Governor's Alternative at 12-18, and as described below, for Standard 8 as well as Standards 2 and 4 will be implemented.¹ BLM will individually analyze those allotments and pastures within the relevant Conservation Area. Given limited agency resources, prioritization will be given to areas that have the potential to provide the greatest benefit to sage-grouse. Allocation of resources should be concentrated on allotments within the CHZ that have declining sage-grouse populations. Following those permits within the CHZ, resources will be further prioritized to allotments within the IHZ with breeding habitats that have decreasing lek counts. (*See* Flow Chart, Appendix V). Sage-grouse populations that are stable or trending upward will be a lower priority for permit renewal and the assessment process.

The assessment/determination process for sage-grouse and Standard 8 compliance must rely on published characteristics of sage-grouse habitat and the Ecological Site Descriptions, existing vegetation, habitat inventories/assessments (Stiver et al. 2010), and where available, state and transition models that describe vegetation and other physical attributes for sage-grouse. The related characteristics within the categories shown below will also be included. These characteristics indicate the ability of a given area to provide sage-grouse habitat.

Category 1: The grazing allotment (or any pasture/significant area therein) has the existing vegetation and existing ecological condition (seral state) to provide sage-grouse habitat

Category 2: The grazing allotment (or any pasture/significant area therein) has the ecological potential to provide sage-grouse habitat.

Where an allotment or pasture meets one of these Categories above, Tables 3-5 (pages 14-17) will be incorporated into relevant resource management plans as the desired conditions with the understanding that these desired conditions may not be achievable: (a) due to the existing ecological condition, ecological potential or the existing vegetation; or (b) due to causal events unrelated to existing livestock grazing. Allotments will only be managed for the primary seasonal habitat that it has the potential to support. Typically, summer habitats will be managed to provide the conditions described in Table 3; winter Table 4; and breeding habitats in Table 5.

¹ Where inconsistencies arise between the grazing framework described on pages 12-18 of the Governor's Alternative and this document, defer to this document.

Based on these habitat characteristics, BLM will conduct fine and site scale-habitat assessments to help inform grazing management. Where necessary, a determination of factors causing any failure to achieve the habitat characteristics (Tables 3, 4 and 5, pages 14-16) will be conducted at a resolution sufficient to document the habitat condition. This determination will include consideration of local spatial and inter-annual variability. A determination of issues attributable to livestock grazing management should not result from one year of data at a specific location within an allotment.

If the process and conditions outlined above demonstrate that livestock grazing is limiting achievement of the habitat characteristics (Tables 3-5), renewed permits will include measures, including but not limited to the actions outlined in (J, pages 46-48), to achieve desired habitat conditions. These measures must be tailored to address the specific management issues associated with seasonal habitat limitations identified in the fine-scale assessments.

Additionally, adaptive management changes related to existing grazing permits should only be undertaken if improper grazing is determined to be the causal factor in not meeting habitat characteristics, specific to site capability, based upon monitoring over time with appropriate site variability.

The Implementation Task Force will maintain oversight capabilities throughout the process and will be given the ability to review proposed management changes and the implementation of conservation measures to ensure that the measures are being appropriately applied.

Under the second path, this adaptive framework aides in determining whether improperly managed livestock grazing may be a causal factor potentially requiring adaptive change prior to permit renewal to existing permits within a Conservation Area. This adaptive process is tied solely to Standard 8 and will rely on the preceding process as outlined above.

Fire Actions

Idaho Governor's Sage Grouse Alternative 7/1/13

Goal: Maintain adequate habitat to support 73% (core) to 95% (core and important) of the 2011 breeding males.

Objective: Implement actions necessary to manage fire within the normal range of fire activity and maintain and restore healthy, native sagebrush plant communities within Core and Important management zones.

PREVENTION						
What:	Fuel Breaks	Fuels Reduction	Fuels Reduction	Fuels Reduction	Fuels Reduction	Fire Restrictions/Closures
Where:	Complete and implement a strategy that identifies the location and extent of fuel breaks that provides adequate defensible space for firefighters. Priority should go to areas within the wildland-urban interface (WUI) to eventually allow for fewer resources to be allocated to the WUI, thus freeing up resources to combat	Identify and prioritize areas of R2 - Annual grasslands within the IHZ and GHZ based on an overlay analysis with the key habitat map (prioritize the CA's).	R2 - Annual grasslands	Identify and prioritize areas of R1 - Perennial grasslands within Core and Important habitat zones based on an overlay analysis with the Key Habitat map (prioritize the CA's).	Identify and prioritize areas of R3 (conifer encroached areas) for restoration by Conservation Area, then within CHZ and IHZs.	Identify roads, trails, and recreational use areas with high frequency of human caused fires.

	wildfire that have the potential to impact the CHZ or IHZ. Consider 300ft wide "green strips" as well as targeted grazing for fuel breaks.					
How:	Mechanical	Winter Livestock Grazing	Herbicide Treatment	Livestock grazing	Mechanical	Utilizing data that indicates the frequency of human-caused wildfires.
How Much:	Determined at the local planning level: BLM Field Office and USFS Ranger District.	Determined at the local planning unit level: Field Office and Ranger District depending upon fuel type, severity and fire threat to the CHZ and IHZ in close coordination with federal livestock grazing permittees. Livestock	Determined at the local planning level: BLM Field Office and USFS Ranger District.	Determined at the local planning unit level: Field Office and Ranger District depending upon fuel type, severity and fire threat to the CHZ and IHZ in close coordination with federal livestock grazing permittees. Livestock grazing must be recognized as an effective fuels management tool and implemented as such. Livestock operators must be looked to for guidance on the placement of fuels reduction projects that	Determined at the local planning level: BLM Field Office and USFS Ranger District.	Within or adjacent to the CHZ and IHZ with high frequency of human caused fires.

		grazing must be recognized as an effective fuels management tool and implemented as such. Livestock operators must be looked to for guidance on the design and placement of fuel reduction projects that utilize grazing.		utilize grazing.		
By When:	Strategy and associated NEPA completed within two years of signing the Record of Decision.	Strategy and associated NEPA completed within two years of signing the Record of Decision.	Strategy and associated NEPA completed within two years of signing the Record of Decision	Strategy and associated NEPA completed within two years of signing the Record of Decision	Strategy and associated NEPA completed within two years of signing the Record of Decision	Strategy and associated NEPA completed within two years of signing the Record of Decision

Mechanism:	RMPs for BLM and USFS lands. Intergovernmental MOUs, stewardship contracting.	RMP for BLM and USFS lands; An adaptive management trigger with fuel loading that is measured in the fall/winter. Implemented through stewardship contracting and/ or grazing permits.	RMPs for BLM and USFS lands			
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SUPPRESSION						
What:	Create additional Rangeland Fire Protection Associations (RFPAs) within the CHZ and IHZ and continue to support existing RFPAs.	Response Time Analysis	Suppression Capacity Analysis/Implementation	Water Capacity Analysis/Implementation	Educate Firefighters on importance of protecting CHZ and IHZ.	
Where:	Prioritize funding for RFPAs that provide coverage for habitat within CHZ and IHZ. Focus on areas that currently have no RFPAs coverage.	Complete a state-wide response time analysis for the SGMA.	Identify areas (e.g. south-west corner of Idaho/N. Nevada/S.E. Oregon) that need strategic placement of additional suppression resources (i.e. guard	Complete a state-wide analysis of the SGMA for current water availability for suppression purposes.	All Field offices and Ranger Districts within the SGMA.	

			stations, air attack, landing strips).			
How:	Through an MOU between IDL & BLM.	Coordination amongst BLM, USFS, State of Idaho, rural fire districts and RFPAs.	Coordination amongst BLM, USFS, State of Idaho, rural fire districts and RFPAs.	Coordination amongst BLM, USFS, State of Idaho, rural fire districts and RFPAs.	Annual fire training in the spring.	
How Much:	Over the long-term acquire funding to support RFPAs that provide coverage for all CHZ and IHZ in Idaho. Priority for an additional RFPAs should go to the West Owyhee Conservation Area, following with an additional RFPAs in the Southern Conservation Area.	Focus should be on response time to fires within CHZ or IHZ or on those fires that have the potential to impact CHZ and IHZ.	Sufficient resources strategically placed in areas of high fire risk within the CHZ and IHZ. Priority should go to the West Owyhee Conservation Area.	Suffience water resources strategically placed in areas of high fire risk within the CHZ and IHZ. Priority should go to the West Owyhee Conservation Area.		
By When:	Within 1 year of the signing of the ROD.	Within 1 year of signing the ROD.	Within 1 year of the signing of the ROD.	Within 1 year of the signing of the ROD.	Upon the signing of the ROD.	
Mechanism:	Through an MOU w/ the State of Idaho and BLM.	RMP for BLM and USFS lands.	RMP and MOU amongst all entities.	RMP and MOU amongst all entities.	RMP for BLM and USFS managed lands.	

RESTORATION						
What:	Reseeding	Sagebrush Seedlings	Invasive Annual Grass Expansion Prevention	Reseeding on State owned lands by federal contractors	Conifer removal on state owned lands by federal contractors	
Where:	Within CHZ and IHZ based upon ecological site potential.	Within CHZ and IHZ based upon ecological site potential.	Prioritize efforts to control annual grass to: 1) prevent further spread into, and 2) reduce stands within, CHZ and IHZ of each Conservation Area. Preventing invasion into CHZ or IHZ may include conducting control in adjacent GHZ.	State owned lands in CHZs and IHZs of each Conservation Area .	Identify and prioritize areas of R3 (conifer encroached areas) for restoration by Conservation Area, then within CHZ and IHZs.	
How:	Complete a strategy that identifies and prioritizes the location and amount of reseeding efforts.	Complete a strategy that identifies and prioritizes the location and amount.	First, model annual grass invasion. Second develop a strategy that identifies and prioritizes locations for prevention and restoration.	MOU between BLM, USFS and State of Idaho	MOU between BLM, USFS and State of Idaho	

How Much:	<p>First, offset sage-grouse habitat lost to wildfires in CHZ and IHZ of each Conservation Area since 2011 (baseline year). Second, offset modeled wildfires (future fires) resulting in losses to 2011 habitat baselines for CHZ and IHZ in each Conservation Area. Third, offset habitat losses due to wildfire that occurred prior to 2011 to build upon the 2011 baselines (the long term objective is not just to reduce and offset current (2011 to present) and future losses but also to build upon the baselines to increase habitats). Number 2 and 3 likely means restoring perennial grasslands.</p>	<p>First, plant seedlings in perennial grasslands of CHZs that do not have sagebrush. Second plant seedlings in perennial grasslands of IHZs that do not have sagebrush.</p>	<p>First, implement techniques to prevent further spread in CHZs, then IHZs. Second, offset annual grass spread in CHZs and IHZs that occurred since 2011. Third, offset habitat losses due to annual grass invasion prior to 2011.</p>	<p>If ecological site condition indicates restoration is needed, reseed all state owned lands burned in CHZs and IHZs within one year of the wildfire.</p>	<p>Remove Phase I and II conifers from state-owned lands adjacent to or within federal lands conifer removal projects.</p>	
By When:	<p>Complete strategy within one year of the signing of the ROD. Implement restoration to offset wildfire losses in CHZs and IHZs since 2011 within 2 years of signing ROD. Offset</p>	<p>Complete the strategy by one year of signing of the ROD. Complete planting of CHZs within</p>	<p>Complete modeling and strategy within one year of the signing of the ROD. Implement techniques to prevent further spread in CHZs and IHZs within 2 years of signing ROD. Offset</p>	<p>Sign MOU within one year of the signing of the ROD. Reseed state owned lands within one year of the wildfire.</p>	<p>Sign MOU within one year of the ROD. Conduct conifer removal on state lands</p>	

	models wildfire losses (future fires in the next 5 years) in CHZs and IHZs 3 years after signing of the ROD. Offset losses prior to 2011 is a longer timeline.	X years of the ROD. Complete planting of IHZs within X years of the ROD	annual grass spread in CHZs and IHZs since 2011 by 3 years after signing of the ROD. Offset losses prior to 2011 is longer timeline.		within the timeframe of federal project(s).	
Mechanism:	RMP for BLM and USFS lands.	RMP for BLM and USFS lands.	RMP for BLM and USFS lands.	MOU between BLM, USFS and State of Idaho	MOU between BLM, USFS and State of Idaho	

FRAMEWORK FOR MITIGATION OF IMPACTS FROM INFRASTRUCTURE PROJECTS ON SAGE-GROUSE AND THEIR HABITATS

Sage-Grouse Mitigation Subcommittee of the Idaho Sage-Grouse State Advisory Committee

December 6, 2010

INTRODUCTION

The Conservation Plan for Greater Sage-grouse in Idaho (Idaho Sage-Grouse Advisory Committee 2006; as amended in 2009) calls for the development of a “proposal for a mitigation and crediting program for sagebrush steppe habitats in Idaho and recommendations for policy consideration” (Measure 6.2.4.). In early 2010, the Idaho Sage-grouse Advisory Committee (SAC) established the Mitigation Subcommittee to complete this task.¹ The Mitigation Subcommittee met several times from the late spring, through the fall of 2010 and found broad areas of agreement among its diverse participants.

This report presents the Mitigation Subcommittee’s consensus recommendations for the creation of an Idaho-based program to compensate for the impacts of infrastructure projects on sage-grouse and their habitats. This program – called the Mitigation Framework – would serve as a science-based “mitigation module” that project developers and government regulators could use to achieve compensatory mitigation objectives called for in project plans and permits. While compensatory mitigation may help offset certain impacts arising from infrastructure projects, mitigation should not be considered a substitute for first avoiding and then minimizing impacts. In addition, it is important to recognize that federal and state regulatory or land-management agencies, and county or local governments may also require additional stipulations, conditions of approval or other requirements as well as on-site mitigation, in accordance with applicable law, regulation or policy.

This document proposes a general outline or “skeleton” of policies and procedures for such a program. The Mitigation Framework is designed to be transparent, inclusive, and accountable to defined objectives. The Subcommittee’s purpose is to describe the program in enough detail to foster a dialogue among SAC members, spot important issues and points of agreement, and assess the level of support for developing a functioning mitigation program for Idaho sage-grouse and their habitats.

¹ Subcommittee participants: John Robison and Lara Rozzelle, Idaho Conservation League; Brett Dumas, Idaho Power Company; Paul Makela and Tom Rinkes, BLM; Don Kemner, Idaho Department of Fish and Game; Will Whelan and Trish Klahr, The Nature Conservancy; Rich Rayhill, Ridgeline Energy, LLC; Lisa LaBolle and Kirsten Sikes, Idaho Office of Energy Resources; Nate Fisher, Idaho Office of Species Conservation; John Romero, Citizen at Large.

EXECUTIVE SUMMARY

The state of Idaho is seeing an increasing number of infrastructure projects, such as transmission lines and wind energy facilities, proposed in the state's sagebrush steppe ecosystems. Where federal permits are required, the environmental review process for these projects will analyze how these projects affect sage-grouse and will consider a range of potential mitigation measures to avoid, minimize, or offset any impacts. It is likely that the environmental review process will lead at least some developers and agencies to implement compensatory mitigation.

Compensatory mitigation consists of compensating for residual project impacts that are not avoided or minimized by providing substitute resources or habitats, often at a different location than the project area. For sage-grouse, this would include, among other things, protecting and restoring sagebrush habitats to offset habitat losses and other effects of infrastructure projects.

This framework describes the general outline for a sage-grouse compensatory mitigation program in Idaho. This program would employ an "in-lieu fee" approach to compensatory mitigation through which a project developer would pay funds into an account managed by the mitigation program for performance of mitigation actions that provide measureable benefits for sage-grouse and their habitats within Idaho.

The Mitigation Framework does not alter the legal standards or procedures for review and approval of infrastructure projects. Rather, it offers an option that project developers and/or regulators may choose for implementing mitigation plans and agency permit conditions. It should be emphasized that this program would not relieve project developers and permitting agencies of their obligation to avoid and minimize environmental impacts through appropriate project siting, design and implementation.

Although the initial focus is on sage-grouse, the Mitigation Framework can be readily adapted to provide compensatory mitigation for other sagebrush obligate and associated species. The suitability of the Framework for other species and natural features has not been evaluated.

The objectives of the Mitigation Framework include:

- Provide a credible, efficient, transparent, and flexible mechanism to implement compensatory mitigation;
- Ensure that sage-grouse impacts are offset by actions that benefit the affected species and habitats;
- Provide increased certainty for developers and agencies;
- Involve private and public partners in crafting solutions;
- Provide developers the opportunity to offset the impacts of project development and operation on sage-grouse and sage-grouse habitat, and provide a consistent mechanism to offset impacts to the species that can be evaluated in future reviews of the species' status; and

- Evaluate issues based on best available scientific information, while acknowledging and responding to scientific uncertainty.

The Mitigation Framework would be established through a memorandum of agreement (MOA) among entities that have the capacity and commitment to assist in its implementation. Such parties may include land and wildlife management agencies, counties, tribes, participating private infrastructure development companies, and non-governmental organizations. The MOA would define the specific roles and responsibilities, procedures, and tasks needed to operate an Idaho-based compensatory mitigation program.

The Mitigation Framework envisions a program with the following attributes: (1) a Mitigation Team and program administrator to steer the mitigation program and ensure strong oversight; (2) technically sound and transparent guidelines for estimating compensatory mitigation costs; (3) a science-based statewide strategy to guide the selection of mitigation actions that will receive funding; (4) provisions that the costs of operating the program will be borne by infrastructure developers that use the Mitigation Framework to deliver compensatory mitigation; (5) monitoring the implementation and effectiveness of mitigation actions funded by the Mitigation Framework program; (6) a system to track benefits provided by the Mitigation Framework to sage-grouse habitat in Idaho; and (7) periodic evaluation and adaptation of the Mitigation Framework program.

This framework provides only a general outline of a proposed Idaho-based compensatory mitigation program. It is intended to assess the level of support for crafting the agreements and completing the technical tasks needed to bring the Mitigation Framework into being.

DISCUSSION

I. The Role of Compensatory Mitigation in Infrastructure Development and Sage-grouse Conservation

A. Mitigation Basics

Broadly defined, “mitigation” refers to a wide range of measures that are taken to avoid, minimize, rectify, reduce, or compensate for the adverse impacts of actions affecting the environment. *See* 40 C.F.R. § 1508.20 (definition of “mitigation” in National Environmental Policy Act (NEPA) rules). In this general sense, mitigation should be an integral part of all phases of project planning and implementation.

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The focus of this report is on compensatory mitigation – also known as “biodiversity offsets” or “offsite mitigation.” Compensatory mitigation consists of compensating for residual project impacts that are not avoided or minimized by providing substitute resources or habitats, often at a different location than the project area. For instance, a project developer may fund the restoration of a particular type of habitat in order to replace or “offset” similar habitat that is lost as a result of project construction.

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This Framework adopts an “in-lieu fee” approach to compensatory mitigation. Under this approach, a project developer provides funding to a compensatory mitigation program administrator who then distributes the funds to the appropriate government agency, foundation or other organization for performance of mitigation actions. In an in-lieu fee program, the responsibility for actually delivering the compensatory mitigation is transferred from the developer to the program administrator once the developer provides the necessary funds to the in-lieu fee program.

It is important to emphasize that compensatory mitigation does not relieve project developers and permitting agencies of their obligation to avoid and minimize environmental impacts. This Framework endorses the principle known as the “mitigation hierarchy,” which holds that decision makers should consider the elements of environmental mitigation in the following order of priority:

1. Avoid environmental impacts through project siting and design;
2. Minimize the impacts during construction, operation, maintenance, and decommissioning by implementing appropriate conservation measures related to timing and conduct of project activities;
3. Restore areas that have been disturbed or otherwise rectify on-site project-related impacts to the greatest extent practicable; and
4. Compensate for residual impacts (direct and indirect effects that are not mitigated on-site) by providing replacement habitats or other benefits.

This means that compensatory mitigation is addressed only after efforts to avoid, minimize, and mitigate the impacts have been addressed. It also should be noted that significant impacts to habitat areas that support special functions and values for sage-grouse may simply not be replaceable through mitigation and therefore the best course may be to avoid those areas altogether.

B. Need for an Idaho Compensatory Mitigation Program

In recent years, the state of Idaho has seen an increase in the number of major infrastructure projects proposed in the state’s sagebrush steppe ecosystems. Several current proposals involve high voltage transmission lines that would cross over hundreds of miles of sage-grouse habitat. Large scale energy infrastructure projects such as wind farms may also affect large areas of sage-grouse habitat.

Where these projects are located at least partially on federally managed public lands they will be required by federal law to go through an extensive environmental review process under NEPA before relevant federal permits are issued. The NEPA process requires the permitting agencies to consider the projects’ environmental effects (both positive and negative), alternatives, and potential mitigation measures. Impacts on sage-grouse will be one of the topics analyzed in the NEPA process.

Even after efforts are taken to avoid and minimize impacts, it is possible that some of these infrastructure projects will degrade some sage-grouse habitat, cause direct sage-grouse mortality, or lead to indirect effects such as avoidance of previously occupied habitat. The extent to which project developers and regulators adopt compensatory mitigation as a means to offset these impacts is not fully known. However, it is likely that at least some developers and regulators will seek to implement compensatory mitigation to benefit sage-grouse and their habitats.

Energy companies and other developers face daunting challenges in carrying out compensatory mitigation for sage-grouse habitat. Just identifying specific mitigation actions requires a major effort. Actually implementing sagebrush restoration and enhancement projects is even more difficult and expensive – typically involving years of effort and a significant risk of failure. Delivering this type of technically complex environmental mitigation may be well outside the core business of many infrastructure developers.

C. Advantages of the Mitigation Framework

The Mitigation Framework proposes to respond to these challenges by creating a statewide program to deliver scientifically sound compensatory mitigation for multiple projects. Project developers and regulators would no longer have to design, fund and implement their own mitigation programs. Instead, they would have the option of contributing money to a central fund overseen by agencies with expertise in habitat management and non-governmental partners with similar experience.

This approach to compensatory mitigation offers three major advantages. The first advantage stems from the increased efficiency of an Idaho-wide mitigation program compared with fragmented, project-by-project mitigation programs. Mitigation efforts require a significant investment in planning, administration, project oversight, and monitoring. The Mitigation Framework would consolidate these functions, thus avoiding needless duplication.

The second advantage is that a state mitigation fund can be used for sage-grouse conservation more strategically and at a greater scale than project-by-project mitigation. As described in more detail below, the Mitigation Framework would fund sage-grouse habitat protection and restoration projects in accordance with a statewide strategy that uses landscape-scale analyses to identify the specific measures and habitats that will provide the greatest benefit for Idaho sage-grouse populations. This Idaho-based mitigation strategy will be integrated with other conservation strategies throughout the range of sage-grouse to ensure that actions taken in Idaho benefit the species as a whole.

Third, this method can engage the capacity and competence of natural resources agencies, local governments, private companies, and non-governmental organizations. The Mitigation Framework proposes to enlist these entities in shaping Idaho's strategy, developing criteria for use of the fund, and proposing and implementing habitat protection and restoration projects.

The benefits of the Mitigation Framework can be summarized as follows:

Benefits for Project Developers:

An efficient and reliable mechanism for meeting compensatory mitigation objectives and permit conditions; and

Increased certainty regarding project costs.

Benefits for Regulatory Agencies:

Increased certainty that in-lieu fees will result in strategic “on-the-ground” mitigation actions that benefit sage-grouse.

Benefits for Sage-Grouse:

Increased certainty that scientifically sound mitigation actions that benefit sage-grouse and offset impacts and habitat losses associated with infrastructure development will be implemented.

D. Ensuring Accountability

In-lieu fee compensatory mitigation does pose one potentially significant drawback that must be acknowledged and addressed: a poorly designed program may lack accountability for delivering meaningful on-the-ground benefits for sage-grouse. Simply having a project developer contribute to an in-lieu fee mitigation account does not by itself compensate for the sage-grouse impacts caused by the project. Actual mitigation is possible only after well-conceived habitat protection and restoration projects are planned, funded, implemented, monitored, and successful in achieving stated objectives.

The Mitigation Framework seeks to ensure accountability by adopting a series of rigorous and transparent procedures. As described below, the Framework would: (1) ensure that program administration and monitoring functions are adequately funded; (2) provide technically sound guidelines for estimating the costs of delivering compensatory mitigation; (3) establish a science-based statewide strategy to guide the program; (4) develop project selection criteria and a request for proposals based on the strategy; (5) require monitoring of the implementation and effectiveness of mitigation actions funded by the program; (6) track benefits the Mitigation Framework program provides to sage-grouse in Idaho; and (7) require periodic evaluation of the program. Taken together, these procedures provide a high degree of certainty that the Mitigation Framework will be able to turn in-lieu fee payments into tangible, lasting compensatory mitigation for sage-grouse.

As described in greater detail in Section E, below, project developers that seek to use the Mitigation Framework will need to show two things. First, they will need to show that their projects’ impacts on sage-grouse and their habitats have been evaluated using a scientifically sound process. Second, they will need to show that their contributions to the mitigation fund reflect the Mitigation Framework’s compensation guidelines to ensure that funding will be adequate to offset project impacts. Having demonstrated those things, the project developers should then be able to rely on their in-lieu fee contribution to the mitigation account as satisfying their compensatory mitigation objectives or obligations.

II. Core Elements of Idaho Sage-Grouse Mitigation Program

A. Program Objectives

- Provide a credible, efficient, transparent, and flexible mechanism to implement compensatory mitigation;
- Ensure that sage-grouse impacts are offset by mitigation actions that benefit the sage-grouse and their habitats;
- Provide increased certainty for developers and agencies;
- Involve private and public partners in crafting solutions;
- Provide developers the opportunity to offset project impacts on sage-grouse and sage-grouse habitat, and provide a consistent mitigation mechanism that can be evaluated in future reviews of the species' status; and
- Evaluate issues based on best available scientific information while acknowledging and responding to scientific uncertainty.

B. Scope

The Mitigation Framework proposes to mitigate for impacts to Idaho sage-grouse and their habitats in Idaho.

The initial focus of the Mitigation Framework is on sage-grouse. However, this program can be readily adapted to provide compensatory mitigation for other sagebrush obligate and associate species, such as pygmy rabbits, if project developers and regulators call for such mitigation. Whether this Framework is suited for mitigation of impacts to a broader suite of species or natural features has not been evaluated. It should be noted that some subcommittee members expect to advocate in other forums that compensatory mitigation should extend beyond sage-grouse.

The Mitigation Framework focuses on infrastructure projects because this type of development is the most likely to give rise to compensatory mitigation under existing environmental policies. As used here, the term “infrastructure” refers to building structures that significantly disturb sage-grouse habitat, including but not limited to projects for electricity transmission, energy generation, pipeline conveyance, transportation, communications, and similar purposes.

The Mitigation Framework is not intended to apply to existing projects that are not changing in scope or to the renewal of on-going activities, such as grazing permits. In addition, the Framework is not suited to projects with minor impacts because their contributions to the mitigation program would be too small to justify the effort needed to establish and administer in-lieu fee payments.

C. Integration with Environmental Review Procedures

The Mitigation Framework does not alter the legal standards or procedures for review and approval of infrastructure projects. Rather, the Framework offers an option that project developers and/or regulators may choose for implementing mitigation plans and agency permit conditions.

The Mitigation Framework is intended to complement the environmental review process conducted pursuant to NEPA and other federal environmental laws as well as county land use planning authorities.

Many energy and other infrastructure projects undergo review and approval at the county level. The issues examined and the level of environmental analysis varies widely among individual counties and individual developers. If a county or developer decides to address sage-grouse impacts, it will be able to use the Mitigation Framework as a mechanism for meeting compensatory mitigation objectives that may arise from the county permitting process.

D. Mitigation Strategy

The next step focuses on the Mitigation Team's task of developing a statewide, science-based strategy that will guide the use of the mitigation fund.

The mitigation program strategy would establish priorities for the use of compensatory mitigation funding based on factors/risks identified in the U.S. Fish and Wildlife Service's 12-Month Findings for Petitions to List Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered (USFWS 2010) and in the Conservation Plan for Greater Sage-grouse in Idaho (2006). The strategy sets mitigation priorities with a landscape view of sage-grouse needs and highlights mitigation opportunities in Idaho based on best available science. In setting priorities, the strategy considers species and community size, landscape condition, and regional context. The strategy is responsive to the threats and risks described in the sage-grouse 12-month findings. The strategy will also generally describe the types of mitigation actions, project specifications, and best practices that are likely to produce measureable benefits for sage-grouse habitat. Finally, the strategy addresses both implementation and effectiveness monitoring requirements for mitigation actions funded through the program.

The Mitigation Framework's strategy will draw heavily from the State of Idaho's sage-grouse conservation plan but has a narrower focus. It is intended to provide the specific guidance on program priorities, accepted mitigation measures, and geographic areas of emphasis that potential mitigation project sponsors will need to know when they apply for funds. The strategy plays a crucial role in steering mitigation funding to those activities and places that can provide the most effective benefits for Idaho sage-grouse populations consistent with strategies to increase the viability of the species throughout its range.

To this end, the strategy will address one of the major policy questions that arise in the design of compensatory mitigation systems: how closely should the mitigation actions be linked to the type and location of the habitat that was originally affected by the infrastructure project. Stated in the alternative, does removal of the mitigation action from the area of impact improve the effectiveness of or benefit from the action. Some compensatory mitigation systems place a heavy emphasis on this link by favoring "in-kind" and "on-site" compensatory mitigation over

“out-of-kind” and “off-site” compensatory mitigation. The subcommittee members generally favor an approach that allows funding to flow to the projects and locations within Idaho that will provide the greatest overall positive impact on sage-grouse populations. The Mitigation Framework calls for a monitoring program that would assess habitat gains provided by mitigation actions and compare them with the mitigation objectives of the participating infrastructure projects. The nature and purpose of this monitoring is described more fully in Mitigation Program Step 4, below.

Once the strategy is complete, the Mitigation Team will develop project ranking criteria and procedures that will guide the selection of the mitigation actions that will receive funding. The goal is to fund projects that provide high quality, lasting benefits based on landscape scale analyses that actually compensate for project impacts.

E. Compensation Guidelines

The Mitigation Framework Program will develop guidelines that may be used by developers and/or regulators to determine the cost of meeting their compensatory mitigation objectives. These compensatory mitigation objectives determine the extent of compensatory mitigation for each project and are generally incorporated into project plans or permits.

The compensation guidelines will provide transparent, technically sound principles for determining how much it costs to deliver habitat mitigation for sage-grouse. In other words, the guidelines will represent best estimates of the true cost of implementing the mitigation actions needed to meet each project’s compensatory mitigation objectives. The guidelines may be used by the project developer and the Mitigation Framework Program Administrator to establish the in-lieu fee that the developer will contribute to the mitigation fund.

Specific valuation methods will be developed at a later time and will likely draw from compensatory mitigation systems used elsewhere in the West. Although the details have yet to be worked out, the following outline illustrates the core concepts and principles (shown in bold lettering) that are likely to be employed by the MOA parties in setting the Mitigation Framework’s in-lieu fee structure.

- A **common unit of measurement** would be established for describing and tracking both the project impacts and the benefits of any compensatory mitigation actions. This unit of measurement can be a physical unit such as “acres impacted” or more specifically “acres of summer brood rearing habitat impacted” or “habitat units” lost.
- While the “common unit of measurement” noted above addresses the area of habitat impacted and mitigated, **habitat compensation ratios** are used to address the **quality** of the habitat affected by the infrastructure project. These ratios could specify the number of acres of mitigation required per acre of impacted habitat based on the size, habitat quality/condition and function of the impacted habitat; for more critical or important habitat, more mitigation acres might be required. Thus, habitats with higher quality and importance could have higher compensation ratios.
- Several factors are taken into account in calculating how much it will cost to actually compensate for the acres or habitat units. The recommended approach is to evaluate on

the costs of implementing a conceptual **portfolio of potential mitigation actions** or offset activities that provide benefits for sage-grouse. This portfolio of model projects would include a balanced mix of accepted habitat protection and restoration measures reflecting the types of projects expected to be funded by the mitigation program (in accordance with the strategy discussed above). Examples of projects in this portfolio may include such actions as restoring sagebrush canopy and a native understory on recently burned land, improving riparian areas and wet meadows in early brood-rearing habitat, conservation easements to prevent habitat loss, and land management practices that improve sage-grouse habitat. Project costs include the full range of expenses needed to complete all phases of the mitigation action, including administration and monitoring. The average costs of these model mitigation actions per acre or habitat unit is the foundation of the in-lieu fee calculation.

- In addition, the in-lieu fee should also be adjusted to take into consideration the issue of **lag time** –the time between when habitat is lost at the impacted site relative to when habitat functions are gained at the compensation site.
- The fee also needs to account for **contingencies** associated with delivering compensatory mitigation, including an estimate of the **risk of failure** (i.e., the probability that offsite mitigation will not result in any measureable conservation outcomes) for each mitigation site or project.
- In addition to the fee calculated above, costs for establishing and operating the program, including travel, technical consultation and monitoring of program effectiveness must be included. This overhead fee could range from 5-15% depending on the size and complexity of the proposed mitigation program.

F. Program Structure and Oversight

The Mitigation Framework would be established through a memorandum of agreement (MOA) among the entities that would participate in its implementation. The MOA would define the specific roles and responsibilities, procedures, and tasks needed to operate an Idaho-based compensatory mitigation program. The MOA would serve as a joint powers agreement for state and local government parties.

The MOA would establish the following administrative structure for the Mitigation Framework:

1. **Core Team:** A core group would oversee the Mitigation Framework program and provide policy-level guidance for the Science Team and Fund Administrator, described below. The Core Team would be composed of three to seven representatives of diverse perspectives among the MOA signatories.
2. **Science Team:** A team of experts drawn from MOA signatories and other targeted organizations will administer the science-based and technical aspects of the program. The Science Team would consist of several individuals with expertise in relevant areas such as habitat protection and restoration, landscape ecology/spatial analysis, wildlife biology, sage-grouse ecology, project development, and mitigation policy.

The Team would focus on developing the policies and statewide strategy that will guide the program, making requests for mitigation project proposals (RFPs), ranking mitigation proposals that will receive funding, tracking monitoring reports and project benefits, and evaluating program success.

3. **Program Administrator:** A program administrator will be responsible for fund management and administrative tasks. The program administrator will provide administrative support for the Mitigation Team, manage the mitigation account, and administer grants, contracts, and other agreements.
4. **Advisory Committee:** A broader advisory committee consisting of agencies, companies and organizations with the skills and commitment that will provide useful advice to the Core Team regarding the implementation of the Mitigation Framework.

The specific make up of each of these groups will be determined at a later time. Potential participants in the Mitigation Framework include but are not limited to representatives of:

State of Idaho:

Department of Fish and Game
Office of Energy Resources
Office of Species Conservation
Idaho Department of Lands

United States:

Bureau of Land Management
U.S. Fish and Wildlife Service
U.S. Forest Service
Natural Resources Cons. Service

Energy Companies:

Idaho Power
Ridgeline Energy

Non-Governmental Organizations:

Idaho Conservation League
The Nature Conservancy

Idaho Tribes

Idaho Sage-Grouse Advisory Committee
Sage-Grouse Local Working Groups

Idaho Counties

Public Land Users (e.g., grazing interests)

G. Funding the Mitigation Program

The costs of administering the program will be sustained by the project developers that seek compensatory mitigation. Therefore, a portion of the in-lieu fee that project developers contribute to the mitigation account will be applied for program administration. As noted above, protecting and restoring sagebrush habitats are time consuming and expensive undertakings. Ensuring that these activities are conducted with strong oversight should be viewed as an exceptionally wise investment.

III. Mitigation Program Steps

The Mitigation Framework envisions a five-step process for developing, implementing, and monitoring compensatory mitigation.

A. Step 1 – Assessment of Project Impacts and Development of Mitigation Objectives

Assessment of project impacts should be undertaken by the project developers proposing new infrastructure projects and the government agencies that conduct environmental reviews of those projects. Although the Mitigation Framework process is not responsible for this step, it is nevertheless crucial to the integrity of the mitigation program. Specifically, the Framework's success in achieving its goal of offsetting major infrastructure project impacts on sage-grouse depends on an accurate accounting of those impacts.

For many projects, this analysis will be done as part of the environmental review procedures required by NEPA. As noted above, NEPA requires federal agencies to address the full range of direct, indirect and cumulative impacts of the proposed project, alternatives to the proposed action, and potential mitigation before they act on permit applications.

Once impacts have been assessed and compensatory mitigation objectives set, the project developer is ready to engage the Mitigation Framework, starting with determining the developer's in-lieu fee contribution.

B. Step 2 – Determine the In-lieu Fee Contribution

The goal of Step 2 is to use valuation techniques, such as the guidelines presented above, to convert the complex range of project impacts, including direct, indirect and cumulative impacts, into monetary terms that become the basis for the in-lieu fee payment. The accepted in-lieu fee compensatory mitigation plan could be a condition of the instrument approving the project (FONSI, ROD, right-of-way grant, conditional use permit, etc.) and thus legally requires the project developer comply with the approved mitigation plan.

C. Step 3 – Commitment of Mitigation Funds by Project Developer

Infrastructure project developers can employ the Mitigation Framework by entering into an agreement with the program administrator with regard to a specific infrastructure project. This project agreement sets forth the parties' respective responsibilities, including the project developer's commitment to pay the in-lieu fee. Importantly, the agreement provides that the project developer's funds can only be used for the purposes set forth in the Mitigation Framework. The agreement may also include "conditions" as requested by regulatory agencies or project developers. For instance, the agreement might provide that the in lieu fee will be used to fund mitigation actions in specific geographic areas in order to meet permit requirements. The program administrator, based on consultation with the MOA parties, may decline to enter into an agreement that is inconsistent with the Mitigation Framework principles or includes conditions that are burdensome or unworkable.

Once the agreement specifying the payment structure and schedule is signed, the project developer makes the required in-lieu fee deposits to an interest bearing account managed by the program administrator.

After the completion of this step, the project developer is no longer engaged in the Mitigation Framework – unless it has decided to participate as a MOA party.

D. Step 4 – Issue Request for Proposals (RFP) and Select, Implement, and Monitor Mitigation Actions

At least at annual intervals, the Mitigation Team will issue an RFP that invite private companies, non-governmental organizations, and agencies to submit proposals for sage-grouse habitat protection, restoration, and/or enhancement actions. The RFP will provide guidance to mitigation project sponsors on program priorities and criteria. These priorities and criteria will be drawn from the mitigation program strategy including identification of geographic areas where mitigation might provide the greatest benefits as well as identification of the threats that present the highest risk to the species or its core habitat. The Mitigation Team should also reach out to federal, state, and local agencies, non-governmental organizations and the general public in order to facilitate discussion, engage stakeholders, raise awareness of the program and generate responses to the RFP.

The RFP will solicit project proposals that contain an operation or implementation plan and address at least the following elements:

- Geographic area;
- Threats addressed and how the mitigation action project will offset impacts resulting from those threats;
- An analysis of current sage-grouse conditions in the area;
- Resource goals and objectives the mitigation action project will seek to provide;
- A description of any coordination with federal, state, tribal and local resource management and regulatory authorities or other stakeholder involvement required to complete the mitigation action (e.g., requirement for NEPA compliance or county permit);
- A description of recent or proposed projects and events in the vicinity of the proposed project, if any, such as fire rehabilitation treatments, restoration or enhancement treatments or other activities that complement the effectiveness or intent of the proposed, mitigation action;
- A description of the long term protection, management, stewardship for the project being implemented, and the entity responsible for these activities; and
- A commitment to periodic evaluation and reporting on the progress of the project in meeting stated goals and objectives, including a process for adaptively redirecting the project if necessary.

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When selecting projects, the Mitigation Team will estimate the biological benefits of the projects activities, the likely success of those activities, the duration of benefit expected and measure those benefits in relation to the strategy and RFP objectives.

Mitigation Team and the program administrator will work together on continuing program administration and oversight including annual reporting of program activities, expenditures, and benefits. An annual program report will describe program activities, budget, and assessment of whether the mitigation strategy and associated projects are benefitting sage-grouse and at what level or scale.

The Mitigation Team and/or Program Administrator should implement a monitoring program to measure and validate whether project-specific objectives have been met. Monitoring is required of all compensatory mitigation actions to determine if the project is meeting its performance standards and objectives. As mentioned above, at regular intervals, the total habitat and/or population gains provided by the programs will be compared with the habitat/population losses associated with the participating infrastructure projects. The purpose of this comparison is to evaluate the mitigation program and make any necessary program adjustments – particularly if the monitoring shows that the mitigation benefits are not compensating for habitat losses. This comparison will not be a basis for imposing new, unexpected requirements on the infrastructure project developers.

CONCLUSION

The framework of policies, principles and procedures outlined above are meant to start a dialogue among parties engaged in sage-grouse conservation and infrastructure development. If these parties agree with the Mitigation Subcommittee that there is great value in establishing an Idaho-based compensatory mitigation program, then this framework will mark the beginning of an inclusive effort to fill in the details and complete the tasks needed to bring such a program into being. We have confidence in our collective ability to create a compensatory mitigation program that will benefit infrastructure developers, agencies, conservation interests, and – not least – Idaho's sage-grouse.

Adaptive Regulatory Trigger Framework

Population & Habitat Trigger Justification

Triggers

Because unexpected events (e.g., wildfire, West Nile Virus) may result in a substantial loss of habitat or decline in sage-grouse populations, adaptive management triggers have been developed. These triggers are intended to improve sage-grouse population trends, protect the overall baseline population, preserve a buffer population, and conserve sage-grouse habitat.

The triggers have both population and habitat components. Population components consider population growth and change in lek size. The habitat component considers loss of breeding and/or winter habitat. Lek size has been related to population change in numerous studies (Connelly and Braun 1997, Connelly et al. 2004, Baumgart 2011, Garton et al. 2011). Garton et al. (2011) used both characteristics as well as number of active leks to assess change for sage-grouse populations throughout the west. A variety of researchers (Swensen et al. 1987, Connelly et al. 2000a, Miller et al. 2011) have shown that loss of winter or breeding habitats resulted in decreased sage-grouse populations. The adaptive management triggers set at a lambda value less than one, a 20% decline in males counted on lek routes, and a 20% loss of breeding or winter habitat as break points that would initiate a population or habitat trigger.

Population Growth (Finite Rate of Change)

Although populations cannot be accurately estimated, lek counts of males provide a robust method for assessing population trend and estimating population growth (λ) in an unbiased fashion. Calculating λ (finite rate of change) between successive years for a sage-grouse population is described in Garton et al. (2011). The ratio of males counted in a pair of successive years estimates the finite rate of change (λ_t) at each lek site in that one-year interval. These ratios can be combined across leks within a population for each year to estimate λ_t for the entire population (or Conservation Zone) or combined across all leks to estimate λ_t for the state between successive years as:

$$\lambda(t) = \frac{\sum_{i=1}^n M_i(t+1)}{\sum_{i=1}^n M_i(t)}$$

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where $M_i(t)$ = number of males counted at lek i in year t , across n leks counted in both years t and $t+1$. Ratio estimation under classic probability sampling designs—simple random, stratified, cluster, and probability proportional to size (PPS)—assumes the sample units (leks counted in two successive years in this case) are drawn according to some random process but the strict requirement to obtain unbiased estimates is that the ratios measured represent an unbiased sample of the ratios (i.e., finite rates of change) from the population or other area sampled. This assumption seems appropriate for leks and the possible tendency to detect (or count) larger leks than smaller leks does not bias the estimate of λ_t across a population or region (Garton et al. 2011), but makes it analogous to a PPS sample showing dramatically increased precision over simple random samples (Scheaffer et al. 1996). Also precision can be estimated for λ .

Because small game populations (including sage-grouse) typically fluctuate among years due to weather and other environmental variables, a λ_t for any given year is not very meaningful. However, a series of years where λ_t remains at or above 1.0 indicates a stable to increasing population. Moreover, this situation would also provide strong evidence of the effectiveness of conservation actions that may have been employed.

Males Counted on Leks

Lek attendance by males has been used as an indicator of population trend in some areas since at least the early 1950s. For many years it was the only indicator used to assess status of sage-grouse populations. However, recent research has shown that male attendance at leks can be affected by severity of the previous winter, weather, timing of counts during spring, and a variety of other factors (Emmons and Braun 1984, Hupp 1987, Baumgart 2011). Baumgart (2011) indicated the probability of male sage-grouse attending leks in south-central Idaho varied among years and appeared to be tied to winter severity. Although lek data provide a powerful data set for assessing population trends over time (Garton et al. 2011), counts for a single year may not reflect trends very well. Thus using lek counts as a trigger must consider the inherent variation in these counts. Moreover, males counted on leks appear to have the most value for

assessing population change when used in conjunction with other indicators of population status (e.g., finite rate of change).

Emmons and Braun (1984) reported that lek attendance rates varied from 86% for yearling males to 92% for adult males. These rates were pooled over 5 day periods and may have overestimated attendance (Connelly et al. 2011). In contrast, Walsh et al. (2004) reported average daily male attendance rates of 42% (range = 7-85%) and 19% (range = 0-38%) for adult and yearling sage-grouse, respectively but these rates were not adjusted for detection rate and were likely biased low (Connelly et al. 2011). Moreover, this study involved very small sample sizes (17 adult males, 9 yearling males over 15 leks) and only one breeding season and it was not clear whether all leks in the study area were known and sampled. Preliminary data from Utah (D. Dahlgren, personal communication) indicated that in a study area about 30 miles south of Idaho male sage-grouse lek attendance rates varied from roughly 60% at the beginning of April to about 90% at the end of the month. Recent findings in Idaho (Baumgart 2011) predicted the probability of lek attendance for an adult male following an “average” winter would range from 0.894 (SE = 0.025) on week 3 (~1 April) to 0.766 (SE = 0.040) on week 8 (~ 5 May). Published information suggests that a change in maximum number of males counted on leks of say 10-15% cannot confidently be considered a reflection of population status. However, a 20% decline in maximum number of males counted on leks would likely not be related to lek attendance patterns but instead would reflect a population decline. Thus, the trigger was set at 20%.

Habitat Trigger

Numerous studies have documented the negative effects of habitat loss including fire and energy development on sage-grouse (Connelly et al. 2000b, Fischer et al. 1996, Nelle et al. 2000, Doherty et al. 2008), but few studies have related the amount of sagebrush habitat lost to population change. In a Montana study area with a non-migratory sage-grouse population, there was a 73% decline in breeding males after 16% of the study area was plowed (Swenson et al. 1987). Walker et al. (2007) indicated that the lowest probability for lek persistence within a landscape occurred where, within 6.4 km of a lek center, the area has < 30% sagebrush. Similarly, Wisdom et al. (2011) reported sage-grouse occupying landscapes with <27% sagebrush as dominant cover would have a low probability of persistence. Connelly et al. (2000a) showed that a fire in 1989 that removed 58% of the sagebrush cover in sage-grouse

breeding and winter habitat led to an almost 95% decline in the breeding population a few years later. Similarly, a fire that removed about 30% of breeding/winter habitat resulted in substantial population declines over the next few years (J. W. Connelly, unpublished data; Table 1). A 30% loss of breeding and winter habitat is thus far the lowest amount of habitat loss for which a population response could be detected and landscapes with < 30% area in sagebrush within 6.4 km of lek center have the lowest probability of lek persistence. Idaho is taking a more conservative approach than suggested by the literature. A soft trigger is set at a 10% loss of breeding or winter habitat in Core or Important management zones of a Conservation Area, which initiates a review of the management approach. A hard trigger is set at a 20% loss of breeding or winter habitat within a Core Habitat Zone of a Conservation Area, which automatically causes a change in management status of the corresponding Important Habitat Zone.

Table 1. Nest success (%) in SE Idaho study areas before and after a fire in the Table Butte study area. The fire occurred in August 2000.

Year	Area	
	Table Butte	Upper Snake
1999	54	
2000	45	61
2001 ^a	18	56
2002	20	65

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Mapping of Breeding and Winter Use Areas

Breeding

We used the Idaho Department of Fish and Game (IDFG) sage-grouse telemetry database, dating back to the early 1990's, to investigate distances between leks and nests. Within the telemetry database, we identified each time a nest location was recorded for a radio-collared female but removed duplicate telemetry locations for each nest, so there was only 1 location for each nest. Next, we assured that each nesting hen had a corresponding capture location recorded. We only included hens that were captured during the breeding season (March 1-June 30). We assumed that the lek closest to the point of capture represented the lek where the hen was bred. We also removed second nest attempts and nests recorded in subsequent years for that hen after her initial capture because we did not know what lek the hen may have visited following her initial nest attempt.

For each nest, we used Geospatial Modeling Environment© Version 0.7.2.0 (GME; Beyer 2012) to calculate the distance from the lek to the nest. We divided distances into 1-km categories (i.e. 0-1 km, 1.1-2 km, etc.) and summed the number of nests in each 1-km category. These data were used to calculate cumulative density curves. We also separated nests by the four Conservations Areas to investigate potential geographic variation within the state.

Statewide, 302 nests qualified for the analysis (Desert n = 34, Mountain Valleys n = 143, Southern n = 85, West Owyhee n = 39). A cumulative density histogram indicates that 80% of nests are within 10 km of the capture lek (Figure 1). Histogram results did not differ appreciably among Conservation Areas.

Based on these data, we assumed that we would capture 80% of the potential nesting areas within 10 km of active leks. Therefore, we buffered all leks active in 2011 (n = 510) by 10 km to encompass the breeding use areas. We also included 18 additional leks that were surveyed in both 2010 and 2012 (but not 2011) that had ≥ 10 males in at least one of those years and ≥ 2 males in the other year.

Winter

We used a combination of sage-grouse radio-telemetry data and reported winter observations to guide mapping of winter use areas. Winter was defined as December 1–February 28. Observations included 1) observations recorded by IDFG biologists during big game aerial surveys; 2) observations reported in IDFG's Animal Conservation Database; and 3) GPS data collected from Idaho falconers.

We used the resulting winter locations (n = 2,691) to model winter use area. We used likelihood cross-validation in GME to calculate fixed kernel density estimates (Horne and Garton 2006). The resulting density contours provide a depiction of winter use areas.

Combined Breeding and Winter Polygon and Management Zones

The breeding and winter use polygons were merged in ArcMap™, then overlaid on Core, Important, and General Management Zones (Figure 2). Next we clipped the breeding and winter polygon to Core and

Important Management Zones. We clipped out fires in Core and Important zones (1997-2011) (Figure 3). We also searched for older fires (1987-1996) in Wyoming big sagebrush habitats that LANDFIRE (2010) did not map as sagebrush and removed those fire areas when applicable. The resulting areas were divided into the 4 Conservation Areas and acreage calculated (Table 1). We also calculated the number of acres of 2012 in breeding and winter use areas.

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Table 1. Acres of breeding and winter use areas in Core and Important Management Zones, and acres (and percent) of 2012 fires in breeding and winter use areas.

Conservation Area	Total Core	Breeding & winter in Core	2012 fires in breeding & winter in Core	Total Important	Breeding & winter in Important	2012 fires in breeding & winter in Important
Desert	1,044,332	840,291	51,382 (6%)	751,139	408,605	6,968 (2%)
Mountain Valleys	1,949,461	1,640,415	384 (0%)	1,728,674	1,013,245	561 (0%)
Southern	947,800	568,921	6,674 (1%)	975,539	622,806	87,274 (14%)
West Owyhee	1,738,155	1,416,135	46,035 (3%)	633,855	590,627	7,370 (1%)

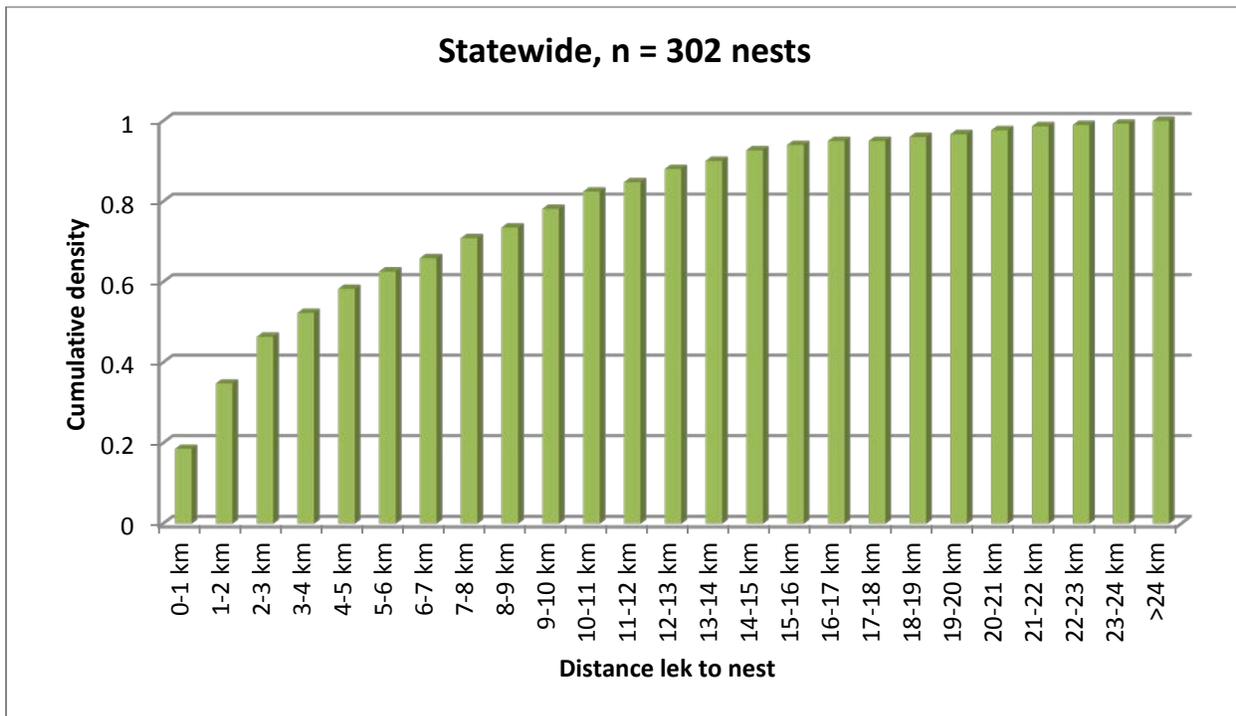


Figure 1. Cumulative density histogram for distances between lek and nest.

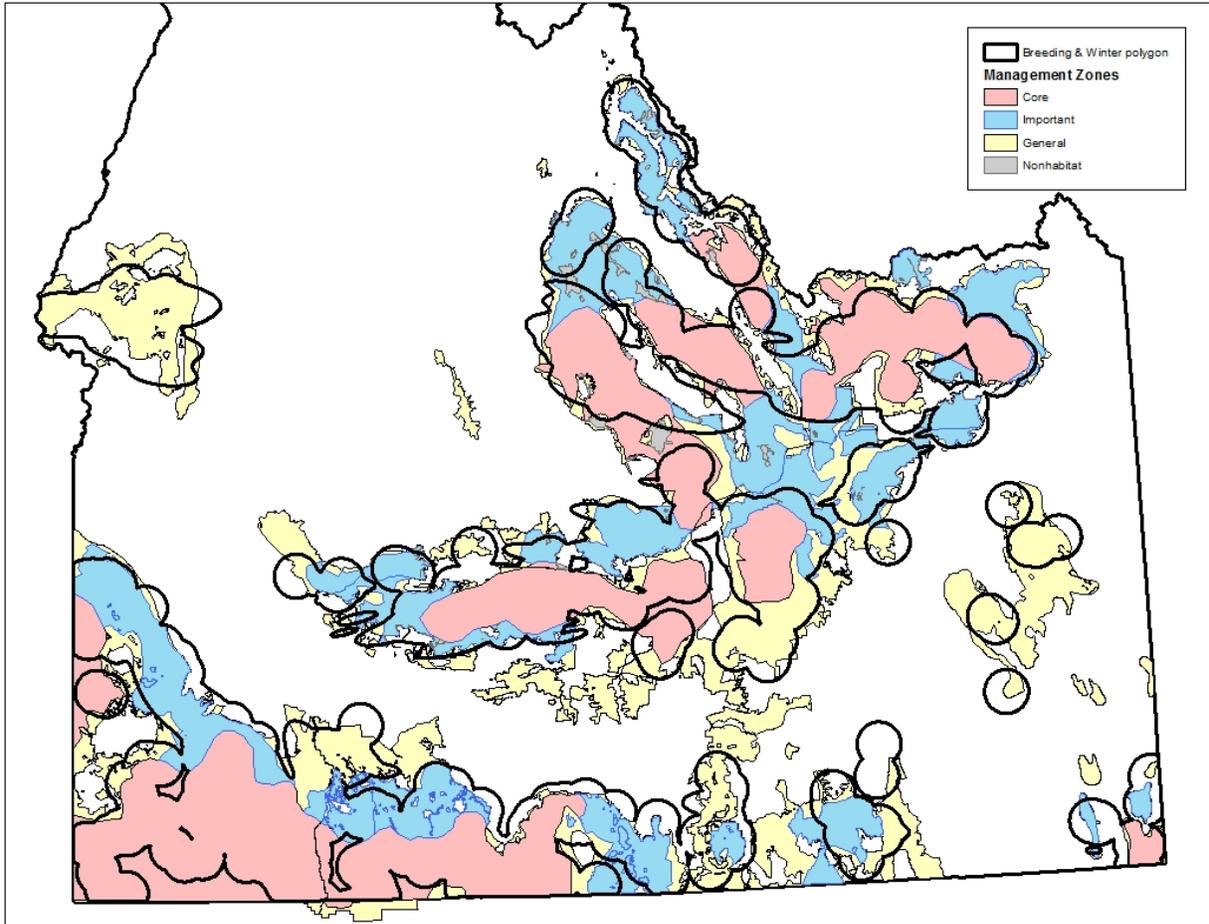


Figure 2. Breeding and winter use polygon overlaid on Core, Important, and General Management Zones.

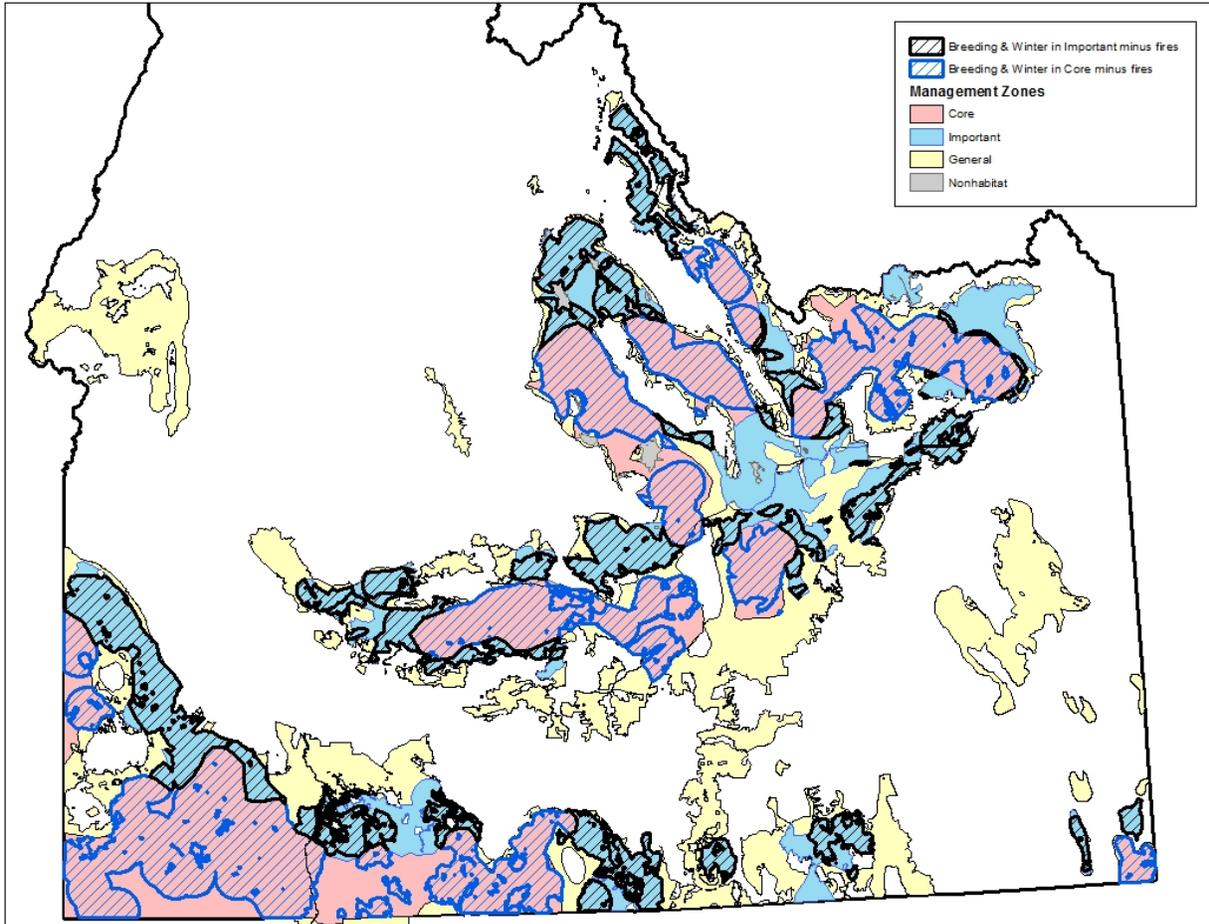


Figure 3. Breeding and winter use areas in Core and Important Management Zones, with recent fires (1997-2011) removed.

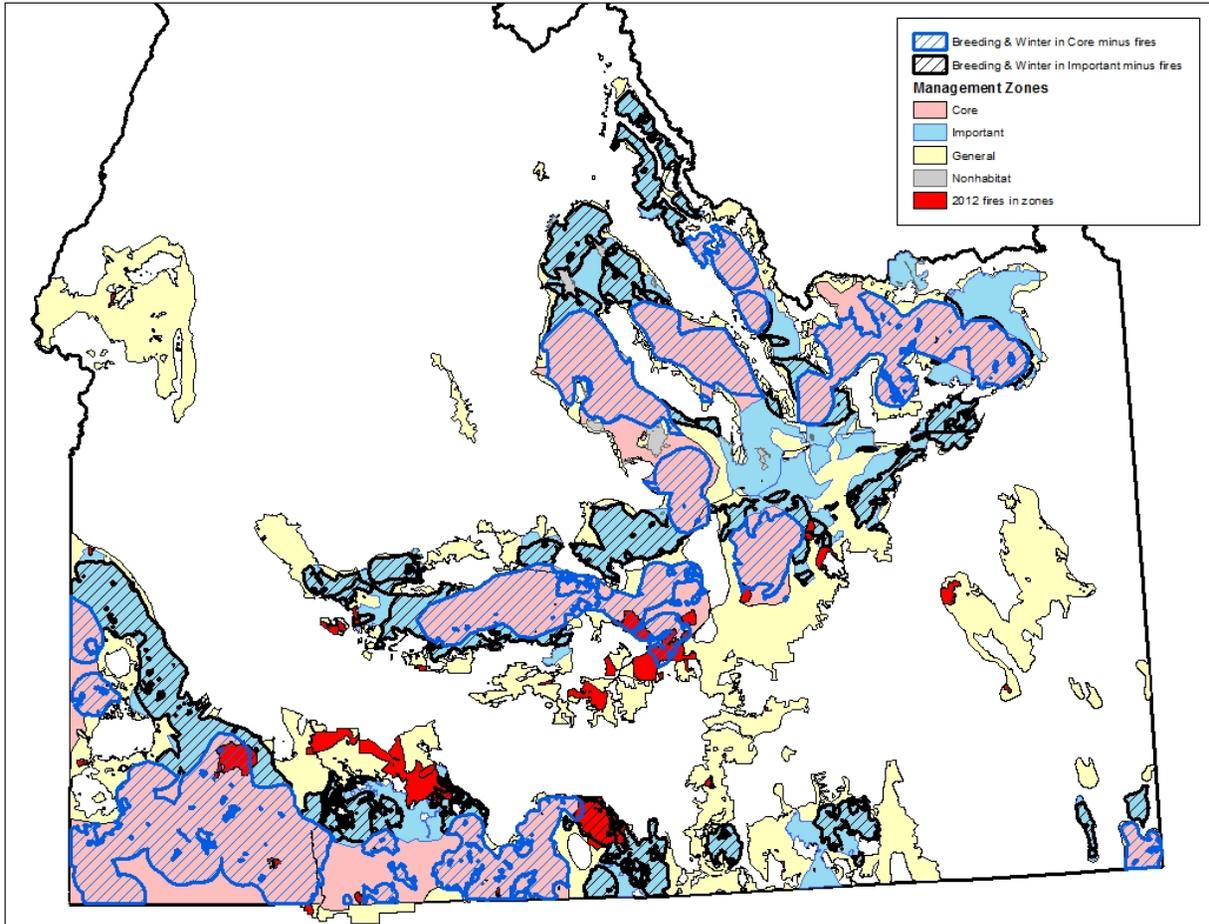


Figure 4. Breeding and winter use areas in Core and Important Management Zones with 2012 fires.

GUIDELINES FOR CONDUCTING SAGE-GROUSE LEK ROUTES

Counts of male sage grouse attending leks are used to provide an index to population trends. Routes have been designed to survey grouse populations throughout the region. It is important these routes be conducted annually following standardized guidelines to ensure useful, quality data.

1. The starting and ending point for each route must remain the same each year. Do not change a route without consulting with the regional wildlife staff.
2. Always count all leks encountered along the route. Make an entry on the data sheet for each lek site encountered on the route. If no birds are present record a zero.
3. In years of high or increasing grouse numbers, satellite leks may be attended or new leks may form. Stop periodically to look and listen for new leks in likely areas.
4. A lek may have more than one activity center (i.e. distinct groups of males). If groups of birds are visible to each other but separated by a relatively long distance (e.g. 200 yards), you are still looking at a single lek.
5. Make all counts from ½ hour before sunrise to 1½ hours after sunrise. Do not drive more than 25 mph.
6. Count and report all males observed; numbers of females are recorded in a separate column.
7. Count each lek at least 4 times between 20 March and 30 April (dates may vary with elevation) with approximately 1 week between counts.
8. Avoid making counts during rainy, inclement weather.

Appendix E

Greater Sage-Grouse Draft Monitoring Framework Plan



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E. Greater Sage-grouse DRAFT Monitoring Framework

The purpose of this Draft U.S. Bureau of Land Management (BLM) and U.S. Forest Service (USFS) Greater Sage-grouse Monitoring Framework (hereafter, draft monitoring framework) is to evaluate the implementation and success of the BLM and USFS land use plans in maintaining and restoring habitat conditions necessary to support sustainable greater sage-grouse (hereafter, sage-grouse) populations. Monitoring data will also be used to help inform adaptive management under these plans.

This draft framework outlines the general monitoring approach, consisting of implementation monitoring and effectiveness monitoring. Implementation monitoring will evaluate whether (and to what extent) the BLM resource management plan (RMP) and USFS land management plan (LMP) decisions to ameliorate threats to sage-grouse have been implemented. Effectiveness monitoring will consist of a multi-scale analysis of our habitat and disturbance monitoring data. Best available population data, provided by the states, will be used to supplement effectiveness analysis.

This draft monitoring framework establishes the use of measurable quantitative indicators for habitat availability and maintenance of habitat types (e.g., priority and general habitats) to ensure each agency's ability to make broad (yet consistent) generalizations about habitat across the range of the species. Monitoring methods and indicators are derived from the best available science. Corporate data-sets will be established or acquired so that data can easily be "rolled up" for reporting monitoring results across the range of sage-grouse, as defined by Schroeder et al. (2004); by populations and subpopulations as defined by Connelly et al. (2004); by RMP/LMP area; by the six Western Association of Fish and Wildlife Agencies (WAFWA) Sage-grouse Management Zones (Stiver et al. 2006) covered by the planning efforts; by BLM and USFS Priority and General Habitat; and by Priority Areas for Conservation (PACs) as defined in the sage-grouse Conservation Objectives Team (COT) Report (U.S. Fish and Wildlife Service 2013). Funding support and dedicated personnel for broad and mid scale monitoring will be renewed annually through the normal budget process.

Sage-grouse are a landscape species, and conservation is a scale-dependent process whereby priority landscapes are identified across the species range and appropriate conservation actions are implemented within seasonal habitats to benefit populations. Following guidelines established by multiple agencies in the Sage-grouse Habitat Assessment Framework (HAF; Stiver et al. 2010), this approach uses the four orders of sage-grouse habitat selection (Johnson 1980): first order (broad scale), second order (mid scale), third order (fine scale), and fourth order (site scale). Because RMP/LMP decisions are made largely at the broad and mid scale, this draft monitoring framework focuses on these two larger spatial scales. The need for fine and site scale habitat monitoring may vary by area depending on existing conditions, habitat variability, threats, and land health; however indicators at these scales will be consistent with the HAF. Thus, this draft monitoring framework includes methods, data standards, and intervals of monitoring at the broad and mid scales, while outlining indicators to be measured at all scales.

E.1 Broad and Mid-Scales

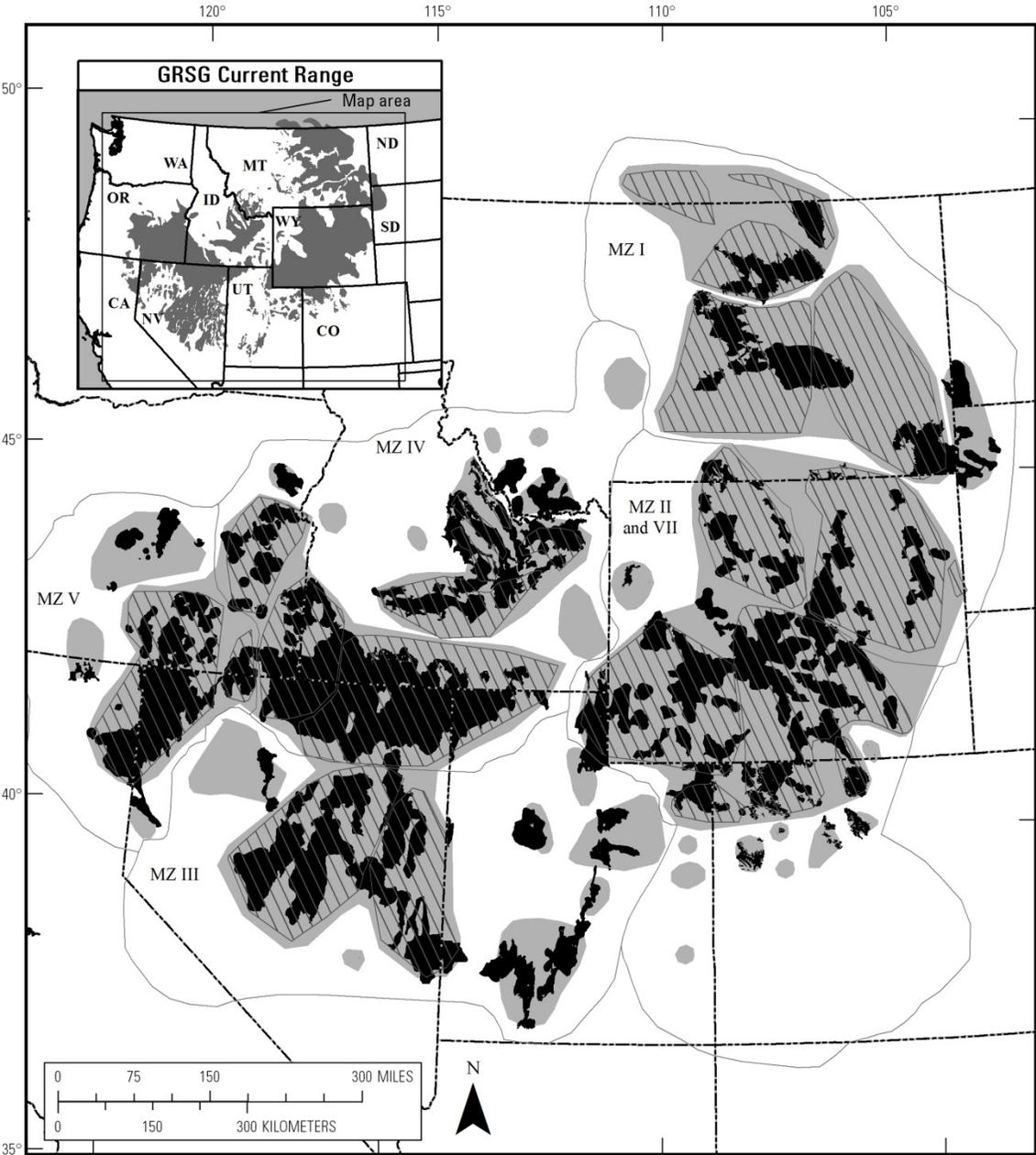
First order habitat selection at the broad scale describes the selection of physical or geographical range of a species. There is one first order habitat, the range of the species defined by populations of sage-grouse associated with sagebrush landscapes (Schroeder et al. 2004; Connelly et al. 2004). Additionally, there is an intermediate scale between the broad and mid scales that was delineated from floristic provinces within which similar environmental factors influence vegetation communities. This scale was developed by WAFWA and is referred to as the WAFWA Sage-grouse Management Zones.

Second order habitat selection at the mid scale includes sage-grouse populations, subpopulations, and PACs. The second order includes at least 40 discrete populations and subpopulations (Connelly et al. 2004). Subpopulations range in area from 300 to 22,400 mi², while populations range in area from 150 to 54,600 mi². PACs range from 20 to 20,400 mi².

Broad and mid scale monitoring results will be reported at the appropriate and applicable geographic scale (Table 1; Figure 1).

Table 1
Indicators for Monitoring Implementation of Decisions, Sage-grouse Habitat, and Sage-grouse Populations at the Broad and Mid Scales

	Implementation	Habitat		Population (States)
<i>Geographic Scales</i>	Decisions	Disturbance	Vegetation	Demographics
Broad Scale: From the range of sage-grouse to WAFWA Management Zones	RMP/LMP objectives, thresholds and management actions	Distribution of sagebrush within occupied habitat		WAFWA Management Zone population level and population trends
Mid Scale: From WAFWA Management Zone scale, subpopulation, and PAC scale	RMP/LMP decisions, vegetation/ mid scale decisions	Percent of sagebrush per unit area, anthropogenic footprint, density of energy development	Sagebrush patch characteristics, sage-grouse habitat indicators	Subpopulation scale, dispersal and lek complex trends



GRSG PACs, Subpopulations and Populations

LEGEND

-  Subpopulations
-  COT PACs
-  Populations

Sources:
 Current Range: Schroeder et al., 2004
 Populations: Connelly et al., 2004
 Subpopulations: Connelly et al., 2004
 PACs: USFWS COT Report, 2013

Figure 1. Map of greater sage-grouse range, populations, subpopulations and Priority Areas for Conservation (PACs).

E.1.1 Implementation (Decision) Monitoring

The regulations for the BLM (43 CFR 1610.4-9) and USFS (36 CFR 219.12) require that land use plans establish intervals and standards for monitoring and evaluations, based on the sensitivity of the resource decisions involved. Implementation monitoring is the process of tracking and documenting the implementation (or the progress toward implementation) of land use plan decisions. An Idaho and Southwestern Montana Sub-Region Implementation Workbook will be completed within one year of the Record of Decision to track the number and type of applicable implementation actions related to each decision for each resource program, and maintained as actions occur. The BLM and USFS will be documenting progress annually toward full implementation of the land use plan.

E.1.2 Habitat (Vegetation) Monitoring

The current geographic extent of sagebrush vegetation within the rangewide distribution of sage-grouse populations will be ascertained using the most recent version of the Existing Vegetation Type (EVT) layer in LANDFIRE (2006). LANDFIRE EVT was selected to serve as the base sagebrush layer for five reasons: 1) it is the only nationally consistent vegetation layer that has been updated since 2001; 2) the ecological systems classification includes multiple sagebrush type classes that, when aggregated, provide more accurate (compared to individual classes) and seamless sagebrush base layer across jurisdictional boundaries; 3) LANDFIRE performed a vigorous spatial accuracy assessment from which to derive the rangewide uncertainty of the base map 4) LANDFIRE EVT can be compared against the geographic extent of land that has the capability to support sagebrush vegetation using LANDFIRE Biophysical Setting (BpS) to provide a reference point for understanding how much sagebrush can be supported in a defined geographic area, and 5) LANDFIRE is consistently used in several recent analyses of sagebrush habitats (Knick et al, 2011, Leu and Hanser 2011, and Knick and Hanser 2011). Therefore, BLM has determined that LANDFIRE provides the best available data at broad and mid scales to serve as an initial base layer for monitoring habitat characteristics and by which disturbance changes are measured, incorporated, and reported. Along with the aggregated sagebrush base map, BLM will aggregate the accuracy assessment reports from LANDFIRE to document the cumulative accuracy for our final base map. Looking at the long-term, BLM through its AIM program and specifically the Landscape Monitoring Framework, will provide field data to the LANDFIRE program to support overall accuracy improvements in their products.

Within the US Forest Service specifically and BLM in isolated areas, forest-wide and field office-wide existing vegetation classification mapping and inventories are available that provide a much finer level of data than provided through LANDFIRE. Where available, these products are useful below the mid scale for establishing baseline conditions for monitoring. The fact that they are not available everywhere however limits their utility for monitoring at the broad and mid scale where consistency of data products is necessary regardless of land ownership.

The BLM is improving the quality of vegetation map products for broad and mid scale analyses through the Grass/Shrub mapping effort in partnership with the Multi-Resolution Land Characteristics Consortium (MRLC). The Grass/Shrub mapping effort applies the



Homer et al. (2009) methodology to spatially depict fractional percent cover estimates for four components range and west-wide. These four components are the percent cover of sagebrush vegetation, percent bare ground, percent herbaceous vegetation (grass and forbs combined), and percent shrubs. One of the benefits of the design of these fractional cover maps is that they facilitate monitoring “with-in” class variation. This “with-in” class variation can serve as one indicator of sagebrush quality that we cannot derive from vegetation type information from LANDFIRE.

The base sagebrush layer, whether derived from LANDFIRE or Grass/Shrub, will allow for estimation of mid scale indicators, e.g. patch size and number, patch connectivity, linkage areas, and landscape matrix and edge effects (Stiver et al. 2010). The actual methods used to calculate these metric will be derived from existing literature (Knick et al, 2011, Leu and Hanser 2011, and Knick and Hanser 2011). Disturbance updates, generated annually, will be included into the base layer and the landscape metrics will be recalculated to examine changes in pattern and abundance of sagebrush at the various geographic boundaries. The appropriate geographic boundaries for this base layer include the range, management zone, population, subpopulation, and PAC. Other data sources would need to be used to report landscape metrics any finer than the PAC.

The sagebrush base layer and disturbance data provide the ability to calculate landscape metrics as one element of habitat monitoring at the broad and mid scales. Habitat quality, however, will be monitored using field data collected with a statistically valid sampling design (e.g., Landscape Monitoring Framework, a collaborative effort with NRCS on BLM lands (USDI-BLM 2011); AIM monitoring data (Toevs et al. 2011); and see "II. Fine and Site Scales"). These efforts can quantify indices such as percent annual grasses, species composition, sagebrush height, and bare ground at the PAC scale with known error estimates that are continually reduced as more data are collected. Point data will also be used to enhance the accuracy and precision of the Shrub/Grass mapping product. This product can in turn provide additional information about habitat quality at the mid scale. Long-term, BLM will be able to provide a suite of monitoring metrics for the PACs and larger scales that will provide a comprehensive view of sagebrush and sage-grouse habitat condition when combined with population data supplied by the states.

E.1.3 Habitat (Disturbance) Monitoring

Most of the decisions in this land use plan are in response to “Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range” in the U.S. Fish and Wildlife Service’s (USFWS’s) 2010 listing decision for sage-grouse (75 FR 13910 2010). The USFWS identified several “threats” affecting Factor A, therefore the BLM and USFS will monitor the relative extent of these threats on sagebrush, both spatially and temporally, to report on conditions at the appropriate and applicable geographic scales and boundaries.

Disturbance data will include:

1. Agriculture
2. Urbanization

3. Habitat treatments
4. Wildfire
5. Invasive plants
6. Conifer encroachment
7. Energy (oil and gas wells and development facilities)
8. Energy (coal mines)
9. Energy (wind towers)
10. Energy (solar fields)
11. Energy (geothermal)
12. Mining (active developments; locatable, leasable, saleable)
13. Infrastructure (roads)
14. Infrastructure (railroads)
15. Infrastructure (power lines)
16. Infrastructure (communication towers)
17. Infrastructure (other vertical structures)
18. Other developed rights-of-ways

Cumulative disturbance monitoring will aggregate these 18 threats into the following three general measures (see Attachment A):

1. Percent of sagebrush per unit area
2. Percent of non-habitat (human footprint) per unit area
3. Number of energy facilities and mining locations per unit area (density)

To accomplish disturbance monitoring, the BLM and the USFS will begin with a base layer of sagebrush described previously in Section B. Restored areas will also be considered when evaluating the percentage of sagebrush on the landscape.

Next, the BLM and USFS will use the best available rangewide data (external and/or internal data) to evaluate anthropogenic and natural disturbances (direct physical footprint) of sage-grouse habitat based on threats listed in Factor A. The Sage-Grouse Baseline Environmental Report (BER; Manier et al. 2013) essentially provided a baseline collection of datasets across jurisdictions where available, however for some threats, the data were for federal lands only. Most of the data used in the BER were from external data sources, therefore the BLM will use the most currently available versions to evaluate changes (additional footprints) from the baseline dataset. A subset of these data (e.g. fire perimeters, mine and energy sites), provided by BLM field and state offices and USFS forests and regional offices, will be updated and reported to agency headquarters annually. The BLM will report the change in footprints for

each of the 18 threats as well as cumulatively for the three general measures described previously.

E.1.4 Population (Demographics) Monitoring

State wildlife management agencies are responsible for monitoring sage-grouse populations within their respective states. The BLM and USFS have initiated a process to establish that WAFWA will coordinate collection of annual population data by state agencies. To establish certainty that the data will be provided to the BLM and the USFS, the existing memorandum of understanding signed by WAFWA, the BLM, the USFS, the Natural Resources Conservation Service, and the USFWS (http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/fish_wildlife_and/sage-grouse.Par.6386.File.dat/MOU%20on%20Greater%20Sage-Grouse.pdf) could be revised to outline collaboration, process, and responsibilities for data analysis and transfer related to management of sage-grouse. These population data will be used for analysis at the applicable scale to supplement habitat effectiveness monitoring of management actions.

E.1.5 Effectiveness Monitoring

The BLM and the USFS will analyze the monitoring data to characterize the relationship among the disturbance, implementation actions, and habitat condition at the appropriate and applicable geographic scale or boundary to accomplish effectiveness monitoring for the Idaho and Southwestern Montana Sub-Region. This will involve evaluating the change in habitat conditions from the baseline conditions in relation to the goals and objectives of the plan and other rangewide conservation strategies (U.S. Department of the Interior 2004; Stiver et al. 2006; U.S. Fish and Wildlife Service 2013). When available from WAFWA and/or state wildlife agencies, effectiveness monitoring can be supplemented with population trends (taking into consideration the lag effect response of populations to habitat changes [Garton et al. 2011]). The compilation of broad and mid scale data (and population trends as available) will be on a 5-year reporting schedule or as needed to respond to emerging issues. In addition, effectiveness monitoring will be used to identify emerging issues and research needs and will be consistent with and inform the BLM and the USFS adaptive management strategy (see “Adaptive Management” section of the EIS).

E.2 Fine and Site Scales

Third order habitat selection at the fine scale describes the physical and geographic area within home ranges. At this level, maps of seasonal habitats (breeding, summer, and winter) and the connectivity between these seasonal use areas can be examined to determine limiting factors for populations, subpopulations, and PACs.

Fourth order habitat selection at the site scale is based on physical conditions and the geographic area within seasonal ranges to meet life requisite needs (e.g., nesting and brood rearing). Specific habitat measures are used at this scale as microsite conditions within the seasonal range to determine distribution and use. These measures are typically sampled across a defined area to inform third order habitat selection.

Details and application of monitoring at these two scales will be determined during implementation of the Idaho and Southwestern Montana Sub-Region LUPA. The need for fine- and site-scale specific habitat monitoring will vary by area depending on proposed projects, existing conditions, habitat variability, threats, and land health. For example, implementation monitoring will track decisions in priority habitat; habitat vegetation monitoring will be conducted to evaluate projects targeting sage-grouse habitat enhancement and/or restoration; habitat disturbance monitoring will be conducted where mid-scale monitoring indicates the need for fine-scaled anthropogenic disturbance footprints; and population monitoring (in cooperation with state wildlife agencies) will be analyzed below the subpopulation/PAC level where needed for more specific effectiveness monitoring (some RMP/LMP objectives, activity plans, development plans, leasing plans, etc.).

Habitat indicator data collected at the fine and site scales will be consistent with the HAF and information provided in the sage-grouse guidelines (Connelly et al. 2000) as well as the core indicators in the assessment, inventory and monitoring (AIM) strategy (Toevs et al. 2011), and applicable USFS monitoring techniques. However the *metrics* for quantifying the indicators can be adjusted for local conditions. If local adjustments to metrics are made, the adjustments will be appropriate to the floristic province/sage-grouse management zone where the data were collected and reflect local plant productivity and sage-grouse habitat data collected within the area. In short, adjustments will be science-based (i.e., predicated on data collected locally and published in a peer-review outlet) and ecologically defensible (i.e., generally supported by the broad base of knowledge on sagebrush and sage-grouse provided in the peer-review literature). When evaluating the land health habitat standard in designated sage-grouse habitats, the BLM will analyze core indicators and other supplemental site scale sage-grouse habitat indicators (see HAF) as appropriate for the seasonal habitat. The activity level plans will describe a sampling scheme for collecting indicators with a non-biased sampling design for vegetation treatments or management actions implemented at the site scale. In addition, the consistent collection of these data will be used to inform the classification and interpretation of imagery and habitat quality at the mid scale as described above.

For examples of current applications of disturbance and reclamation monitoring at the fine scale, see the BLM Wyoming Density and Disturbance Calculation Tool (<http://ddct.wygisc.org/>) and the BLM White River Data Management System (WRDMS) in development with the USGS.

E.3 Final Monitoring Plan

This draft monitoring framework was developed for draft environmental impact statements to describe the proposed monitoring activities for this plan. The BLM and USFS will consider public comments and collaborate with other agencies to finalize the Idaho and Southwestern Montana Sub-Region Sage-grouse Monitoring Plan.

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Attachment A. Geospatial data layers used to determine three factors for greater sage-grouse habitat disturbance monitoring at the broad and mid scales.

Geospatial Data Layer	Percent of Sagebrush	Percent of Non-habitat (Human Footprint)	Number of Energy and Mining Facilities
Sagebrush	X		
Areas with biotic potential for sagebrush	X		
Agriculture	X		
Urbanization	X		
Habitat treatments	X		
Wildfire	X		
Invasive plants	X		
Conifer encroachment	X		
Energy (oil and gas wells and development facilities)		X	X
Energy (coal mines)		X	X
Energy (wind towers)		X	X
Energy (solar fields)		X	X
Energy (geothermal)		X	X
Mining (active locatable, leasable, and salable developments)		X	
Infrastructure (roads)		X	
Infrastructure (railroads)		X	
Infrastructure (power lines)		X	
Infrastructure (communication towers)		X	
Infrastructure (other vertical structures)		X	
Other developed rights-of-way		X	

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Appendix F

Regional Mitigation Strategy



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F. Regional Mitigation Strategy

Mitigation strategies, which take into account the mitigation hierarchy (avoid, minimize, restore, offset), are an important tool for ensuring the BLM meets its greater sage-grouse resource objectives while continuing to honor its multiple-use mission. The BLM's priority is to mitigate impacts to an acceptable level onsite, to the extent practical, through avoidance (not taking a certain action or parts of an action), minimization (limiting the degree or magnitude of the action and its implementation), rectification (repairing, rehabilitating, or restoring the affected environment), or reduction of impacts over time (preservation and maintenance operations during the life of the action). While mitigating impacts for proposed projects to an acceptable level onsite is typically analyzed and determined through site-specific, implementation-level NEPA documents and their commensurate decision documents, the analysis and mitigation for project level activities will be tiered to the analysis and mitigation proposed throughout each of the action alternatives in this Amendment. BMPs and/or RDFs would be applied as described in **Appendix C**.

For those impacts that cannot be sufficiently avoided or minimized onsite, the BLM must ensure implementation of effective measures to offset (or compensate for) such impacts and to maintain or improve the viability of sage grouse habitat and populations over time, as described in the Service's Conservation Objectives Team Report. Regional mitigation may be a necessary component for many large renewable and nonrenewable energy development projects as well as many smaller projects with cumulative effects on the greater sage-grouse and its habitat.

Any regional mitigation strategy will comply with BLM's *Regional Mitigation* Manual Section (MS) 1794, which provides policies, procedures, and instructions for:

1. Adopting a regional approach to planning and implementing mitigation, including pre-identifying potential mitigation sites, projects, and measures; and
2. Identifying the type of mitigation that is needed to compensate for impacts to resources or values caused by a land use authorization.

It is important to note that any mitigation strategy must include the cooperation and coordination of appropriate and pertinent federal, state and local land and resource management agencies across the landscape. The final strategy adopted and implemented within a landscape will be dependent on the unique resources and values of the regional landscape and the mitigation strategies and resources contributed by the regional partners. It is important to acknowledge that the State government working with the BLM as a Cooperating Agency on this land use plan amendment may have already completed, or is currently working on, statewide mitigation strategies. The BLM will continue to work with and support those State government efforts.

The BLM will establish a Mitigation Implementation Team for each of the six WAFWA Management Zones in the West, following the completion of each of the 15 sub-regional EISs that are associated with the National Greater Sage-Grouse Planning Strategy. The planning area presented in this sub-regional EIS lies within the WAFWA Management

Zones II and IV. The teams are responsible for developing a Mitigation Strategy consistent with BLM MS 1794, as appropriate. The teams will coordinate recommended mitigation strategies between RMP planning areas, WAFWA management zones, and local and state jurisdictions for mitigation consistency, where appropriate.

These implementation teams will be responsible for implementing BLM MS 1794, and making recommendations regarding the following items related to compensatory mitigation:

1. A structure for determining appropriate mitigation, including impact (debit) and benefit (credit) calculation methods, mitigation ratios, mitigation “currency” (i.e., numbers of birds, acres, etc.), location, and performance standards options by considering local and regional, mitigation options,
2. How to resolve mitigation oriented discrepancies that arise within the WAFWA Management Zone or between Zones,
3. the application and the holding and disposition of any mitigation funds,
4. the most appropriate mitigation for impacts from a given land use authorization and type of seasonal habitat impacted,
5. Prioritization of potential mitigation sites, projects, and measures, as guided by conservation strategies (e.g. PACs, priority habitat areas), and
6. Reviewing mitigation monitoring reports and analyzing and reporting on project effectiveness, corrective measures / adaptive management (where required), and cumulative effects of mitigation actions at the PAC and the WAFWA zone.

These WAFWA Management Zone Implementation Teams will function as interdisciplinary teams (IDTs) composed of BLM, FS, FWS and state fish and game agencies. The Mitigation Implementation Team will make recommendations to the BLM Authorized Officer. If the recommendations are rejected for any reason, the Mitigation Implementation Team will be re-convened to develop additional recommendations.

Appendix G

Detailed No Action Alternative



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G. Detailed No Action Alternative

G.1 Existing GRSG Guidance in Land Use Plans

G.1.1 Introduction

Nearly all LUPs within the Idaho and southwestern Montana subregion have some guidance regarding GRSG and/or sagebrush habitats. These goals, objectives, and actions for BLM and objectives, standards, and guidelines for the Forest Service are presented by LUP in Table G-1 below.

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

Bureau of Land Management
Bruneau Field Office – Bruneau MFP
<i>Special Status Species – Wildlife, Sage-grouse</i>
Objective (WL-4): Manage upland game and waterfowl habitats in the BPU to increase populations of the highly desired species.
Action (WL-4.4): Manage 520,000 acres of sage grouse range in the BPU including those areas under Wilderness IMP classification and within IMP management guidelines to improve nesting, brood rearing and winter habitats.
Action (WL-4.4(1)): To improve the quality of sage grouse nesting and brood rearing habitats, all poor and fair big sagebrush, meadow, and riparian ecological sites should be improved and managed for good ecological condition, based on the SCS ecological site classification system.
Action (WL-4.4(2)): When making management decisions affecting areas used by sage grouse in the BPU, refer to and address the “Guidelines for Habitat Protection in Sage Grouse Range” as published by the Western States Sage Grouse Committee, June, 1974. Significant among these are: <ul style="list-style-type: none"> a) Manage sage grouse habitat by maintaining the density of sagebrush canopy cover at 20-30% within nesting habitats and at least 20% in present wintering habitats and in areas known to have supported wintering concentrations within the previous ten years. Canopy cover should not be confused with hiding cover. b) Designate sage grouse nesting and wintering habitat as “active” wildfire suppression areas wherein fire suppression activities are geared to fire behavior and the potential resource threat from any fire after it has been initially evaluated. If significant sage grouse cover is destroyed by any fire, sagebrush seed will be included in any mixture used in fire rehabilitation projects, seeded at a rate sufficient to reestablish suitable cover for sage grouse. c) In brood rearing areas where the big sagebrush canopy cover is 20% or greater, improve herbaceous vegetation by sagebrush manipulation and seeding of small irregular areas. These manipulations must not however, reduce the existing sagebrush canopy below 10%. Carefully evaluate the sage grouse response of these habitat manipulations before expanding the program to a large scale. Prescribed burning in most cases will be used for the cover alteration. d) No rehab projects will be implemented where live sagebrush crown cover is less than 20%, or on steep upper slopes (20% + gradient) where big sagebrush is 12 inches or less in height. e) Range vegetal control/rehab projects within two miles of known strutting grounds will be limited to practices which also enhance sage grouse habitat since this area constitutes the breeding complex for sage grouse. f) No vegetal control using herbicides will be conducted along streams, meadows, or secondary dry/intermittent drainages. A minimum of a 100 yard strip of living sage will be retained on each edge of meadows and drainages.

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

<p>g) Restrict during March-May any intensive disturbance activities such as gravel pit operation or ORV races within 2 miles of sage grouse strutting grounds and avoid the establishment of major roads within ½ mile.</p> <p>h) Restrict vehicular traffic to existing roads from November 1 to February 28 in sage grouse wintering habitats.</p> <p>i) Retain in public ownership all tracts of land on which strutting grounds are located and all lands within a two-mile radius of those strutting grounds, but allow exchanges if higher quality habitat can be acquired and such exchanges are in the public interest.</p> <p>j) Prescribed burning shall be the primary tool for habitat improvement.</p>
<i>Livestock Grazing</i>
Action (RM1.1): Implement AMPs on 14 allotments and less-intensive management on 5 allotments (Overlay RM-4). Allotments are listed in priority order. Adjust management or exclude grazing on sage grouse brood-rearing areas to improve habitat. Design grazing management to improve crucial antelope winter/early spring ranges. Establish grazing systems and seasons to meet bighorn sheep requirements.
Burley Field Office - Cassia RMP
<i>Special Status Species – Wildlife, Sage-grouse</i>
Objective: Management Areas 2, 4, 7, 10: Maintain or improve sage grouse winter habitat and sage grouse strutting/brood-rearing habitat. (# of acres of habitat is identified in each Management Area in the LUP)
Action: Management Areas 9, 11, 13: Maintain or improve sage grouse brood-rearing habitat. (# of acres of habitat is identified in each Management Area in the LUP)
Action: Allow for limited vegetation manipulation in areas of known sage-grouse brood-rearing areas and winter areas. Refer to Sage-grouse Management in Idaho, Wildlife Bulletin Number 9, Idaho Department of Fish and Game 1981, for habitat requirements for sage-grouse.
<i>Livestock grazing</i>
Action: Implement livestock grazing systems that will provide a 20-40% canopy cover of brush, an average plant height of 20” and 50% average utilization of grass understory in upland game habitat areas.
<i>Fluid Minerals (Oil and Gas, Tar Sands, and Geothermal Resources)</i>
Action: Management Area 4: Open to leasing subject to the following stipulation: No exploration/development work in sage grouse strutting/brood-rearing habitat from April 11 through June 15.
Action: Management Areas 2, 7, 9, 10, 11, 13: Open to leasing subject to the following stipulation: No exploration/development work in sage grouse strutting/brood-rearing habitat from April 1 through June 15.
Burley Field Office - Twin Falls MFP
<i>General Wildlife</i>
<ol style="list-style-type: none"> 1. Through the use of intensive grazing management systems maintain and enhance nesting-brood rearing complexes and wintering areas for sage grouse. 2. Limited work will be permitted along streams, meadows or secondary drainages (dry and intermittent). A 100-yard strip (minimum) of living sagebrush will be retained on each edge of meadows and drainages for protection of sage grouse habitat. Install protective fencing on selected springs, seeps, meadows, and well overflow areas, as they become identified, to protect succulent forage and improve sage grouse habitat. 3. Give sage grouse nesting, brood-rearing, and winter habitat needs priority consideration in these habitat areas. The guidelines developed by IDFG will guide the habitat management of these areas. Maintain existing range improvement practices that exist within these habitat areas. The key in determining the nesting-brood rearing habitat sites will be the location of leks relative to the 2-mile radius rule. Multiple use management of these areas will aim at maintaining adequate nesting cover. Brood-rearing needs in these areas will strive to maximize succulent forbs and insects. management of wintering areas will be to

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

<p>maintain adequate sagebrush cover in identified winter areas.</p> <ol style="list-style-type: none">4. Provide improved upland game bird habitat by planting vegetation which will out compete noxious weeds, are non-spreading in nature but will provide the same benefits as many of the noxious weeds. Until this can be accomplished, herbicide and pesticide use will have to be selective.5. Enhance upland game habitat by developing the following wildlife enclosures.6. Implement the following cooperative farm agreements to enhance upland game bird habitat.7. All land treatment proposals affecting brushy islands or buffer strips, should receive multiple resource input to assure consideration of the wildlife habitat needs and keep the needed patches and islands of brush habitat. The existing islands and leave areas from the initial projects will remain leave areas in future maintenance unless wildlife input indicates that the areas are not critical habitat, in which case treatment can be done in a manner that benefits the wildlife values.8. Improve upland game habitat by making all existing and future water developments available to all upland game birds. Improve the Chukar habitat by installing permanent water sources in Chukar range. Construct and install bird guzzlers along Salmon Falls Creek Rim for Chukar an near the juniper trees by Mule Creek for quail. Install additional guzzlers as locations become identified.9. Provide upland game habitat, primarily pheasants and public hunting areas, by: maintaining small isolated parcels of public land which are surrounded by private land in public ownership (these tracts must be in legal subdivision); in all future desert land entries, Carey Act, public sales, land exchanges, etc.; retain a minimum of 15 percent of the land in public ownership; retain the following isolated parcels in public ownership and maintain them in their present condition until such time when the surrounding private land goes in to agriculture.10. Improve and maintain terrestrial, aquatic and wetland-riparian habitat for upland games species throughout the planning unit.11. Acquire the following parcel of land to provide additional upland game habitat: T 10 S, R 18 E, Section 11 N 1/2 N1/2 SE 1/412. Maintain and enhance habitat for sharptailed grouse through the use of intensive grazing management systems. Maintenance of a 12 inch high grass understory is important. Maintain present cover on public lands adjacent to dry land grain fields. Protect grass areas intermixed with bitterbrush and sagebrush in draws and small canyons with dense stands of berry producing vegetation.13. Allow vehicular use and oil and gas exploration without restriction except during the period from March 15 through June 15 in critical sage grouse nesting-brood rearing complexes. During this period, vehicular use will be limited to existing roads and trails.14. Close critical sage grouse wintering areas to snowmobiling.15. Determine the boundary of each agricultural trespass, determine the party in violation, settle the damages due the government based on fair market value: 1.) Terminate the unauthorized use by one of the following actions. Restore the land to its prior stat for multiple resource management. 2.) Enter into cooperative wildlife farming agreement. Use the Sieks Act authority where applicable.3.) Enter into an agricultural lease with multiple resource values identified and collect fair market value rental for the government. 4.) Dispose of the farmed land to the private sector through public sale. Sites containing any of the following criteria will be retained in public ownership for multiple use resource management: a. cultural or archeological b. natural history values c. threatened or endangered plant species d. threatened or endangered animal species and their habitats e. critical wildlife habitat such as mule deer winter, sage grouse winter, pheasant winter, pheasant nesting, etc.16. Modify multiple-use recommendation to finalize the Twin Falls Off-Road Vehicle Designation Plan based on the Step recommendations. Complete the designation plan and an EA through public review as needed local motorcycle and 4-wheel clubs. Change the ORV limitation in mule deer critical winter range from the date November 1 to November 15. Designate area between powerline and Salmon Falls

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

<p>Creek as limited to existing roads and trails (Accept CRM-1.5 WL-4.2). Limit ORV use in sage grouse nesting and strutting areas (Accept WL-2.12).</p> <p>17. Practice limited fire suppression on the existing seedings and proposed seedings with modifications as shown in RM-2.3 RM2.4 and RM-2.5 Multiple Use Recommendations that provide for normal fire suppression on sage grouse ranges antelope and mule deer winter ranges, mule deer critical summer range and isolated tracts</p> <p>18. Do not use aerial retardant on resource value Class II lands except when needed to protect or ensure the safety of private property, structures, livestock, general public and fire suppression personnel. Do not use aerial retardant on any open waters such as reservoirs ponds, streams and springs. Aerial retardant can be used to aid in protecting identified sage grouse, antelope and mule deer winter areas, mule deer critical summer range and isolated tracts.</p> <p>19. Modify the multiple use recommendation to include all the identified area and to agree with the range multiple use recommendation RM-2.7 RM2.7 says practice limited fire suppression on existing seedings and proposed seedings with the modifications shown in RM-2.3 RM-2.4 and RM2.5. Aggressive fire suppression will be initiated to protect wildlife values on sage grouse strutting grounds, antelope and mule deer winter range, mule deer critical summer range and on the Twin Falls-Cassia Isolated Sikes Act Tracts. Fire management will consult closely with the area manager on actions in these areas.</p>
Twin Falls District - Fire Management Direction Amendment
<i>Wildland Fire Management</i>
GOAL: Maintain, protect, and expand sage grouse source habitats.
Action: Suppress wildland fires in source habitats (Figure 3-3), except where WFU would benefit habitat.
Action: Allow WFU in sage grouse source habitats for the benefit of the habitat only after site specific project level coordination with IDFG (Figure 3-3).
Action: Conduct vegetation treatments in areas that pose a wildland fire risk to source habitats.
Action: Treat areas within source habitats that have low resiliency (i.e., areas characterized by low species diversity, undesirable composition, and dead or decadent sagebrush).
Action: When multiple wildland fire ignitions occur, the criteria for establishing suppression priorities would follow the two prioritization criteria described under Section 2.4.4.1, followed by the following prioritization:
<ul style="list-style-type: none"> • Minimize risks to sage-grouse source, key, and restoration habitats. • Minimize risks to habitats occupied by T&E species. • Minimize risks to resources where changes in fuel accumulation and fire occurrence have occurred (i.e., FRCC 2 and FRCC 3 areas).
Action: Use AMR to wildland fire in all sage grouse restoration and key habitats and healthy wildlife habitats.
GOAL: Treat sage grouse key and restoration habitats to expand source habitats. Improve and maintain sage grouse Restoration (R1-3) and key habitats.
Action: Use appropriate management response to wildland fire in all sage grouse restoration and key habitats and healthy wildlife habitats.
Action: WFU may be allowed in historically frequent fire regimes to restore fire's natural role and in sage grouse restoration and key habitats for the benefit of the habitat only after site specific project level consultation/collaboration with IDFG (Figure 3-3).
Action: Conduct vegetation treatments in restoration and key habitats to reduce risk of wildland fire and reconnect restoration and key habitats.
Action: Treat areas of restoration and key habitats that have low resiliency characterized by low species diversity.
Action: T&E and Candidate species with recovery plans, conservation agreements, and conservation

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

<p>strategies will be protected as specified in their respective plans/agreements/strategies. These protections include such measures as adequate habitat and range for a given species, including mitigation measures for multiple land use activities authorized by the BLM.</p>
<p>Action: R.1 PRESCRIBED FIRE: Leave adequate untreated sagebrush areas for loafing/hiding cover near leks for sage-grouse.</p>
<p>Action: R.1 PRESCRIBED FIRE: Avoid the use of prescribed fire or other sagebrush treatments in habitats prone to the expansion or invasion of cheatgrass or other invasive species unless adequate measures are taken to control the invasive species and ensure subsequent dominance by desirable perennial species. In many—if not most—cases, this will likely require chemical treatments and reseeding.</p>
<p>Action: R.2 ANNUAL GRASSLANDS Seed used in sage-grouse habitat restoration seedings, burned area rehabilitation projects, and hazardous fuels/wildland urban interface projects will be tested and certified as weed-free, based on prevailing agency policy and protocol. Private landowners are encouraged to use only certified seed, as well.</p>
<p>Action: R.2 ANNUAL GRASSLANDS Design vegetation treatments in areas of high fire frequency to facilitate firefighter safety; reduce the risk of extreme fire behavior; reduce the risk and rate of fire spread to stronghold, key, and restoration habitats(sic sage-grouse); reduce fire frequencies; and shorten the fire season.</p>
<p>Action: R.2 ANNUAL GRASSLANDS Human activities such as fence and pipeline maintenance or construction, facility maintenance, utility maintenance, or any project or related work at or within 1 km (0.6 miles) of occupied leks that results in or will likely result in disturbance to lekking birds should be avoided from approximately 6:00 PM to 9:00 AM. In general, this guideline should be applied from March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats.</p>
<p>Action: R.4 CONIFER ENCROACHMENT Remove Douglas fir or other conifers where they are encroaching on wet meadows, riparian areas, or sagebrush stands that provide potential sage-grouse habitat.</p>
<p>Action: R.4 CONIFER ENCROACHMENT Remove juniper, Douglas fir, pinyon pine, or other trees within at least 100 m (330 ft) or an 8-acre area of occupied sage-grouse leks. The purpose of this procedure is to reduce perching opportunity for raptors or other avian predators within view of leks. Techniques could include chainsaw, chipper, or other suitable mechanical means. Ensure cutting and slash disposal is completed between approximately July 15 and January 30 to minimize disturbance to grouse that may be in the vicinity (e.g., males at leks, nesting females, and young broods). This practice serves to reduce raptor predation on sage-grouse by eliminating potential perches, thereby improving survival, recruitment, and productivity. It may be particularly valuable where avian predation may be of greater concern such as in areas with fragmented habitat, nearby infrastructure features, and/or in the case of small, isolated sage-grouse populations.</p>
<p>Action: R.4 CONIFER ENCROACHMENT Where juniper or other conifer species have encroached upon sagebrush communities at larger scales, employ prescribed fire, chemical, mechanical (e.g., chaining, chipper, chainsaw, or commercial sale), or other suitable methods to reduce or eliminate juniper. Priority should be given to areas where there is a strong likelihood for recovery of perennial herbaceous vegetation or where preparatory and follow-up actions (e.g., control of invasive species and seeding) are likely to be successful. Whenever possible, but especially if sagebrush habitat is limited locally, use juniper-control techniques that are least disruptive to the affected stand of sagebrush. For example, if junipers are only scattered, and the associated sagebrush community is otherwise relatively healthy, cutting junipers with chainsaws will remove the encroachment threat while allowing for immediate use of the sagebrush by sage-grouse. In all cases, control efforts should be planned using interdisciplinary expertise.</p>

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

GOAL: Protect and enhance sage grouse stronghold habitats.
Action: Suppression Priorities: Minimize risk to source, key, and restoration sage grouse habitat. Minimize risk to threatened, endangered, and candidate species habitat. Minimize risk to resources where changes in fuel accumulation and fire occurrence have occurred.
Action: Design vegetation treatments potentially affecting Greater sage-grouse (in Low-elevation Shrub, Mid-elevation Shrub, and Mountain Shrub), conservation measures identified in Appendix R would be considered.
Action: Manage fuels and fire across the sagebrush steppe landscape to provide habitat for a variety of sagebrush-obligate wildlife species as well as other resource benefits. Progress made toward DFC would result in improved habitat for sagebrush steppe obligate species.
Challis Field Office – Challis RMP
<i>Special status species</i>
Goal: Maintain populations of special status species and/or their habitat over the range of natural distribution and habitat conditions. Eliminate the need for listing of sensitive and candidate species and contribute to recovery of listed species by increasing the number or size of populations or by removing threats to species and their habitats.
Objective: Within 10 years, develop BLM Species Management Plans or other types of conservation plans for at least five of the species inventoried under Special Status Species, Goal 1, #4 and 5 above.
<i>Wildlife Habitat</i>
Objective: In the following wildlife habitat areas, unless NEPA analysis and consultation with the IDFG determine that restrictions on a permitted activity are not necessary, BLM permitted activities (other than permitted livestock use, unless restricted elsewhere) would be (1) restricted to prevent disturbance during the specified crucial periods, and (2) designed to eliminate adverse effects (in consultation with the IDFG and other interested publics): Habitat Area Restricted Period Sage Grouse Strutting Grounds 3/1-5/15 Sage Grouse Nesting/Brood-rearing Areas 4/15-6/30
Dillon Field Office – Dillon RMP
<i>Travel and Transportation</i>
See Appendix X pg. 214 Roads and Motorized Vehicles <i>Issue: Roads may increase sage grouse mortality through collisions with vehicles, displacement because of human disturbance, or other factors.</i> 1. Identify, map, quantify, and evaluate impacts of existing roads, including 2-tracks, in relation to known lek locations and sage grouse winter ranges. 2. Consider impacts to sage grouse when designing new roads and modifying existing roads. 3. Consider seasonal use restrictions or signing to avoid disturbance of critical times, such as winter and nesting periods.
<i>Issue: Roads and their associated disturbances and cumulative effects contribute to the loss of habitat and declining sage grouse populations.</i> 1. Develop a transportation management plan across ownership boundaries in critical sage grouse habitats. 2. Participate in travel planning efforts and educate the general public about the impacts of roads on sage grouse and critical habitat. 3. Consider buffers, removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat. 4. Re-vegetate closed roads with plant species beneficial to sage grouse. 5. Close and re-vegetate travel ways in sage grouse habitats where appropriate.

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

6. Provide sage grouse habitat information during the planning phases of transportation development, working with MDOT, FHWA, industry, counties, etc.
<i>Recreation and Visitor Services</i>
Appendix X pp. 214 Recreational Disturbance of Sage Grouse <i>Issue: Management of lek viewing may be necessary.</i> Action 5. Issue special use permits for certain activities with distance and timing restrictions to maintain the integrity of breeding habitat.
<i>Lands and Realty</i>
See appendix X pg. 213 Powerlines and Generation Facilities <i>Issue: Existing power lines near a lek, brood-rearing habitat, or winter habitat increases the risk of predation on sage grouse by raptors.</i> 1. Document the segment(s) of line causing problems. 2. Determine by cooperative action- agencies, utilities, and landowners- whether or not modification of poles to limit perching will prevent electrocution of raptors and decrease predation on sage grouse. 3. Emphasize the following if perch prevention modifications do not work to protect sage grouse and sagebrush habitat: a) reroute the line using distance, topography, or vegetative cover; or b) bury the line. 4. Explore opportunities for technical assistance and funding. 5. Remove power line when use is completed. <i>Issue: Existing power line is causing consistent or significant collision mortality on sage grouse.</i> 1. Document the segment(s) of line causing consistent or biologically significant mortality- with agencies, utilities, and landowners cooperating in the effort. 2. Initiate collision prevention measures using guidelines (Avian Power Line Action Committee 1994) on identified segments. Measures are subject to restriction or modification for wind and ice loading or other engineering concerns, or updated collision prevention information. 3. Remove power lines that traverse important sage grouse habitats when facilities being serviced are no longer in use or when projects are completed.
<i>Range Management</i>
Pg. 69 Action 3 - identifies SG habitat as priority habitat. 3 Consider the following habitats priority wildlife habitats: • all listed and special status species habitats, with grizzly bear and lynx receiving the most emphasis in coniferous forest habitats, and sage grouse receiving the most emphasis in sagebrush steppe habitats • coniferous forest and sagebrush habitats that provide important big game winter habitat • sagebrush habitats that provide bighorn sheep year-long or seasonal habitats • sagebrush habitats that provide sage grouse breeding, early brood rearing, or winter habitat • mountain mahogany and sagebrush steppe habitat associations in the Lima Sweetwater Breaks key raptor management area • all riparian and wetland habitats 4 Consider the following species priority wildlife species: • all listed and special status species, with grizzly bear, lynx, and sage grouse receiving the most emphasis • bighorn sheep Pg. 73 Actions 42, 43, 44 <i>Sagebrush Steppe Wildlife Habitats</i>

Table G-1
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<p>42. Use the National and Montana sage grouse conservation strategies (see Appendix X) as the basis to address habitat management in the watershed planning process and in project level analysis.</p> <p>43. Manage sagebrush habitats so that mid-scale level shrub cover includes a mix of height classes with herbaceous understory adequate for meeting seasonal habitat requirements for sage grouse and other wildlife species that use sagebrush habitat including wintering antelope and mule deer.</p> <ul style="list-style-type: none">• In habitats with predominately mountain big sage-brush, manage sites with the potential to support sagebrush in a manner that maintains > 70 percent of those areas in canopy closure of 5 to 25 percent.• In habitats that include predominately Wyoming big sagebrush, manage sites with ecological potential to maintain sagebrush over at least 60 per-cent of those areas in a canopy closure of 5 to 25 percent.• Maintain an herbaceous understory emphasizing multiple species of native forbs and grasses, recognizing that herbaceous productivity decreases at >10-15 percent canopy cover.• Emphasize restoration and rehabilitation of sage-brush in areas that are capable of supporting sage-brush and contribute to the distribution and connectivity of patches. <p>44. When making project decisions located in sage grouse habitats, objectives for sage grouse habitats and relevant information about sage grouse seasonal habitat will be considered when determining the desired resource condition. If specific issues regarding sage grouse are identified, applicable conservation actions or guidelines will be reviewed by interdisciplinary teams and considered in the decision-making process. None of the conservation actions or guidelines in the Management Plan and Conservation Strategies for Sage Grouse in Montana will be construed as mandatory or standards.</p> <p>Appendix X – pg. 208 Grazing Management <i>Issue: Conflicting priorities for land uses, species, and habitats.</i></p> <ol style="list-style-type: none">1. Use scientific data and historic information to establish baseline information when evaluating soil conditions and ecological processes and when monitoring seasonal sage grouse habitats.2. Set specific habitat objectives and implement appropriate grazing management to achieve those objectives and maintain or improve vegetation condition and trends.
<p>Appendix X pg. 208 action 3 Grazing Management <i>Issue: Conflicting priorities for land uses, species, and habitats.</i></p> <ol style="list-style-type: none">3. Offer private landowners incentives when and where appropriated to achieve sage grouse objectives.
<p>Appendix X pg. 208 <i>Issue: Some sagebrush communities may have been significantly altered by past grazing management practices.</i></p> <ol style="list-style-type: none">1. Implement appropriate grazing management strategies and range management practices where soil conditions and ecological processes will support sage grouse and desired commodities and societal values.2. Establish suitable goals for sagebrush communities that have deteriorated to such an extent that livestock management alone may not contribute to habitat objectives.
<p>Pg. 55 <i>Goal</i> Restore and maintain riparian wetland areas so that at least 955 miles of streams and 2,050 acres of wetlands are in proper functioning condition. Design management to achieve objectives (Desired Future Conditions) or initiate an upward trend in 20 years.</p> <p>Appendix X - Grazing Mngmt pg. 209 <i>Issue: Riparian areas (wet meadows, seeps, streams) are important resources for sage grouse and livestock.</i></p> <ol style="list-style-type: none">1. Design and implement livestock grazing management practices (riparian pastures, seasonal grazing,

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

<p>development of off-stream water facilities, etc.) to achieve riparian management objectives.</p> <ol style="list-style-type: none">2. Modify or adapt pipelines and natural springs, where practical, to create small wet meadows as brood habitat.3. ensure the sustainability of desired soil conditions and ecological processes within upland plant communities following implementation of strategies to protect riparian areas. This can be achieved by:<ul style="list-style-type: none">• protecting natural wet meadows and springs from over-use while developing water for livestock, and• plan the location, design, and construction of new fences to minimize impacts on sage grouse.
<p>Pg 51 Action 14</p> <p>Improve existing seedings that are not meeting range-land health standards for plant vigor and density by implementing grazing management systems or re-seeding with appropriate species of natives or cultivars. Focus restoration of any existing seedings on areas containing high resource values and/or priority habitats and species. Allow the use of all available tools.</p> <p>Appendix X pg. 215</p> <p><i>Issue: The age distribution of sagebrush may have been altered by management, such as a young stand recovering from disturbance or a mature stand with poor regeneration.</i></p> <ol style="list-style-type: none">1. Map and inventory areas believed to be deficient in quality of habitat or exhibiting poor health.2. Evaluate the site potential and desired condition, and develop specific objectives accordingly within specific landscapes.3. If sagebrush is lacking:<ol style="list-style-type: none">a) develop and implement grazing practices that influence sagebrush growth,b) inter-seed historical breeding and winter habitats with the appropriate sagebrush species,c) identify and promote seed sources for habitat restoration efforts,d) encourage the voluntary use of sagebrush in habitat incentive programs, such as the Conservation Reserve Program, and work to develop additional funding sources for such programs,e) reclaim and/or re-seed areas disturbed by treatments when necessary, andf) promote sage plantings, where appropriate, on project areas occurring within sage grouse habitats. <p><i>Issue: The plant community has been altered and lack a diverse herbaceous understory.</i></p> <ol style="list-style-type: none">1. Map and inventory areas believed to be important sage grouse breeding habitats.2. Evaluate the site potential and desired condition within the context of a larger landscape.3. Develop and implement techniques to increase herbaceous diversity and density in sagebrush-steppe within ecological limits.4. Ensure that grazing practices allow plants to grow to seed ripe on a rotational basis.5. Adjust livestock grazing management when necessary, such as the season of use/projects, to promote forb establishment and recruitment.6. Identify large areas of introduced plant species, such as crested wheat, and determine if restoration efforts are deemed appropriate.7. Inter-seed appropriate breeding habitats with forbs as identified by the specialists and affected interests.
<p>Pg. 73 Action 44</p> <p>44. When making project decisions located in sage grouse habitats, objectives for sage grouse habitats and relevant information about sage grouse seasonal habitat will be considered when determining the desired resource condition. If specific issues regarding sage grouse are identified, applicable conservation actions or guidelines will be reviewed by interdisciplinary teams and considered in the decision-making process. None of the conservation actions or guidelines in the Management Plan and Conservation Strategies for Sage Grouse in Montana will be construed as mandatory or standards.</p>

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<p><i>Issue: It is important to maintain viable sagebrush habitat and populations of sage grouse while eradicating infestations of noxious weeds.</i></p> <ol style="list-style-type: none"> 1. Employ integrated weed management treatment methods such as a combination of biological and cultural, such as grazing, mowing, or seeding treatments in conjunction with herbicides to manage weeds in sage grouse habitat. 2. Use the most selective herbicides where chemical treatment is appropriate, to minimize loss of non-target plant species. 3. Restore plant communities with desired species adapted to the site, using proven management techniques where biologically feasible. A restoration program may be necessary if conditions prevent natural plant species.
<p>Appendix X pg. 211</p> <p><i>Issue: Water discharge and impoundments can degrade or inundate breeding, nesting, and winter habitat.</i></p> <ol style="list-style-type: none"> 1. Design impoundments and manage discharge so as not to degrade or inundate leks, nesting sites, and wintering sites. 2. Protect natural springs from any source of disturbance or degradation from energy-related activities.
<p>Appendix X pg 209</p> <p><i>Issue: Potential for sage grouse to be disturbed or displaced by concentrations of livestock near leks or winter habitat.</i></p> <ol style="list-style-type: none"> 1. Discourage concentration of livestock on leks or other key sage grouse habitats. <ul style="list-style-type: none"> • Avoid placement of salt or mineral supplements near leks during the breeding season (March-June), and • Avoid supplemental winter feeding of livestock, where practical, on sage grouse winter habitat and around leks <p><i>Issue: Existing fences near breeding, brood-rearing, or winter habitats can increase the risk of collision mortalities and / or predation on sage grouse by hawks, eagles, and ravens by providing perches.</i></p> <ol style="list-style-type: none"> 1. If portions of existing fences are found to pose a significant threat to sage grouse as strike sties or raptor perches, mitigate through moving or modifying posts, implementation of predator control programs, etc. Actions may include increasing the visibility of the fences by flagging or by designing “take-down” fences. 2. Offer private landowners incentives when and where appropriate to achieve sage grouse objectives.
<p><i>Fluid Minerals</i></p> <p>RMP Final EIS Alt. C Pg. 53 Table 6 lists stipulations that were analyzed. Winter/Spring habitat – NL Leks – NL ½ mile buffer Breeding habitat – NSO</p> <p>NL = no lease NSO = no surface occupancy</p> <p>Under Alternative C, 80 percent (1,086,596 acres) of the planning area would not be available for oil and gas leasing. This includes all the lands identified in Alternative B, plus lands in these additional locations:</p> <ul style="list-style-type: none"> • Sage Grouse Winter/Spring Range • Lands within 1/2 mile of Sage Grouse Strutting Grounds (leks)
<p>Appendix X. pg 210-211 Mining and Energy Development <i>Issue: Energy development may adversely affect sage grouse.</i></p>

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1. Work cooperatively – agencies, utilities, and landowners – to identify and map important seasonal ranges for sage grouse.
2. Complete a broad scale assessment to identify important areas that require additional protection or conservation during land use planning and leasing of energy reserves.
3. Prioritize areas relative to their need for protection – ranging from complete protection to availability for moderate to high levels of energy development.
 4. Encourage development in incremental stages to stagger disturbance (federal leases range from 3-10 years); design schedules that include long-term strategies to localize disturbance and recovery within established zones over a staggered time frame.
 5. Provide technical assistance to private landowners who lease privately owned fee minerals.
 6. Use off-site mitigation, such as the creation of sage-brush habitat, or purchase conservation easements with industry dollars to offset habitat losses.
 7. Remove facilities and infrastructure when use is completed.
 8. Enhance our understanding of the effects of energy development through:
 - a) pre-activity inventory,
 - b) monitoring over the life of the development, and
- c) Annual evaluations.

Issue: Increased roads, pipelines, and power lines can fragment sagebrush habitats.

1. Develop a comprehensive infrastructure plan prior to energy development activities to minimize road densities.
2. Avoid locating roads and power lines in crucial sage grouse breeding, nesting, and wintering areas.
3. See conservation actions for siting and constructing power lines.
4. Use minimal surface disturbance to install roads and pipelines and reclaim site of abandoned wells to natural communities.

Issue: Energy-related facilities located within 2 miles of a sage grouse lek can degrade habitat quality within existing leases.

1. Locate storage facilities, generators, and holding tanks outside the line of sight and sound of important breeding habitat.
2. Minimize ground disturbance in sagebrush stands with documented use by sage grouse:
 - a) breeding habitat – the lek and associated stands of sagebrush,
 - b) nesting habitat – stands of sagebrush within 2 miles of a lek, and
 - c) wintering habitat – sagebrush stands with documented winter use by sage grouse with portions that would remain above the snow even during years of deep-snow conditions.
3. Concentrate energy-related facilities when practicable.

Wildland Fire Management

Appendix X pg.207

Conservations measures for
Fire Management

Issue: Reduction of sagebrush by prescribed fire.

1. Sites should not be burned unless:
 - a) biological and physical limitations of the site and impact on sage grouse are identified and considered,
 - b) management objectives for the site, including those for wildlife, are clearly defined,
 - c) potential for weed invasion and successional trends are well understood, and
 - d) capability exists to manage the post-burn site properly, including a funded monitoring schedule, to achieve a healthy sagebrush community.

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2. Develop local or regional guidelines, such as the Beaverhead-Deer Lodge Forest/FWP guidelines in the intermountain valleys, or consider the following guide-lines if fire is used as a tool elsewhere:
 - a) analyze cumulative effects of sagebrush treatment by considering ecological units, evaluate the degree of fragmentation, and maintain a good representation of mature sagebrush,
 - b) predict effects for the length of time necessary for sagebrush to return to desired condition for deter-mine treatment types and intervals,
 - c) identify suitable patch size based on site-specific characteristics of the natural community and treat patches in a mosaic pattern that provides sagebrush cover for snow capture, hiding cover, and a seed source,
 - d) use available literature to research the effects of fire on sagebrush communities,
 - e) use caution in reducing sagebrush cover in and following drought periods,
 - f) work cooperatively with public agencies, academia, and private landowners to establish conservation objectives for the project area, and
 - g) map all burns within one year of treatment, monitor vegetative response, and develop a GIS layer of burn history.
3. Develop treatments to improve habitats over the long term if sagebrush stands do not meet objectives for sage grouse, such as confining treatments to small patches.
4. Consider mechanical treatment as the primary method and prescribed fire as a secondary method to remove conifers that encroach on sage grouse habitat, except where forested habitat is limited.
5. Avoid treatments to sage grouse habitat in areas that are susceptible to invasion by cheatgrass or other invasive plant species. Treatment will be accompanied by restoration, and reseeded if necessary, to re-establish native vegetation.
6. Protect sagebrush along riparian zones, meadows, lakebeds, and farmlands that include important sage grouse habitat:
 - a) winter habitat,
 - b) breeding habitat, and
 - c) nesting habitat.
7. Wash vehicles and heavy equipment for fires prior to arrival at a new location to avoid introduction for noxious weeds.

Livestock Grazing
Pg 43 Action 16

16. Rest vegetation treatment areas (e.g., prescribed burns) from livestock grazing up to one year prior to treatment (if necessary) to maintain fine fuels for burning, and for a minimum of two growing seasons following treatment to promote recovery of vegetation. Livestock rest for less than two growing seasons could be justified on a case-by-case basis.

Appendix X pg.208

Conservations measures for
Fire Management

Issue: Reduction of sagebrush by wildfire.

1. Schedule annual coordination meetings – with appropriate resource staff including fie specialists, wildlife biologists, and range ecologists – to incorporate new sage grouse habitat and other wildlife habitat information needed to set wildfire suppression priorities related to resources. Distribute updates to fire dispatchers for initial attack planning.
2. Identify the location of know sage grouse habitat and other wildlife habitats of concern, such as latitude and longitude with a polygon and radius, to avoid disturbance or degradation by temporary facilities, such



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<p>as fire camps, staging areas, and helibases.</p> <p>3. Incorporate known sage grouse habitat information into each Wildfire Situation Analysis to help determine appropriate suppression plans and prioritize multiple fires.</p> <p>4. Retain unburned areas of sage grouse habitat, such as interior islands and patches between roads and fire perimeter, unless compelling safety, resource protection, or control objectives are at risk.</p>
<p>Appendix X pg.208</p> <p><i>Issue: Rehabilitation and restoration of sagebrush grass-lands.</i></p> <p>1. Assure that long-term wildfire rehabilitation objectives are consistent with the desired natural plant community.</p> <p>2. Re-vegetate burned sites in sage grouse habitat within one year unless natural recovery of the native plant community is expected. Areas disturbed by heavy equipment will be given priority consideration.</p> <p>3. Emphasize native plant species adapted to the site that are readily available and economically and biologically feasible.</p> <p>4. Monitor the site and treat for noxious weeds.</p> <p>5. Allow a minimum of two growing seasons of rest from grazing by domestic livestock unless there are specific restoration objectives using livestock.</p> <p>WAFWA guidelines are incorporated in Appendix X and include restoration guidelines.</p>
<p>Four Rivers Field Office - Cascade RMP</p>
<p><i>Wildlife – Sage-grouse</i></p>
<p>Action: No sagebrush control work would be allowed on sage grouse nesting and wintering habitat where live sagebrush canopy cover is less than 20%.</p>
<p>Action: Treatment measures should be applied in irregular patterns using topography and other ecological considerations to minimize adverse effects to the sage grouse resource.</p>
<p>Action: Where fire is used as a habitat management tool, it should be used in such manner as to result in a mosaic pattern of shrubs and open areas, with openings, optimally from 1 to 10 acres in size.</p>
<p>Action: Maintain the density of sagebrush canopy coverage at 20-30% within nesting habitats and at least 20% in wintering habitats.</p>
<p>Action: No control of sagebrush would be considered in any area known to have supported important wintering populations of sage grouse in the past 10 years.</p>
<p>Action: Seed mixtures for range improvement projects and fire rehabilitation projects will include a mixture of grasses, forbs and shrubs that benefit sage grouse.</p>
<p>Action: Improve sage grouse brood rearing habitat where sagebrush canopy cover is greater than 20% by removing sagebrush in small irregular areas and then reseeding.</p>
<p>Action: Sage Grouse Winter Range Occupancy Restrictions for Oil, Gas, Geophysical Exploration and Development and Major Construction 12/1 to 2/15 Entire Habitat Area</p>
<p>Action: Sage Grouse Breeding Grounds Occupancy Restrictions for Oil, Gas, Geophysical Exploration and Development and Major Construction 2/15 to 6/30 Entire Habitat Area</p>
<p>Action: Sage Grouse Nesting/Brood Rearing Occupancy Restrictions for Oil, Gas, Geophysical Exploration and Development and Major Construction 4/15/6/30 2-mile radius from lek</p>
<p><i>Special Status Species – Wildlife, Sage-grouse</i></p>
<p>Objective: Manage 185,860 acres of sage grouse habitat to improve brooding and nesting habitat.</p>
<p>Four Rivers Field Office – Kuna MFP</p>
<p>Wildlife</p>
<p>Objective WL-1: Protect and/or improve endangered species habitat within the Kuna Planning Unit.</p>
<p>Objective WL-2: Manage sensitive species habitat in the KPU to maintain or increase existing and potential</p>

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populations.
WL-4.4 Manage 83,600 acres of sage grouse range to improve nesting, brood rearing, and winter habitats by: (1) improving all poor and fair big sagebrush, meadow, and riparian ecological sites to good ecological condition, and (2) referring to and addressing the "Guidelines for Habitat Protection in Sage Grouse Range" as published by the Western States Sage Grouse Committee, June 1974, when making management decisions affecting areas used by sage grouse in the KPU.
<i>Livestock Grazing</i>
RM1.1 Implement AMPs on 7 allotments and less-intensive management on 19 allotments (Overlay RM-4). Allotments are listed in priority order. Adjust management or exclude grazing on sage grouse brood-rearing areas to improve habitat. Design grazing management to improve crucial antelope winter/early spring ranges.
RM-1.8 Treat an estimated 4,600 acres (2,900 acres brush control and 1,700 acres brush control and reseeding) to reduce invasion of less desirable species, improve range condition, and increase grazing capacity, subject to the following conditions: a. If sprays are used, maintain a buffer of 150 feet around perennial streams and riparian habitat. b. Allow for a sufficient forage-to-cover ratio to meet wildlife needs in winter ranges for mule deer, antelope, and sage grouse. c. Design projects with irregular control lines, feathered edges, and natural contours. On sites treated by mechanical means, drainages and occasional brush islands will be left untreated.
Four Rivers Field Office - Morley Nelson Snake River Birds of Prey National Conservation Area
<i>Vegetation - General</i>
Goal: The uplands would provide habitats to increase the populations of shrub obligate animals.
Goal: Sagebrush and salt desert shrub communities would be the dominant vegetation type and would include a mosaic of multi-aged shrubs, forbs, and native and adapted non-native perennial grasses.
Objective: Limit further loss of existing native shrub habitat to no more than 30,000 acres and increase the acres of restored shrub habitat.
<i>Wildlife</i>
Goal: The distribution, abundance, and quality of wildlife habitats would be maintained or improved to provide food, cover, and space for healthy populations of game and nongame wildlife through the seasons, as well as through various life stages.
Goal: Distribution and condition of habitats would contribute to the long-term viability of federally listed and BLM sensitive species and to their resilience to environmental change.
Convert approximately 100,000 acres of annual grasslands to a perennial plant community through a combination of biological, chemical, and mechanical fuels management projects. This is in addition to habitat restoration projects.
Jarbidge Field Office - Jarbidge RMP
<i>Vegetation - Rangeland</i>
Action: No chemical control of sagebrush will be allowed.
Goal: Manage all ecological sites on mule deer, pronghorn, elk, bighorn sheep and sage grouse habitat currently in fair or poor ecological condition, for good ecological condition.
<i>Special Status Species – Wildlife, Sage-grouse</i>
Goal: Protect and enhance endangered, threatened, and sensitive species habitats in order to maintain or enhance existing and potential populations within the planning area.
Objective: Where applicable, "Guidelines for Habitat Protection in Sage Grouse Range" and "Sage Grouse Management Practices" (Technical Bulletin No. 1) – Western States Sage Grouse Committee, June 1974, and 1982 respectively, will be followed.
Action: No control work would be allowed where live sagebrush cover is less than 20%.

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

Action: Treatment measures should be applied in irregular patterns using topography and other ecological considerations to minimize adverse effects to the sage grouse resource.
Action: Maintain the density of sagebrush canopy coverage at 20-30% within nesting habitats and at least 20% in wintering habitats.
Action: No control of sagebrush would be considered in any area known to have supported important wintering populations of sage grouse in the past 10 years.
Action: Seed mixtures for range improvement projects and fire rehabilitation projects will include a mixture of grasses, forbs, and shrubs that benefit sage grouse.
Action: Improve sage grouse brood rearing habitat where sagebrush canopy cover is greater than 20% by removing sagebrush in small irregular areas and then reseeding.
Action: Wildlife Habitat Occupancy Restrictions: No occupancy in sage grouse winter range (entire habitat area) from December 1 through February 15.
Action: Wildlife Habitat Occupancy Restrictions: No occupancy in sage grouse breeding grounds (entire habitat) from February 15 through June 30.
Action Wildlife Habitat Occupancy Restrictions: No occupancy in sage grouse nesting/brood rearing habitat within 2 miles radius from a lek from April 15 through June 30.
Goal: Priority for habitat management will be given to habitat for listed and candidate threatened or endangered species and sensitive species.
<i>Livestock Grazing</i>
Objective: Maintain present levels of upland game bird nesting and cover habitat.
<i>Lands and Realty</i>
Action: Any public lands where rare, endangered, threatened, or sensitive species of plant or animal are known to live (or nest) would be found unsuitable for disposal, unless mitigation is possible.
<i>Fluid Minerals</i>
Action: Occupancy for oil and gas activities will be restricted in crucial wildlife habitats as shown in Table 1. (see sage-grouse section for occupancy restrictions).
Owyhee Field Office – Owyhee RMP
<i>Soil and Water</i>
Action: Implement a juniper abatement plan for appropriate sites on which juniper is invading.
<i>Wildlife</i>
Action: Design and implement vegetation treatments to improve habitat where juniper or shrub density is contributing to unsatisfactory habitat conditions. All treatments will be designed to protect scarce, unique and highly productive wildlife habitat types, retain large interconnected blocks of more common habitat types and accommodate specific wildlife habitat requirements including migration corridors for big game. Reseed burns with a variety of shrubs, forbs and grasses. Rest all burns and seedings from livestock grazing for a minimum of two growing seasons following treatment.
Action: Retain all public land within crucial and other high quality wildlife habitats unless exchanging for land of equal or higher value and acquire additional high quality habitat through purchase or exchange with willing landowners. These include but are not limited to wetland/riparian habitats, crucial big game winter habitat and isolated tracts and shrublands adjacent to agricultural areas that provide important cover for upland game. Isolated tracts will be grazed only if needed to maintain or improve wildlife habitat.
<i>Special Status Species – Wildlife, sage-grouse</i>
Objective (SPSS 1): Manage special status species and habitats to increase or maintain populations at levels where their existence is no longer threatened and there is no need for listing under the Endangered Species Act of 1973, as amended. See Tables SPSS-1 and SPSS-2.
Action (9): Identify, protect, and enhance key sage grouse habitats and populations. Guidance for

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

enhancement and protection is addressed in the Memorandum of Agreement in the 1997 Idaho Sage Grouse Management Plan (March 1998). Subsequent guidance may become available through the development of plans by local sage grouse working groups or similar efforts.
Action (1): Prepare, revise, and implement Habitat Management Plans (HMPs) and other resource activity plans and cooperate in the development and implementation of Recovery Plans, Conservation Agreements and Strategies and species management plans to ensure that objectives for special status plant and animal species are incorporated and met.
Action (4): Acquire additional high quality habitat for special status species through purchase or exchange with willing landowners.
<i>Wildland Fire Management</i>
Objective (FIRE 5): Modify standard suppression techniques to protect sensitive resource values.
Action (2): Use any and all available fire suppression techniques to protect the Silver City area, cultural ACECs, and unique wildlife habitat areas.
Pocatello Field Office - Pocatello RMP and Malad MFP
<i>Wildlife - Malad</i>
Objective: Improve and maintain the sage grouse habitat to support current sage grouse population numbers (1200 birds on public lands) through 1985.
Decision: At least 20% of live vegetation left within land treatment projects will be composed of sagebrush where sage grouse needs have been identified. A 100 yard sage brush buffer will be retained along meadows and perennial drainages.
Decision: Vegetative control will exclude known sage grouse winter areas.
<i>Wildlife - Pocatello</i>
Objective: Improve 3,126 acres of sage grouse and sharp-tailed grouse seasonal ranges from fair to good ecological range condition.
<i>Wildland Fire Management – Malad & Pocatello</i>
Goal: Protect and enhance sage grouse source habitats as well as enhance key ecological components in plant and animal communities.
Objective: Maintain, protect, and expand sage grouse source habitats.
Action: Suppress wildland fires in source habitats, except where WFU would benefit habitat.
Action: Allow WFU in sage grouse habitats for the benefit of the habitat only after site-specific project level coordination with IDFG.
Action: Conduct vegetation treatments in areas that pose a wildland fire risk to source habitats.
Action: Treat areas with source habitats that have low resiliency (i.e., areas characterized by low species diversity, undesirable composition, and dead or decadent sagebrush)
Action: Following wildland fire, WFU and prescribed fire treatments, use chemical, mechanical, and seeding treatments with appropriate plant materials to attempt to stabilize sites and prevent dominance of invasive, annual vegetation, and noxious weeds.
Action: Use native plant materials where determined to be appropriate and practical at the project-implementation level.
Objective: Treat sage grouse key and restoration habitats to expand source habitats. Improve and maintain sage grouse Restoration (R1-3) and key habitats.
Action: Use AMR to wildland fire in all sage grouse restoration and key habitats and healthy wildlife habitats.
Action: WFU may be allowed in historically frequent fire regimes to restore fire's natural role and in sage grouse restoration and key habitats for the benefit of the habitat only after site-specific project level consultation/collaboration with IDFG.

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

Action: Conduct vegetation treatments in restoration and key habitats to reduce risk of wildland fire and reconnect restoration and key habitats.
Action: Treat areas of restoration and key habitats that have low resiliency characterized by low species diversity.
Objective: Apply Greater sage-grouse conservation measures and management restrictions for fire suppression and fire and non-fire vegetation treatments for the following disciplines:
<p>Action: Implement the following Greater sage-grouse conservation measures: Conservation Measures Considered in Developing Vegetation Treatments Potentially Affecting Greater Sage-Grouse</p> <p>Prescribed Fire</p> <ul style="list-style-type: none"> • Prior to planning prescribed burns or other vegetation management treatments in sagebrush communities, ensure that sage-grouse seasonal habitats have been mapped (see 5.3.2 for additional discussion of mapping). • Once seasonal habitats have been mapped, ensure that proposed project areas have been evaluated on the ground in the context of the appropriate seasonal habitat characteristics (see 5.3.2). • Avoid the use of prescribed fire and other sagebrush-reduction projects in areas where sagebrush is limiting on the landscape or in habitats that currently meet, or are trending toward meeting, breeding or winter habitat characteristics. • If the analysis shows that a vegetation treatment may still be advisable, design habitat-manipulation projects to achieve the desired objectives, considering the following: <ul style="list-style-type: none"> ▪ Where prescribed burning, or other treatments, in sage-grouse habitats may be warranted (e.g., sagebrush cover exceeds desired breeding or winter habitat characteristics; understory does not meet seasonal habitat characteristics and restoration is desired; there is a need to restore ecological processes; or a proposed treatment site is in an exotic seeding being managed for overall sage-grouse benefits on the surrounding landscape). ▪ Project design should be done with interdisciplinary input and in cooperation with IDFG. ▪ Ensure that any proposed sagebrush treatment acreage is conservative in the context of surrounding seasonal habitats and landscape. ▪ Where appropriate, ensure that treatments are configured in a manner that promotes use by sage-grouse (see Connelly 2000 for additional discussion). ▪ Leave adequate untreated sagebrush areas for loafing/hiding cover near leks for sage-grouse. • Evaluate and monitor prescribed burns, and other treatments, as soon as possible after treatment and periodically thereafter to determine whether the project was successful and is meeting or trending toward desired objectives. • Avoid the use of prescribed fire or other sagebrush treatments in habitats prone to the expansion or invasion of cheatgrass or other invasive species unless adequate measures are taken to control the invasive species and ensure subsequent dominance by desirable perennial species. In many—if not most—cases, this will likely require chemical treatments and reseeded. • Plan, execute, and monitor prescribed fires in a manner that provides for adequate control and provision for contingency resources. • Ensure that burn plans address the importance of preventing escaped fires when prescription fires are planned in the vicinity of stronghold and key habitat. <p>Annual Grasslands</p> <ul style="list-style-type: none"> • Local working groups (LWG), land management agencies, IDFG, and other partners should work

Table G-1
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closely together to identify and prioritize annual grassland areas for restoration. Work cooperatively to identify options, schedules, and funding opportunities for specific projects.

- In general, the priority for implementation of specific sage-grouse habitat restoration projects in annual grasslands should be given first to:
 - Sites adjacent to or surrounded by sage-grouse stronghold habitats, then
 - Sites outside stronghold habitats but adjacent to or within approximately two miles of key habitat, and
 - Sites beyond two miles of key habitat. The intent here is to focus restoration outward from existing, intact habitat.
- All seeding project designs should include measures for noxious weed control and monitoring for at least 3 years following implementation.
- Seed used in sage-grouse habitat restoration seedings, burned area rehabilitation projects, and hazardous fuels/wildland urban interface projects will be tested and certified as weed-free, based on prevailing agency policy and protocol. Private landowners are encouraged to use only certified seed, as well.
- In designing rehabilitation and restoration projects, use the best available science relative to seeding technology and plant materials. Use of NRCS's "VegSpec" website may be helpful. VegSpec is a web-based decision support system that assists land managers in the planning and design of vegetation establishment practices. VegSpec uses soil, plant, and climate data to select plant species that are site-specifically adapted, suitable for the selected practice, and appropriate for the purposes and objectives for which the planting is intended. (See <http://plants.usda.gov>).
- Design vegetation treatments in areas of high fire frequency to facilitate firefighter safety; reduce the risk of extreme fire behavior; reduce the risk and rate of fire spread to stronghold, key, and restoration habitats; reduce fire frequencies; and shorten the fire season.
- Where rangelands are dominated by annuals (such as cheatgrass) or where they border farmlands or railroad right-of-ways, convert cheatgrass areas to perennials, or establish buffers of perennial species to reduce the risk of fire spread from railroad or agriculture-related activities (e.g., sparks from trains, field burns, burn barrels), where appropriate and feasible.
- To discourage the spread of invasive annuals and noxious weed seed, require the washing of fire vehicles (including undercarriage) prior to deployments and prior to demobilization from wildfire incidents.
- Human activities such as fence and pipeline maintenance or construction, facility maintenance, utility maintenance, or any project or related work at or within 1 km (0.6 miles) of occupied leks that results in or will likely result in disturbance to lekking birds should be avoided from approximately 6:00 PM to 9:00 AM. In general, this guideline should be applied from March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats.

Perennial Grasslands

- LWGs, land management agencies, IDFG, and other partners should work closely together to identify and prioritize perennial grasslands (exotic versus native) where plant species diversity or sagebrush is limiting on the landscape. Further, they should work cooperatively to identify options, schedules, and funding opportunities for reestablishing sagebrush in higher priority areas.
- When seeding sagebrush, source-identified, tested seed adapted to local conditions should be used.
- One or more of the following approaches for restoring sagebrush should be considered to improve likelihood of success (see Dalzell 2004 and Monsen et al. 2004):
- Use of the "Oyer" compact row seeder, which compacts soil and presses seed into the surface.

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- Use of the Brillion cultipacker seeder, where seed is broadcast over the surface followed by cultipacking.
- Transplant bare-root or containerized stock in small critical areas to establish a seed source.
- Use the "mother plant" technique, and transplant bare-root or containerized stock in select locations throughout the area to establish a seed source.
- For large areas (e.g., large wildland fires), aerial seed onto a rough seedbed (Monsen et al. 2004) coupled with one or more of the above options.
- In established stands of introduced perennial grasses, transplant sagebrush into strategic patches or strips in critical sites or throughout the area. Scalp spots or strips to reduce grass competition prior to planting. Or, as an alternative to scalps, consider the use of herbicides (see Monsen et al. 2004, Volume 3).
- Where the diversification of crested wheatgrass or similar seedings with native species of grasses, forbs, and/or shrubs is desired, Pellant and Lysne (2005) recommend a three-step process:
 - Reduce competition of crested wheatgrass to facilitate the establishment and persistence of the desired species. Possibilities include use of livestock, capitalizing on drought episodes that reduce grass vigor, herbicides such as glyphosate, and mechanical treatments.
 - Introduce desired, site-adapted species through drill seeding; aerial seeding followed by harrow, cultipacker or churning; livestock trampling; or transplanting container stock, bareroot stock, or individual plants from native sources ("wildings"). Lambert (2005) provides descriptions, recommended seeding rates, and other useful information for nearly 250 species of native and non-native grasses, forbs, and shrubs.
 - As part of post-treatment management, ensure that livestock grazing and rest intervals are matched with the phenology and life history characteristics of the desired/seeded/transplanted species. Implement monitoring to clearly document how, what, when, and where treatments were implemented. Follow up with suitable effectiveness monitoring to document success of the treatments relative to project objectives.

Conifer Encroachment

- LWGs, land management agencies, IDFG, and other partners should work closely together to identify and prioritize conifer encroachment areas for further management action. Work cooperatively to identify options, schedules, and funding opportunities for specific projects. For western juniper, Miller et al. (2005) provide *Guidelines for Selecting the Most Appropriate Management Actions*, pages 54–57.
- IDFG, land management agencies, LWGs, and other partners should work closely together to identify leks where conifer encroachment may be affecting lek attendance or nearby habitat quality.
- Remove Douglas fir or other conifers where they are encroaching on wet meadows, riparian areas, or sagebrush stands that provide potential sage-grouse habitat.
- Remove juniper, Douglas fir, pinyon pine, or other trees within at least 100 m (330 ft) or an 8-acre area of occupied sage-grouse leks. The purpose of this procedure is to reduce perching opportunity for raptors or other avian predators within view of leks. Techniques could include chainsaw, chipper, or other suitable mechanical means. Ensure cutting and slash disposal is completed between approximately July 15 and January 30 to minimize disturbance to grouse that may be in the vicinity (e.g., males at leks, nesting females, and young broods). This practice serves to reduce raptor predation on sage-grouse by eliminating potential perches, thereby improving survival, recruitment, and productivity. It may be particularly valuable where avian predation may be of greater concern such as in areas with fragmented habitat, nearby infrastructure features, and/or in the case of small, isolated sage-grouse populations.

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- Where juniper or other conifer species have encroached upon sagebrush communities at larger scales, employ prescribed fire, chemical, mechanical (e.g., chaining, chipper, chainsaw, or commercial sale), or other suitable methods to reduce or eliminate juniper. Priority should be given to areas where there is a strong likelihood for recovery of perennial herbaceous vegetation or where preparatory and follow-up actions (e.g., control of invasive species and seeding) are likely to be successful. Whenever possible, but especially if sagebrush habitat is limited locally, use juniper-control techniques that are least disruptive to the affected stand of sagebrush. For example, if junipers are only scattered, and the associated sagebrush community is otherwise relatively healthy, cutting junipers with chainsaws will remove the encroachment threat while allowing for immediate use of the sagebrush by sage-grouse. In all cases, control efforts should be planned using interdisciplinary expertise. Where juniper control around leks is planned, monitor leks for at least three consecutive years post-treatment to document effects on lek attendance. Ideally, two to three years of pre-treatment monitoring is also recommended, but this may not always be feasible.

Suppression Restrictions

Fire Management

- A Wildland Fire Situation Analysis will be initiated as per the Redbook (Interagency Standards for Fire and Aviation Operations).
- Interagency cooperation will be maintained to facilitate coordinated fire management activities across administrative boundaries.
- Wildland fire suppression activities will continue to exercise Tribal trust responsibilities.
- In the event a wildland fire escapes initial attack, a BLM resource advisor will be assigned to ensure that resource management concerns are adequately addressed and that necessary mitigation occurs. If one of the following is being threatened or has the potential to be threatened, the appropriate manager will be notified with the following information and a resource advisor will be dispatched: 1) Public health and safety, 2) WUI, 3) Sage grouse habitat and, 4) Any ACEC, Resource Natural Area (RNA), congressionally delegated watershed or any other area of significant concern.
- Prior to wildland fire season potential areas of conflict between archeological resources and wildland fire suppression activities should be identified.

Noxious Weeds

- To minimize spread of noxious weeds, equipment used for extended attack or Type I/II incidents should be cleaned before arriving on-site and prior to leaving the incident. Staging areas and fire camps should avoid sites with noxious weed infestations.

Vegetation

- Blading should occur on existing roads where possible. Blading through undisturbed areas, especially those supporting native cover types, should be avoided unless necessary to protect life, property, or resource values.

Wildlife

- When conducting fire suppression actions, species with recovery plans, conservation agreements, Partners in Flight species, and Birds of Conservation Concern will be protected as specified in their respective plans and or agreements.
- Establishment of control lines, base camps, and support facilities in known SSS habitat will be avoided unless life and property are threatened.

Table G-1
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Threatened, Endangered, and Candidate Species

The following restrictions apply to Proposed, Threatened, Endangered and Candidate species and to “designated” critical habitat.

- Fire fighter safety and public safety are top priorities in response to fire suppression. At no time will the activities described in this EIS compromise fire fighter safety and public safety.
- The BLM will coordinate annually with the USFWS to update species status in the planning area.
- Field Managers will ensure resource staff initiates emergency consultation with the USFWS whenever suppression activities may impact listed species habitat and, more specifically, during emergency suppression actions to protect life and property.
- Control lines, base camps, support facilities, and other suppression-related facilities should not be established within:
 - 1/2 mile of known bald eagle or yellow-billed cuckoo nests (February 1-August 15)
 - 1 mile of occupied gray wolf den sites (April 15 - June 30)
 - 300 feet of occupied Ute ladies'-tresses habitat
 - 300 feet of all water bodies and springs occupied by T & E and Candidate species
 - Secure habitat within designated grizzly bear management unit (BMU).
- Minimum Impact Suppression Techniques (MIST) guidelines will be followed in occupied T&E and Candidate species habitat where appropriate (Appendix T in Interagency Standards for Fire and Aviation Operations, 2005). MIST guidelines direct suppression techniques, procedures, tools, and equipment that least impact the environment. Wet-lining (using water to soak/saturate fuels) is the preferred fireline construction tactic.
- Field Managers will assign a Resource Advisor or other designated representative as per the current Red Book guidance.
 - BLM will notify USFWS when appropriate to discuss T&E species mitigation within the suppression area to assure conservation practices are being followed to avoid adverse effects.
 - When Incident Management Teams (IMTs) are required, the Resource Advisor will brief the IC about conservation measures needed to avoid adverse effects.
- Where grizzly bears may reasonably occur:
 - The BLM Resource Advisor will brief all fire crews on general operating procedures including proper bear safety, sanitation, and food storage.
 - Incident Commanders, Fire Management Officers, and Scouts should be equipped with and trained to use bear deterrent spray.
 - Garbage should be disposed of in bear-proof containers when possible and removed from camps daily, preferably in the evening.
- No water-dipping by helicopters will occur within 1/2 mile of any occupied bald eagle nest.
- Fuel storage, fuel trucks, and refueling activities will not occur within 300 feet of live waters containing T&E and Candidate species. The current Planning Area Hazardous Material plan will be followed to ensure T&E and Candidate species and habitat will not be adversely affected in the event of a spill.
- Dozer blading should not occur within 300 feet of perennial streams or their tributaries occupied by T&E and Candidate species.
- Drafting equipment for pumps will be properly screened to prevent entrapment of T&E fish species. Maximum screen mesh size shall be 3/32-inch diameter.

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- Any sump created by blocking flow in any occupied T&E habitat will be performed in coordination with a natural resource specialist to prevent dewatering.
- If chemical products will be injected into the system, water will not be pumped directly from the streams. If chemicals are needed, water will be pumped from a portable tank, or a backflow check valve will be used.
- Application of retardant or foam (aerial or ground) will be avoided within 300 feet of perennial streams or their tributaries occupied by T&E and Candidate species pursuant to the current Red Book guidance.
- To minimize spread of noxious weeds, equipment used for extended attack or Type I/II incidents should be cleaned before arriving on-site and prior to leaving the incident. Staging areas and fire camps will avoid sites with noxious weed infestations.

TES Reporting Requirements

Because of the programmatic nature of this EIS process, the exact timing, site-specific suppression methods, location, and size of fires are currently unknown. In order to monitor the impacts of wildland fire-suppression activities, the Level I team will meet immediately after the fire season to review a summary of activities (fire suppression) that may have occurred in or adjacent to T&E and Candidate habitat. If the Level I team identifies fire-suppression activities for which more information is needed to ascertain potential effects to the environmental baseline for a particular listed or candidate species, BLM will provide a report providing the necessary information identified by the Level I team to the USFWS Snake River Fish and Wildlife Office or the Eastern Idaho Field Office no later than December 31 for the preceding 12-month period. The types of information that may be needed include:

- The location, timing, size, intensity, and suppression activities used for each fire.
- Any mitigations used during fire-suppression activities to avoid effects to T&E and Candidate species and habitat, any T&E and Candidate species or habitat affected, and the estimated extent of effects.
- Results of post-fire reviews and monitoring.

Fire and Non-Fire Vegetation Treatment Restrictions

Fire and non-fire vegetation treatment restrictions will be applied to site-specific restoration and hazardous fuels reduction treatment actions for the following disciplines:

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Vegetation • Air Quality • Cultural Resources and Historic Trails • Hazardous Materials and Abandoned Mine Sites • Livestock Grazing • Placeholder Species | <ul style="list-style-type: none"> • Recreation • Riparian Areas • Special Designations (WSAs, ACECs) • Visual Resources • Wildlife • Threatened, Endangered, and Candidate Species |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The following fire and non-fire vegetation treatment restrictions will be applied to site-specific restoration and hazardous fuels reduction treatment actions occurring throughout the Planning Area, consistent with NFP policy and LUP direction.

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Vegetation Management

- No chemical treatment would conflict with existing or future national vegetative treatment guidance. To reduce potential resource impacts from chemical treatments, herbicide use would conform to application criteria described in the 1991 document, Environmental Impact Statement for Vegetation Treatment on BLM Lands in Thirteen Western States or in subsequent revisions and/or replacements of this document. Use would conform to instructions from BLM Manual 9011 Chemical Pest Control, as well as label restrictions and current policies and state statutes. In addition, the prescription for herbicide application (desired, optimum environmental conditions) would evaluate off-site migration and non-target species by assessing wind speed and direction, temperature, precipitation forecast, soil infiltration potential, constraints on overland water transport due to precipitation or flooding, establishment of riparian buffer strips, and risk to special status species. Fishery and/or wildlife biologists would assist project planners in selecting appropriate herbicides for use among or near terrestrial and aquatic flora and fauna sensitive to herbicides.
- The economic effects of alternative fuels management practices would be considered. Local involvement and economic benefits from fuels reduction projects would be promoted.
- Collaboration with local partners to assess WUI areas would be continued, and existing mitigation plans would be updated to implement fuels treatments.
- There would be no Healthy Forest Restoration Act treatments in old-growth forests.
- Vegetation treatment activities would continue to exercise Native American Tribal trust responsibilities.
- Fuels treatments would be utilized to reduce the overall threat of the establishment and spread of noxious/invasive plant species.
- The economic effects of alternative fuels management practices would be considered. Local involvement and economic benefits from fuels reduction projects would be promoted.
- Collaboration with local partners to assess WUI areas and to update existing County Wildfire Protection Plans (CWPPs) would continue.

Wildlife

- Seasonal guidelines may be applied if needed to mitigate the impacts to big game species from planned fuels management and vegetation treatments as specified in the LUPs identified in Table 1.2.
- Restrictions may be imposed on fuels management and vegetation treatment projects in areas supporting nesting raptors as per amended LUPs (Table 1.2). Treatment proposals would be coordinated with IDFG.
- Species with recovery plans, conservation agreements, Partners in Flight species, and Birds of Conservation Concern will be protected as specified in their respective plans/agreements.
- Habitat Conservation Assessment and Conservation Strategies have been prepared and are currently being implemented for the following BLM sensitive species: Townsend's big-eared bat, wolverine, spotted bat, white headed woodpecker, trumpeter swan, northern goshawk, Columbian sharp-tailed grouse, greater sage grouse (Idaho plan pending), mountain quail, Idaho dunes tiger beetle, Bonneville cutthroat trout, bull trout, Yellowstone cutthroat trout, red band trout and leather sided chub.
- Vegetation treatments proposed in areas supporting sage grouse and sharp-tailed grouse would be coordinated with IDFG and would be implemented under LUP guidance or restrictions.
- Seasonal guidelines may be applied to mitigate the impacts to big game species from planned vegetation treatments as specified in LUPs.
- During implementation, the Proposed Plan Amendment directs collaboration with the appropriate

Table G-1
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local, state, and federal agencies to promote public education on species at risk, including their importance to the human and biological community and the rationale behind the protective measures that would be applied to their habitats.

Threatened, Endangered, and Candidate Species

The following restrictions apply to proposed habitats occupied by T&E and Candidate species and designated critical habitat.

- Treatment activities may occur near or adjacent to T&E and Candidate species habitat and will be designed to minimize or mitigate impacts to habitat occupied by T&E and Candidate species and designated critical habitat so that the species or their habitats will not be adversely affected. All related fire and non-fire vegetation treatment activities in areas that may affect T&E and Candidate species would be conducted in consultation with USFWS. Further, all such activities would be designed and implemented in such a manner that potential impacts to T&E and Candidate species from disturbance or habitat modification would be extremely unlikely to occur or would be so small as to not be meaningfully measured, detected, or analyzed.
- T&E and Candidate species with recovery plans, conservation agreements, and conservation strategies will be protected as specified in their respective plans/agreements/strategies. These protections include such measures as adequate habitat and range for a given species, including mitigation measures for multiple land use activities authorized by the BLM.
- Herbicide applicators will obtain a weather forecast for the area prior to initiating a spraying project to ensure no extreme precipitation or wind events could occur during or immediately after spraying. Aerial application of herbicides will not occur during periods of inversion. Spraying will follow label instructions.
- Fuels management and vegetation treatment activities would be conducted according to standards and guidelines in The Pacific Bald Eagle Recovery Plan, 1986. The planning area within the Greater Yellowstone Ecosystem would conduct fuels management and vegetative treatments according to standards and guidelines in the Greater Yellowstone Bald Eagle Management Plan (Greater Yellowstone Bald Eagle Working Group 1996). No vegetation treatment activities would occur within a one-half-mile radius of bald eagle nesting zones from February 1 to July 31. No activities would occur within one half mile (direct line of site) or one quarter mile of winter bald eagle concentration sites from November 1 to March 1.
- Riparian cottonwood forests with willow understories that may be impacted by fuels management and vegetation treatments would be surveyed for yellow-billed cuckoos prior to initiating project activities. When developing vegetation treatment projects, no ground-based application of herbicides would occur from May 1 to August 31 within 200 feet of occupied yellow-billed cuckoo habitat.
- Aerial application of chemicals would not occur from May 1 to August 31 within one-half mile of occupied yellow-billed cuckoo habitat.
- Fuels management and vegetation treatment areas within the BMUs would be coordinated with U.S. Forest Service activities to comply with road density restrictions and number and juxtaposition of management activities with BMUs, as provided for in the Grizzly Bear Recovery Plan (USFWS 1993) or the Final Conservation Strategy for the Grizzly Bear in the Yellowstone Area (USFWS 2003).
- When developing vegetation treatment projects, open and total motorized access routes or trail density within BMUs would not increase. When developing vegetation treatment projects within BMUs, the Bureau will coordinate with the Interagency Grizzly Bear Committee to develop/implement sanitation



**Table G-1
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<p>guidelines.</p> <ul style="list-style-type: none"> • Gray wolf (<i>Canis lupus</i>) populations in the area, which includes portions of the Planning Area, have been designated as experimental/nonessential. Presence or absence of gray wolf dens or rendezvous sites in fuels management or vegetation treatment areas would be determined prior to initiating projects. In the event active den or rendezvous sites are established within the planning area, vegetation treatments would be designed and implemented to minimize noise disturbance or habitat modifications within one mile of the den or rendezvous sites from April 15 to June 30. • Fuels management and vegetation treatments that may occur within the Little Lost River drainage would be conducted according to standards and guidelines developed for bull trout (<i>Salvelinus confluentus</i>) Riparian Habitat Conservation Areas on BLM lands within the geographic range of bull trout (U.S. Fish and Wildlife Service 1999a, 2002). • No aerial application of herbicides would occur within one half mile of all water bodies and springs containing listed snails, Columbia spotted frog, and bull trout. • No ground-based applications of herbicides, surfactants, or adjuvants would occur within 100 feet of perennial streams or their live water tributaries occupied by listed snails, Columbia spotted frog, and bull trout. • Dozer blading would not occur within 300 feet of streams that have habitat occupied by T&E or Candidate Species. • Ground-disturbing activities other than tree and shrub planting will not occur within 300 feet of all water bodies and springs containing listed snails, Columbia spotted frog and bull trout. • No aerial application of herbicides would occur within one-half mile of all water bodies and springs containing listed snail, Columbia spotted frog and bull trout species. • Treatments will follow PACFISH/INFISH guidelines in bull trout habitat. • For those portions of the Snake River drainages where fuels management and vegetation treatments have the potential to effect populations of T&E Snake River mollusks, the Bureau will consult with the Service to ensure mitigation measures are adequate to avoid adverse effects to Snake River mollusks.
<p>Salmon Field Office – Lemhi RMP</p>
<p><i>Vegetation – General</i></p>
<p>Action:</p> <ol style="list-style-type: none"> 1. The Idaho Department of Fish and Game shall be given at least two years notice prior to any vegetation manipulation project. 2. Brush control projects will be designed to maximize edge effect to the extent possible. Islands of untreated sagebrush will be incorporated into project design as necessary to provide cover for sage grouse and other species. 3. Proposed brush manipulation projects on sage grouse winter and/or nesting range or antelope winter and/or fawning range must have a predicted neutral or beneficial effect on these species. <ol style="list-style-type: none"> a. The sagebrush canopy cover will not be reduced below 10 percent on sage grouse brood rearing areas. b. The sagebrush canopy cover will not be reduced below 20 percent on sage grouse nesting and wintering areas. c. The sagebrush canopy cover will not be reduced below 10 percent on general antelope ranges. Winter ranges and spring fawning areas will not be treated unless overall benefits to antelope will result. 4. Brush control proposals within 2 miles of known strutting grounds will be subject to on-site inspection by BLM and Idaho Department of Fish and Game personnel to determine prohibited areas. 5. As a rule, no brush control will be allowed within 100 yards of streams, meadows, or secondary drainages (dry and intermittent). The desirability of increasing or decreasing the width on specific areas will be determined via on-site evaluation by BLM and Idaho Department of Fish and Game personnel.

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6. A mixture of grasses, forbs, and shrubs (if appropriate) will be used in all range rehabilitation or improvement projects.
<i>Wildlife</i>
Objective: Provide forage for 9,350 deer, 2,194 elk, 2,950 antelope, and 200 bighorn sheep. Improve 4,000 acres of elk winter/spring range; 17,000 acres of deer, antelope, and sage grouse seasonal ranges; and 22,000 acres of non—game habitat from fair to good ecological range condition to good. Improve 7,320 acres of seasonal elk and bighorn sheep ranges. Provide a more consistent water supply on 81,000 acres of antelope, sage grouse, and non-game habitat in the Gilmore and Muddy Creek area. Preserve habitat values of 30 small isolated seeps and wet meadows created by livestock water developments. Enhance big game movement and safety. Protect the future integrity of the elk breeding area in McDevitt Creek and antelope migration corridor near Center Ridge. Enhance the integrity and availability of 69,057 acres of crucial habitat of raptors, waterfowl, elk, and other wildlife. Improve the quality of 10,400 acres of crucial elk and bighorn habitat.
Action: Crucial habitat will be enhanced through adoption of no surface occupancy restrictions on 69,057 acres available for mineral leasing. The quality of 8,800 acres of big game habitat will be improved through restrictions on livestock use and timber management and harvest.
Action: Seasonal restrictions will continue to be applied where they are needed to mitigate the impacts of human activities on important seasonal wildlife habitat. Approximately 60 percent (226,000 acres) of the resource area lies within areas potentially subject to restriction. During any given year, the authorized officer may waive seasonal restrictions if actual conditions do not warrant them. Seasonal wildlife restrictions related to GRSG: Sage Grouse Strutting Grounds 03/01 — 04/30 Sage Grouse Nesting & Brood-rearing 04/30 — 06/30
<i>Livestock Grazing (Range Management)</i>
Action: All new fence construction will comply with the Lemhi Resource Area fencing policy dated May 20, 1983 which is as follows: It shall be standard policy for the Lemhi Resource Area that: A. All wire fences constructed subsequent to this policy statement shall be 3 wire only. B. Wire spacing shall be as follows: a. Top wire shall be set no higher than 38” from ground level. b. Bottom wire shall be smooth and set at a minimum of 18” from ground level. c. Midwire shall be set at 26” from ground level unless: 1. Bighorn sheep are involved (34”) 2. Fence is adjustable for antelope (29”) C. All new fences shall be flagged (e.g. cloth strips, survey flagging) between every other post.
Shoshone Field Office - Craters of the Moon National Monument RMP
<i>Vegetation - General</i>
Goal: There is no net loss, and preferably a net gain, of sagebrush steppe communities over the life of the plan.
Goal: Continuity of habitat for special status species and general wildlife are emphasized.
Action: VEG-2: Existing sagebrush steppe communities will be protected to prevent loss of shrub cover and managed to promote a diverse, desirable grass and forb understory.
Action: VEG-3: Annual grasslands and highly degraded sagebrush steppe communities will be restored to achieve a mosaic of shrubs, forbs, and grasses capable of

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

sustaining native animal populations
Action: VEG-4: Restoration projects will be prioritized relative to locations of key Greater sage-grouse habitats and population strongholds. Emphasis will be on projects that restore annual grasslands and degraded sagebrush steppe communities, as well as enlarging and connecting habitats in good condition.
Action: VEG-5: National and Idaho state habitat guidelines for Greater sage-grouse and sagebrush steppe obligates developed by interagency working groups regarding composition and structure of sagebrush habitats on a landscape scale will be adopted to guide sagebrush steppe management.
Action: VEG-8: Aggressive protection of existing sagebrush steppe communities and proactive restoration of areas with poor to fair biotic integrity through both active and passive means (see Figure 6) will be emphasized.
Action: VEG-9: Approximately 80,000 acres of BLM-administered land (11% of the entire Monument) will be restored. About 31,000 acres of annual grassland and 49,000 acres of highly degraded low elevation sagebrush steppe (poor to fair biotic integrity) will be treated to control cheatgrass and restore big sagebrush cover with a perennial understory.
Action: VEG-10: All special status species in the Monument will be inventoried with monitoring plans established, particularly when and where adverse impacts may occur.
Action: VEG-11: Actions and stipulations necessary to protect special status species and their habitats will be made part of land use authorizations (e.g., limiting fragmentation of special status species populations when considering road maintenance) and fire planning.
Action: VEG-12: Use of native plants will be emphasized in rehabilitation and restoration projects, and only native plants will be used for rehabilitation or restoration projects within the Pristine Zone. Integrated weed management principles will be used to: <ul style="list-style-type: none"> • detect and eradicate all new infestations of noxious weeds; • control existing infestations; and • prevent the establishment and spread of weeds within and adjacent to the planning area.
Action: Restoration treatments in areas supporting sage-grouse wintering habitats would be limited from December 1 through March 1.
Action: Restoration treatments in areas supporting sage-grouse breeding habitat would be limited from March 1 through April 30, and grouse nesting habitat April 30 through June 15.
Action: Sage-grouse Key and Source habitats would be maintained and enhanced when possible within Low- and Mid-Elevation Shrub types. Restoration treatments would generally be limited in habitats supporting live sagebrush communities. Treatments to enhance and restore habitat would be focused in areas where the sagebrush component is lost or dead and the understory degraded.
<i>Wildlife</i>
Goal: High-quality habitats for sagebrush obligate species are provided.
Action: WLIFE-7: Actions and stipulations necessary to protect special status species and their habitats will be made part of land use authorizations (e.g., limiting fragmentation of special status species populations when considering road maintenance) and fire planning.
<i>Special Status Species – Wildlife, Sage-grouse</i>
Goal: Greater sage-grouse restoration habitat (R1 & R2) will achieve significant progress towards reclassification as Key habitat.
Goal: Species composition in key Greater sage grouse habitat will reflect site potential.
Action: WLIFE-8: Active and historic leks will be protected from disturbance during the Greater sage-grouse breeding season. Some examples of potential protective measures as presented in the Idaho Sage-grouse Advisory Committee's 2006 Conservation Plan for the Greater Sage-grouse in Idaho include the following:

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<ul style="list-style-type: none"> • Apply use restrictions where needed and appropriate on existing roads or trails near occupied leks to minimize nonessential activity between 6:00 PM to 9:00 AM (in general this guideline should be applied from approximately March 15 through May 1). • Avoid human activities such as fence maintenance or construction or any project or related work at or near (1 km or 0.6 mile) occupied leks that results in or will likely result in disturbance to lekking birds, between 6:00 PM to 9:00 AM (in general this guideline should be applied from approximately March 15 through May 1). • Avoid creating unnecessary disturbances related to livestock management activities near occupied leks whenever possible. • Improve the dissemination of information to elementary and high school students, hunters, resource user groups, and others to increase their understanding of Greater sage-grouse and sagebrush steppe conservation issues. • Monitor leks in a manner that minimizes disturbance to Greater sage-grouse following established protocol (Idaho Sage-grouse Advisory Committee 2006, Sections 5.2.1.1 and 5.2.1.2). <p>Note: Road closures or restrictions during the Greater sage-grouse breeding season will not apply to agency (BLM and NPS) vehicles, including Idaho Department of Fish and Game vehicles and personnel who conduct necessary Greater sage-grouse inventory.</p>
<p>Action: WLIFE-9: Consistent with Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (USDI BLM 1997) determinations, livestock grazing management will be modified as necessary to ensure that key Greater sage-grouse habitat achieves site potential.</p>
<p><i>Wildland Fire Management</i></p>
<p>Action: VEG-16: Wildland fire will be suppressed to protect life and property, healthy sagebrush steppe communities, recent rehabilitation and restoration projects, cultural sites, and the Little Cottonwood Creek watershed.</p>
<p>Action: VEG-17: Fire will be managed to maximize protection and restoration of sagebrush steppe in the Passage and Primitive Zones.</p>
<p>Action: VEG-20: In the event of wildland fire, burned areas will be rehabilitated when necessary to restore the appropriate mosaic of sagebrush species and subspecies, along with a diverse perennial understory, and to suppress invasive and noxious weeds.</p>
<p><i>Comprehensive Trails and Travel Management</i></p>
<p>Action: The NEPA Analysis which accompanies the Comprehensive TMP will include, at a minimum, cumulative effects assessments of road density and fragmentation of sage-grouse habitat.</p>
<p>Shoshone Field Office - Magic MFP</p>
<p><i>Special Status Species – Wildlife, Sage-grouse</i></p>
<p>Goal: Habitat Improvement</p>
<p>Objective: Establish vegetation...in conjunction with existing brush along Magic Reservoir.</p>
<p>Action: Provide adequate forage for sage grouse broods.</p>
<p>Goal: Habitat Maintenance</p>
<p>Objective: Determine winter use and strutting areas for maintenance of habitat.</p>
<p>Action: Inventory to determine if there is winter sage-grouse use within close proximity to their strutting grounds. If winter use is identified, adequate sagebrush should be maintained within the use areas.</p>
<p>Action: All sagebrush control projects that lie within 2-mile radius of sage-grouse strutting grounds will be designated...to not have any adverse impacts on nesting grouse.</p>
<p>Action: Maintain sagebrush within the 2-mile radius of sage-grouse strutting grounds.</p>

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

Goal: Habitat Expansion
Objective: Establish a 10-15% density of summer succulent forbs approximately 14,000 acres.
Action: Sage-grouse summer habitat would be expanded.
<i>Wildland Fire Management</i>
Goal: Control big sagebrush only with chemicals or fire where it will not impair adequate nesting success of Sage grouse.
Objective: Maintain sagebrush within 2-mile radius of known grouse strutting grounds.
Goal: Control big sagebrush using chemicals or fire.
Objective: Maintain sagebrush outside of the 2-mile radius of known grouse strutting grounds.
Action: Strive for about 50% reduction in the amount of big sagebrush.
<i>Livestock Grazing</i>
Goal: Artificial Treatment (Brush Control)
Objective: Improved forage and range conditions.
Action: Coordination/Planning on brush control within areas inside the identified primary nesting areas for sage grouse.
Action: Brush control designed such that they will not have any adverse impacts on nesting grouse.
Shoshone Field Office - Sun Valley MFP
<i>Vegetation – Rangeland</i>
Goal: (NC, BW, & M) Appendix 1 of MFP Decision Number 6, Habitat Management – Vegetation Manipulation
Objective: Maintain crucial habitat
Action: Every effort should be made to delay sheep bands from utilizing known sage grouse nesting areas until about the first week in June, or until young sage grouse have hatched in the particular locality.
Action: Livestock should not be permitted to heavily use known important sage grouse wintering areas.
Action: No sagebrush should be treated or removed until a comprehensive multiple-use management plan (MFP) has been formulated for the area.
Action: Sagebrush control should include provisions for long-term quantitative and qualitative measurements of vegetation before and after control to acquire data on the effects of wildlife habitat.
<i>Special Status Species – Wildlife, Sage-grouse</i>
Goal: (NC, BW, & M) Appendix 1 of MFP, Habitat Management – Vegetation Manipulation
Objective: Maintain crucial habitat
Action: No control work should be considered where live sagebrush cover is less than 20%, or on steep upper slopes with skeletal soils where big sagebrush is 12 in. or less in height.
Action: Control of vegetation within the breeding complex should not be undertaken within 2 miles of leks, or on nesting and brood areas.
Action: No control of sagebrush should be considered in any area known to have supported important wintering concentrations of sage grouse within the past 10 years.
Action: When sagebrush control is found to be unavoidable in sage grouse range, all treatment measures should be applied in irregular patterns using topography and other ecological considerations to minimize adverse effects to the sage grouse resource.
<i>Wildland Fire Management</i>
Goal: (NC, BW, & M) Appendix 1 of MFP, Habitat Management – Vegetation Manipulation
Action: No winter burns of sagebrush habitat in identified important wintering sites.
Action: Fire should be avoided during spring/summer when it could destroy ... young sage grouse.
Shoshone Field Office - Bennett Hills/Timmerman Hills MFP
<i>Soil & Water - WATERSHED in MFP</i>

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

Objective: Selectively control heavy stands of brush which are competing with or have replaced herbaceous vegetation desirable for watershed protection in the following delineated areas. (W 1.4.)
Action: Selective brush control may be undertaken within two-mile radius of sage grouse strutting grounds, sage grouse wintering areas, and deer winter range subject to coordinated assessment by the Area Manager and Wildlife Biologist.
<i>Vegetation – General</i>
Action: Forbs composition at the desired level of 20-25% is the accepted Wildlife Recommendations for the entire area. This goal puts additional constraints on spraying of sagebrush with chemicals which also reduce forbs. It may be that some reduction could be accepted for the short term if long term benefits in forb production could be attained. Another possible mitigating measure might be to aerial seed some forbs following sagebrush spray project.
<i>Vegetation – Rangeland</i>
Dempsey Allotment: Action: Coordinate land treatment proposal in the allotment where critical deer winter range sage grouse range and lands potentially valuable for agriculture have not been identified to assure all multiple use conflicts are mitigated prior to project implementation Criteria to be used in mitigating conflicts are found in Appendix I MFP Step II, See Step II Overlay for coordinated control areas.
Indian Allotment: Action: Allow coordinated land treatment on sage grouse winter range.
Clover Creek Allotment: Action: Allow coordinated land treatment on sage grouse winter range.
Davis Mountain Allotment: Action: Allow coordinated land treatment on sage grouse winter range. See Appendix I, MFP Step II.
Black Canyon Allotment: Action: Allow coordinated land treatment on sage grouse winter range and strutting grounds. See Appendix 1, MFP Step II.
Rattlesnake Allotment: Action: Allow coordinated land treatment on sage grouse winter range and nesting areas. See criteria in Appendix I, MFP Step II.
North Shoshone Allotment: Action: Allow coordinated land treatment on sage grouse winter range and nesting grounds. Refer to criteria in Appendix 1, MFP Step II.
Kinzie Butte Allotment: Action: Allow selective brush control within two mile radius of sage grouse strutting grounds.
Marsh Spring Allotment: Action: Allow coordinated land treatment within 2 mile radius of sage grouse strutting grounds. See criteria referred to in 2 above.
Macon Flat Allotment: Action: Allow coordinated land treatment on sage grouse winter range and nesting grounds. Refer to criteria in #2 above.
Picabo Cattle Allotment - Action: Selectively control sagebrush to increase livestock forage, improve watershed conditions, and improve species composition for sage grouse brood rearing within the accepted guidelines (RM Appendix II) for sagebrush control.
Tikura Allotment - Action: Selectively control sagebrush to increase livestock forage, improve watershed conditions, and improve species composition for sage grouse brood rearing within the accepted guidelines (RM Appendix II) for sagebrush control.
Richfield Allotment - Action: Selectively control sagebrush to increase livestock forage, improve watershed conditions, and improve species composition for sage grouse brood rearing within the accepted guidelines (RM Appendix II) for sagebrush control.
Tack Allotment - Action: Selectively control sagebrush to increase livestock forage, improve watershed conditions, and improve species composition for sage grouse brood rearing within the accepted guidelines (RM Appendix II)

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for sagebrush control.
Timmerman Hills Sheep Allotment - Action: Selectively control sagebrush to increase livestock forage, improve watershed conditions, and improve species composition for sage grouse breed rearing within the accepted guidelines (RM Appendix I) for sagebrush control.
<i>Wildlife – Sensitive Species – Sage-grouse</i>
Goal: Sage grouse are an important wildlife resource within the planning area in which most of the birds live their entire life cycle. The objective is to increase the huntable population of this species within the area. (p. 4)
Objective: The three key habitat requirements of this species are strutting and nesting areas brood rearing areas and winter areas. The strutting grounds should not be disturbed and adequate sagebrush cover should be maintained within the nesting areas to provide for nesting sage grouse. (p. 4)
Objective: In the brood rearing areas the key factor is wet meadow areas which provide succulent forage during the summer months. These areas should be maintained and improved.(p. 4)
Objective: Since the primary ingredient in the sage grouse winter diet is sagebrush it will be necessary to maintain adequate brush within the winter areas to provide for the anticipated population of sage grouse.(p. 4)
Objective: Improve 283,000 acres of sage grouse brood rearing habitat in the Bennett Hills and Timmerman Hills Planning Units in order to provide adequate food, cover, and water for prehunting season population of 20,000 sage grouse by 1990. (WL 6.)
Action: Selectively reduce sagebrush throughout those portions of sage grouse brood rearing habitat that does not encompass either critical deer winter range or winter sage grouse habitat. (WL 6.1.)
Objective: Manage the existing sagebrush on 283,000 acres of nesting habitat and 38,000 acres of winter habitat in order to provide the necessary nesting cover and winter forage and cover for prehunting season population of 20,000 sage grouse in the two planning units. (WL 7.)
Action: Selectively control sagebrush within 2-mile radius of strutting grounds in a manner that will not adversely impact present and future nesting sage grouse populations.
Action: Selective brush control may be under taken on sage grouse wintering areas only after careful consideration that remaining sagebrush habitat will be adequate for projected sage grouse populations. (WL 7.1.)
<i>General wildlife</i>
Objective: Manage the upland game bird habitat throughout the two planning units and provide diversity of vegetative species in order to provide variety of habitats for the five species of upland game birds. (WL 8.)
Action: Establish livestock grazing systems in order to establish diverse vegetative composition 15-20 percent shrubs, 20-25 percent forbs, and 50-65 percent grasses throughout the upland game bird habitat. (WL 8.3.3)
Objective: Upland Game Birds: An important part of their (sic upland game birds) habitat requirements can be provided on the National Resource Land by maintaining sagebrush for escape and winter cover. (pp. 4-5)
Action: Small parcels of National Resource Land identified as having important upland game habitat and situated adjacent to private land will be retained in public ownership and managed for upland game birds.
Objective: Forbs and grasses are also an important component of the life cycle of the upland game bird species. Consideration of this need should be part of the development of the allotment management plans in those areas which lie adjacent to the developed agricultural lands. (p. 5)
Shoshone and Burley Field Offices - Monument RMP
<i>Vegetation - Rangeland</i>
Action: "Sage Grouse Management in Idaho" (Autenrieth 1981) will be used as a reference to assist in the design of proposed projects in sage grouse habitat.
Action: Where wildlife habitat is a major consideration, areas will be burned to create a mosaic of shrubby and herbaceous vegetation. Burned areas will be rested from livestock grazing for two growing seasons

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following treatment.
<i>Special Status Species – Wildlife – Sage-grouse</i>
Objective: Protection of brush pockets will be important in maintaining or enhancing habitat for sage grouse, pronghorn, mule deer, and non-game wildlife.
Action: Maintain and enhance sage grouse habitat by maintaining adequate, suitable areas of brush and providing additional forbs for brood rearing.
Action: A Sage Grouse Habitat Management Plan will be prepared to guide management in the sage-grouse winter habitat area covering about 67,000 acres in Laidlaw Park, Little Park, and Paddleford Flat west of Carey.
Action: Suitable forbs will be included in range seedings in this area.
Goal: Monitoring and evaluation will be conducted to determine whether the RMP decisions are being implemented, whether the objectives of the RMP are being accomplished, and whether the RMP continues to be consistent with related plans. If a variation warranting management concern is found, the reasons for the variation will be examined and corrective actions will be taken as appropriate.
Objective: Variation From RMP Warranting Management Concern - Any decrease below 1982 sage-grouse population levels.
Action: Monitoring lek trends annually.
Objective: Variation From RMP Warranting Management Concern - More acres of brush burned than planned for brush control.
Action: Monitor nesting and winter habitats through analysis of fire reports.
Objective: Variation From RMP Warranting Management Concern - 20 percent decrease in key species.
Action: Monitor nesting and winter habitats by measuring frequency of key forbs.
Action: Priority will be given to habitat for listed candidate, threatened and endangered species and sensitive species.
<i>Wildland Fire Management</i>
Objective: Protection of brush pockets will be important in maintaining or enhancing habitat for sage grouse, pronghorn, mule deer, and non-game wildlife.
Upper Snake Field Office – Upper Snake RMP
<i>Vegetation - General</i>
Action: Use chemical, mechanical, seeding, and prescribed fire treatments as appropriate to achieve DFC. In perennial grass, invasive annual grasses, and juniper-invaded cover types, restore the sagebrush steppe with an aggressive sagebrush seeding effort, using the appropriate sagebrush subspecies for the treatment area.
Action: Conduct fire/non-fire vegetation treatments in non-WUI areas with the following goals: <ul style="list-style-type: none"> • Diversify perennial grass to speed reestablishment of sagebrush cover. • Enhance structural and species diversity in degraded low-elevation sagebrush steppe. • Reduce shrub and juniper density in mid-elevation shrub. • Reduce invasive species or noxious weeds in all vegetation types. • In mountain shrub, rejuvenate old, decadent shrubs and increase cover and density of desirable herbaceous species.
Action: Design vegetation treatments in concert with wildlife species and their season of use (e.g., winter, lekking, transitional, nesting, hibernation) while maintaining required habitat characteristics such as but are not limited to: <ul style="list-style-type: none"> • Providing cover for wildlife

**Table G-1
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<ul style="list-style-type: none"> • Maintaining diversity • Treating in a mosaic pattern • Providing travel corridors • Mimicking natural historic disturbances (e.g., fingering, uneven patches). 								
<p>Action: As appropriate, to move vegetation cover types towards the DFC, use various methods (e.g., prescribed fire, mechanical, chemical, WFU) to treat on an <i>annual</i> basis the following footprint acres.</p> <table border="1"> <thead> <tr> <th>Cover Type</th> <th>Acres treated</th> </tr> </thead> <tbody> <tr> <td>Wyoming/Basin Big Sagebrush</td> <td>45,010–49,750</td> </tr> <tr> <td>Mountain Big Sagebrush</td> <td>8,165–9,025</td> </tr> <tr> <td>Low Sagebrush</td> <td>95–105</td> </tr> </tbody> </table>	Cover Type	Acres treated	Wyoming/Basin Big Sagebrush	45,010–49,750	Mountain Big Sagebrush	8,165–9,025	Low Sagebrush	95–105
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<i>Vegetation - Rangeland</i>								
<p>Objective: Control invasive species/noxious weeds and poisonous plants to decrease the overall number of areas occupied. Minimize the likelihood of introduced new species of invasive species/noxious weeds and prevent weeds from becoming established.</p>								
<p>Action: Priority treatment areas include:</p> <ul style="list-style-type: none"> • Wilderness study areas/areas of critical environmental concern/research natural areas • Special status species (SSS) habitats 								
<i>Special Status Species – Wildlife - Sage-grouse</i>								
<p>Goal: Ensure public lands are managed to conserve species and their habitats, while providing for favorable conditions that support their continued existence.</p>								
<p>Objective: Maintain, improve, or increase habitat for sensitive species to prevent them from becoming listed species (i.e. Federal T&E).</p>								
<p>Action: Maintain existing partnerships and establish new partnerships (e.g., Greater sage-grouse working groups, IDFG, local cave groups) that help manage sensitive species habitat on BLM-administered public lands. Coordinate with state and other federal agencies to support research efforts, develop partnerships, and develop outreach and educational opportunities to inform the public about sensitive species habitats and populations.</p>								
<p>Action: Pursue conservation easements, land acquisitions, cooperative management efforts, and other programs to support conservation of sensitive species and linkage corridors to improve habitat connectivity.</p>								
<p>Action: Reduce impacts to sensitive species habitat by implementing measures such as but not limited to:</p> <ul style="list-style-type: none"> • Implement distance and timing stipulations. • Consider placement of, rerouting, modifying, or removing infrastructure (e.g., facilities, powerlines, pipelines, fence lines) or project location. • Consider placement of range improvements. 								
<p>Action: Inventory potential habitat and monitor population trends.</p>								
<p>Action: Permitted/authorized activities (mining, recreation, land use authorizations, grazing, etc.) within sensitive species habitat may be modified (e.g., closed, limited or restricted access, season of use) to reduce potential conflicts or impacts (e.g., disturbance, habitat degradation).</p>								

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

Action: Manage livestock grazing in special status species habitat according to Standard 8 (Special Status Species) under Idaho Standards for Rangeland Health.
Objective: Maintain, improve, or increase habitat for sensitive species to preclude them from becoming listed species (i.e., federally threatened or endangered).
Action: Manage Greater sage-grouse habitat consistent with appropriate conservation plans (e.g., Conservation Plan for the Greater Sage-grouse in Idaho [ISAC 2006]), local working group (e.g., Upper Snake, Challis, Eastern Idaho Uplands, Big Desert, and Magic Valley) and IDFG conservation strategies (e.g., Idaho Comprehensive Wildlife Conservation Strategy [IDFG 2005a]), including future revisions or amendments, and current BLM guidance, by: <ul style="list-style-type: none"> • Reducing/controlling invasive species/noxious weeds • Reducing/limiting disturbance during breeding, nesting, and early brood rearing • Establishing setbacks or buffers • Maintaining/improving habitats through proactive vegetation treatments • Maintaining nesting habitat • Applying livestock management techniques (e.g., sheep-bedding, herding, salting, water hauling, varying season of use, adjusting livestock numbers, developing alternative sources of water, and converting spring developments to a closed system).
Action: Limit physical, mechanical, and audible disturbance within 0.5 miles of active leks from March through June (Sharp-tailed Grouse)
<i>Wildland Fire Management</i>
Action: In designing vegetation treatments in Low- and Mid-elevation Shrub and Mountain Shrub that could potentially affect Greater Sage-grouse, conservation measures would be implemented.
Objective: Maintain, protect, and expand Greater sage-grouse stronghold/source habitats.
Action: Conduct vegetation treatments in areas that pose a wildland fire risk to Greater sage-grouse Key habitat.
Action: Strategically place treatments on a landscape scale to prevent wildland fire from spreading into intact sagebrush steppe habitat (e.g., leks, breeding or brood rearing area) or WUI.
Action: WFU may be allowed in historically frequent fire regimes to restore fire's natural role and in Greater sage-grouse habitat for the benefit of the habitat only after site-specific project-level coordination with the Idaho Department of Fish and Game.
Action: Suppress wildland fires in stronghold/source habitats, except where WFU would benefit habitat.
Goal: Protect and enhance sage grouse source habitats as well as enhance key ecological components in plant and animal communities.
Objective: Make progress towards DFC in the low-elevation shrub, perennial grass, invasive annual grass, mid-elevation shrub, mountain shrub, and juniper vegetation types.
Action: In perennial grass, invasive grass, and juniper invaded cover types, restore sagebrush steppe with an aggressive sagebrush seeding effort, using the appropriate sagebrush subspecies for the treatment area.
Objective: Maintain, protect, and expand sage grouse source habitats.
Action: Allow WFU in sage grouse habitats for the benefit of the habitat only after site-specific project level coordination with IDFG.
Objective: Treat sage grouse key and restoration habitats to expand source habitats. Improve and maintain sage grouse Restoration (R1-3) and key habitats.
Action: Use AMR to wildland fire in all sage grouse restoration and key habitats and healthy wildlife habitats.
Action: WFU may be allowed in historically frequent fire regimes to restore fire's natural role and in sage

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

grouse restoration and key habitats for the benefit of the habitat only after site-specific project level consultation/collaboration with IDFG.
Action: Conduct vegetation treatments in restoration and key habitats to reduce risk of wildland fire and reconnect restoration and key habitats.
Objective: Apply Greater sage-grouse conservation measures and management restrictions for fire suppression and fire and non-fire vegetation treatments.
Action: Implement the following suppression restrictions: <u>Fire Management</u> <ul style="list-style-type: none"> In the event a wildland fire escapes initial attack, a BLM resource advisor will be assigned to ensure that resource management concerns are adequately addressed and that necessary mitigation occurs. If one of the following is being threatened or has the potential to be threatened, the appropriate manager will be notified with the following information and a resource advisor will be dispatched: 1) Public health and safety, 2) WUI, 3) Sage grouse habitat and, 4) Any ACEC, Resource Natural Area (RNA), congressionally delegated watershed or any other area of significant concern. <u>Noxious Weeds</u> <ul style="list-style-type: none"> To minimize spread of noxious weeds, equipment used for extended attack or Type I/II incidents should be cleaned before arriving on-site and prior to leaving the incident. Staging areas and fire camps should avoid sites with noxious weed infestations. <u>Special Designations (WSAs, ACECs)</u> <ul style="list-style-type: none"> Fire camps and staging areas should be placed outside of special management areas. Use of natural firebreaks and existing roads and trails to contain a wildland fire would be encouraged. The resource values, hazards present, and management prescriptions within specific areas would be evaluated when applying guidelines to ACECs. <u>Vegetation</u> <ul style="list-style-type: none"> Blading should occur on existing roads where possible. Blading through undisturbed areas, especially those supporting native cover types, should be avoided unless necessary to protect life, property, or resource values. <u>Wildlife</u> <ul style="list-style-type: none"> When conducting fire suppression actions, species with recovery plans, conservation agreements, Partners in Flight species, and Birds of Conservation Concern will be protected as specified in their respective plans and or agreements. Establishment of control lines, base camps, and support facilities in known SSS habitat will be avoided unless life and property are threatened. <u>Threatened, Endangered, and Candidate Species</u> <p>The following restrictions apply to Proposed, Threatened, Endangered and Candidate species and to “designated” critical habitat.</p> <ul style="list-style-type: none"> The BLM will coordinate annually with the USFWS to update species status in the planning area. Field Managers will ensure resource staff initiates emergency consultation with the USFWS whenever suppression activities may impact listed species habitat and, more specifically, during emergency suppression actions to protect life and property. Minimum Impact Suppression Techniques (MIST) guidelines will be followed in occupied T&E and Candidate species habitat where appropriate (Appendix T in Interagency Standards for Fire and Aviation Operations, 2005). MIST guidelines direct suppression techniques, procedures, tools, and equipment that least impact the environment. Wet-lining (using water to soak/saturate fuels) is the preferred fireline construction tactic.

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<ul style="list-style-type: none">• Field Managers will assign a Resource Advisor or other designated representative as per the current Red Book guidance.<ul style="list-style-type: none">○ BLM will notify USFWS when appropriate to discuss T&E species mitigation within the suppression area to assure conservation practices are being followed to avoid adverse effects.○ When Incident Management Teams (IMTs) are required, the Resource Advisor will brief the IC about conservation measures needed to avoid adverse effects.• To minimize spread of noxious weeds, equipment used for extended attack or Type I/II incidents should be cleaned before arriving on-site and prior to leaving the incident. Staging areas and fire camps will avoid sites with noxious weed infestations.
<p>Action: Implement the following fire and non-fire vegetation restrictions:</p> <p><u>Vegetation Management</u></p> <ul style="list-style-type: none">• No chemical treatment would conflict with existing or future national vegetative treatment guidance. To reduce potential resource impacts from chemical treatments, herbicide use would conform to application criteria described in the 1991 document, Environmental Impact Statement for Vegetation Treatment on BLM Lands in Thirteen Western States or in subsequent revisions and/or replacements of this document. Use would conform to instructions from BLM Manual 9011 Chemical Pest Control, as well as label restrictions and current policies and state statutes. In addition, the prescription for herbicide application (desired, optimum environmental conditions) would evaluate off-site migration and non-target species by assessing wind speed and direction, temperature, precipitation forecast, soil infiltration potential, constraints on overland water transport due to precipitation or flooding, establishment of riparian buffer strips, and risk to special status species. Fishery and/or wildlife biologists would assist project planners in selecting appropriate herbicides for use among or near terrestrial and aquatic flora and fauna sensitive to herbicides.• Fuels treatments would be utilized to reduce the overall threat of the establishment and spread of noxious/invasive plant species. <p><u>Livestock Grazing</u></p> <ul style="list-style-type: none">• All treatment areas would be rested from livestock grazing until project-specific monitoring identified in site-specific project plans and/or NEPA documents show that resource objectives have been met. Resumption of grazing would be determined on a case-by-case basis. <p><u>Placeholder Species</u></p> <ul style="list-style-type: none">• Plant materials used in re-vegetation actions would be native when appropriate and practical. However, desirable non-native species may be used in re-vegetation actions on harsh or degraded sites, when native seed is not available, or where they would structurally mimic the natural plant community and prevent soil loss and invasion by exotic annual grasses and noxious weeds. The species used would be those that have the highest probability of establishment on these sites. These "placeholders" would maintain the area for potential future native restoration. Native seed would be used more frequently and at larger scales as species adapted to local areas become more available. <p><u>Wildlife</u></p> <ul style="list-style-type: none">• Species with recovery plans, conservation agreements, Partners in Flight species, and Birds of Conservation Concern will be protected as specified in their respective plans/agreements.• Habitat Conservation Assessment and Conservation Strategies have been prepared and are currently being implemented for the following BLM sensitive species: Townsend's big-eared bat, wolverine, spotted bat, white headed woodpecker, trumpeter swan, northern goshawk, Columbian sharp-tailed grouse, greater sage grouse (Idaho plan pending), mountain quail, Idaho dunes tiger beetle, Bonneville cutthroat trout, bull trout, Yellowstone cutthroat trout, red band trout and leather sided chub.

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<ul style="list-style-type: none">• Vegetation treatments proposed in areas supporting sage grouse and sharp-tailed grouse would be coordinated with IDFG and would be implemented under LUP guidance or restrictions. <p><u>Threatened, Endangered, and Candidate Species</u></p> <p>The following restrictions apply to proposed habitats occupied by T&E and Candidate species and designated critical habitat.</p> <ul style="list-style-type: none">• Treatment activities may occur near or adjacent to T&E and Candidate species habitat and will be designed to minimize or mitigate impacts to habitat occupied by T&E and Candidate species and designated critical habitat so that the species or their habitats will not be adversely affected. All related fire and non-fire vegetation treatment activities in areas that may affect T&E and Candidate species would be conducted in consultation with USFWS. Further, all such activities would be designed and implemented in such a manner that potential impacts to T&E and Candidate species from disturbance or habitat modification would be extremely unlikely to occur or would be so small as to not be meaningfully measured, detected, or analyzed.• T&E and Candidate species with recovery plans, conservation agreements, and conservation strategies will be protected as specified in their respective plans/agreements/strategies. These protections include such measures as adequate habitat and range for a given species, including mitigation measures for multiple land use activities authorized by the BLM.• Herbicide applicators will obtain a weather forecast for the area prior to initiating a spraying project to ensure no extreme precipitation or wind events could occur during or immediately after spraying. Aerial application of herbicides will not occur during periods of inversion. Spraying will follow label instructions.
<p>Action: Implement the following Greater sage-grouse conservation measures:</p> <p>Prescribed Fire</p> <ul style="list-style-type: none">• Prior to planning prescribed burns or other vegetation management treatments in sagebrush communities, ensure that sage-grouse seasonal habitats have been mapped (see 5.3.2 for additional discussion of mapping).• Once seasonal habitats have been mapped, ensure that proposed project areas have been evaluated on the ground in the context of the appropriate seasonal habitat characteristics (see 5.3.2).• Avoid the use of prescribed fire and other sagebrush-reduction projects in areas where sagebrush is limiting on the landscape or in habitats that currently meet, or are trending toward meeting, breeding or winter habitat characteristics.• If the analysis shows that a vegetation treatment may still be advisable, design habitat-manipulation projects to achieve the desired objectives, considering the following:<ul style="list-style-type: none">○ Where prescribed burning, or other treatments, in sage-grouse habitats may be warranted (e.g., sagebrush cover exceeds desired breeding or winter habitat characteristics; understory does not meet seasonal habitat characteristics and restoration is desired; there is a need to restore ecological processes; or a proposed treatment site is in an exotic seeding being managed for overall sage-grouse benefits on the surrounding landscape).○ Project design should be done with interdisciplinary input and in cooperation with IDFG.○ Ensure that any proposed sagebrush treatment acreage is conservative in the context of surrounding seasonal habitats and landscape.○ Where appropriate, ensure that treatments are configured in a manner that promotes use by sage-grouse (see Connelly 2000 for additional discussion).○ Leave adequate untreated sagebrush areas for loafing/hiding cover near leks for sage-grouse.• Evaluate and monitor prescribed burns, and other treatments, as soon as possible after treatment and periodically thereafter to determine whether the project was successful and is meeting or trending toward

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desired objectives.

- Avoid the use of prescribed fire or other sagebrush treatments in habitats prone to the expansion or invasion of cheatgrass or other invasive species unless adequate measures are taken to control the invasive species and ensure subsequent dominance by desirable perennial species. In many—if not most—cases, this will likely require chemical treatments and reseeding.
- Plan, execute, and monitor prescribed fires in a manner that provides for adequate control and provision for contingency resources.
- Ensure that burn plans address the importance of preventing escaped fires when prescription fires are planned in the vicinity of stronghold and key habitat.

Annual Grasslands

- Local working groups (LWG), land management agencies, IDFG, and other partners should work closely together to identify and prioritize annual grassland areas for restoration. Work cooperatively to identify options, schedules, and funding opportunities for specific projects.
- In general, the priority for implementation of specific sage-grouse habitat restoration projects in annual grasslands should be given first to:
 - Sites adjacent to or surrounded by sage-grouse stronghold habitats, then
 - Sites outside stronghold habitats but adjacent to or within approximately two miles of key habitat, and
 - Sites beyond two miles of key habitat. The intent here is to focus restoration outward from existing, intact habitat.
- All seeding project designs should include measures for noxious weed control and monitoring for at least 3 years following implementation.
- Seed used in sage-grouse habitat restoration seedings, burned area rehabilitation projects, and hazardous fuels/wildland urban interface projects will be tested and certified as weed-free, based on prevailing agency policy and protocol. Private landowners are encouraged to use only certified seed, as well.
- In designing rehabilitation and restoration projects, use the best available science relative to seeding technology and plant materials. Use of NRCS's "VegSpec" website may be helpful. VegSpec is a web-based decision support system that assists land managers in the planning and design of vegetation establishment practices. VegSpec uses soil, plant, and climate data to select plant species that are site-specifically adapted, suitable for the selected practice, and appropriate for the purposes and objectives for which the planting is intended. (See <http://plants.usda.gov>).
- Design vegetation treatments in areas of high fire frequency to facilitate firefighter safety; reduce the risk of extreme fire behavior; reduce the risk and rate of fire spread to stronghold, key, and restoration habitats; reduce fire frequencies; and shorten the fire season.
- Where rangelands are dominated by annuals (such as cheatgrass) or where they border farmlands or railroad right-of-ways, convert cheatgrass areas to perennials, or establish buffers of perennial species to reduce the risk of fire spread from railroad or agriculture-related activities (e.g., sparks from trains, field burns, burn barrels), where appropriate and feasible.
- To discourage the spread of invasive annuals and noxious weed seed, require the washing of fire vehicles (including undercarriage) prior to deployments and prior to demobilization from wildfire incidents.
- Human activities such as fence and pipeline maintenance or construction, facility maintenance, utility maintenance, or any project or related work at or within 1 km (0.6 miles) of occupied leks that results in or will likely result in disturbance to lekking birds should be avoided from approximately 6:00 PM to 9:00 AM. In general, this guideline should be applied from March 15 through May 1 in lower elevation

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habitats and March 25 through May 15 in higher elevation habitats.

Perennial Grasslands

- LWGs, land management agencies, IDFG, and other partners should work closely together to identify and prioritize perennial grasslands (exotic versus native) where plant species diversity or sagebrush is limiting on the landscape. Further, they should work cooperatively to identify options, schedules, and funding opportunities for reestablishing sagebrush in higher priority areas.
- When seeding sagebrush, source-identified, tested seed adapted to local conditions should be used.
- One or more of the following approaches for restoring sagebrush should be considered to improve likelihood of success (see Dalzell 2004 and Monsen et al. 2004):
 - Use of the "Oyer" compact row seeder, which compacts soil and presses seed into the surface.
 - Use of the Brillion cultipacker seeder, where seed is broadcast over the surface followed by cultipacking.
 - Transplant bare-root or containerized stock in small critical areas to establish a seed source.
 - Use the "mother plant" technique, and transplant bare-root or containerized stock in select locations throughout the area to establish a seed source.
 - For large areas (e.g., large wildland fires), aerial seed onto a rough seedbed (Monsen et al. 2004) coupled with one or more of the above options.
- In established stands of introduced perennial grasses, transplant sagebrush into strategic patches or strips in critical sites or throughout the area. Scalp spots or strips to reduce grass competition prior to planting. Or, as an alternative to scalps, consider the use of herbicides (see Monsen et al. 2004, Volume 3).
- Where the diversification of crested wheatgrass or similar seedings with native species of grasses, forbs, and/or shrubs is desired, Pellant and Lysne (2005) recommend a three-step process:
- Reduce competition of crested wheatgrass to facilitate the establishment and persistence of the desired species. Possibilities include use of livestock, capitalizing on drought episodes that reduce grass vigor, herbicides such as glyphosate, and mechanical treatments.
 - Introduce desired, site-adapted species through drill seeding; aerial seeding followed by harrow, cultipacker or chaining; livestock trampling; or transplanting container stock, bareroot stock, or individual plants from native sources ("wildings"). Lambert (2005) provides descriptions, recommended seeding rates, and other useful information for nearly 250 species of native and non-native grasses, forbs, and shrubs.
 - As part of post-treatment management, ensure that livestock grazing and rest intervals are matched with the phenology and life history characteristics of the desired/seeded/transplanted species. Implement monitoring to clearly document how, what, when, and where treatments were implemented. Follow up with suitable effectiveness monitoring to document success of the treatments relative to project objectives.

Conifer Encroachment

- LWGs, land management agencies, IDFG, and other partners should work closely together to identify and prioritize conifer encroachment areas for further management action. Work cooperatively to identify options, schedules, and funding opportunities for specific projects. For western juniper, Miller et al. (2005) provide *Guidelines for Selecting the Most Appropriate Management Actions*, pages 54–57.
- IDFG, land management agencies, LWGs, and other partners should work closely together to identify leks where conifer encroachment may be affecting lek attendance or nearby habitat quality.
- Remove Douglas fir or other conifers where they are encroaching on wet meadows, riparian areas, or sagebrush stands that provide potential sage-grouse habitat.
- Remove juniper, Douglas fir, pinyon pine, or other trees within at least 100 m (330 ft) or an 8-acre area of occupied sage-grouse leks. The purpose of this procedure is to reduce perching opportunity for raptors

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<p>or other avian predators within view of leks. Techniques could include chainsaw, chipper, or other suitable mechanical means. Ensure cutting and slash disposal is completed between approximately July 15 and January 30 to minimize disturbance to grouse that may be in the vicinity (e.g., males at leks, nesting females, and young broods). This practice serves to reduce raptor predation on sage-grouse by eliminating potential perches, thereby improving survival, recruitment, and productivity. It may be particularly valuable where avian predation may be of greater concern such as in areas with fragmented habitat, nearby infrastructure features, and/or in the case of small, isolated sage-grouse populations.</p> <ul style="list-style-type: none"> • Where juniper or other conifer species have encroached upon sagebrush communities at larger scales, employ prescribed fire, chemical, mechanical (e.g., chaining, chipper, chainsaw, or commercial sale), or other suitable methods to reduce or eliminate juniper. Priority should be given to areas where there is a strong likelihood for recovery of perennial herbaceous vegetation or where preparatory and follow-up actions (e.g., control of invasive species and seeding) are likely to be successful. Whenever possible, but especially if sagebrush habitat is limited locally, use juniper-control techniques that are least disruptive to the affected stand of sagebrush. For example, if junipers are only scattered, and the associated sagebrush community is otherwise relatively healthy, cutting junipers with chainsaws will remove the encroachment threat while allowing for immediate use of the sagebrush by sage-grouse. In all cases, control efforts should be planned using interdisciplinary expertise. • Where juniper control around leks is planned, monitor leks for at least three consecutive years post-treatment to document effects on lek attendance. Ideally, two to three years of pre-treatment monitoring is also recommended, but this may not always be feasible.
<p><i>Livestock Grazing</i></p> <p>Action: Manage livestock grazing consistent with the Conservation Plan for the Greater Sage-grouse in Idaho (ISAC 2006) and local working group plans (e.g., Big Desert Plan), implementing conservation measures such as, but not limited to:</p> <ul style="list-style-type: none"> • Implementing grazing management systems (e.g., herding, rest rotation, deferred rotation) to ensure adequate nesting habitat within the breeding landscape • Adjusting grazing use distribution to benefit occupied Greater sage-grouse breeding habitat, through herding, salting, and water source management (e.g., turning troughs/pipelines on/off, extending pipelines/moving troughs) • Identifying and/or developing strategically located forage reserves • Moving sheep bedding grounds away from Greater sage-grouse leks • Placing salt/mineral supplements in existing disturbed sites, areas with reduced sagebrush cover, seedings, or cheatgrass sites • Considering the impact of range improvement placement on Greater sage-grouse • Modifying fences when impacts to Greater sage-grouse are identified.
<p><i>Fluid Minerals (Oil and Gas, Tar Sands, and Geothermal Resources)</i></p> <p>Action: Identify the following lands as open to leasing, subject to seasonal and controlled surface use restrictions (≈560,560 acres). These restrictions would be changed only by waiver, exception, or modification as outlined by the criteria listed in Appendix Process for Fluid Mineral Leasing.</p> <p>Seasonal wildlife guidelines (Approximately 456,560 acres):</p> <ul style="list-style-type: none"> • Greater sage-grouse strutting and nesting areas—activity allowed 6/16 to 1/30 (lands in the Big Lost MFP [BLM 1983])

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<ul style="list-style-type: none"> • Sharp-tailed grouse and Greater sage-grouse strutting grounds—activity allowed 5/1 to 3/1 (lands in the Medicine Lodge RMP) • Sharp-tailed grouse and Greater sage-grouse nesting and brood rearing areas—activity allowed 7/1 to 5/1 (lands in the Medicine Lodge RMP) • Sharp-tailed grouse and Greater sage-grouse winter range—activity allowed 4/1 to 12/1 (lands in the Medicine Lodge RMP) • Sharp-tailed and Greater sage-grouse nesting and brood rearing areas within the Tex Creek Wildlife Management Area—activity allowed 7/1 to 3/31
<i>Mineral Materials</i>
<p>Action: Develop conditions of approval that require operators to comply with mineral material regulations to protect the following surface resource values:</p> <ul style="list-style-type: none"> • Sharp-tailed grouse and Greater sage-grouse strutting, nesting, and brood rearing areas • Sharp-tailed grouse and Greater sage-grouse winter range • Special status species habitats.
Forest Service
Beaverhead-Deerlodge National Forest – Beaverhead-Deerlodge National Forest Plan
<i>Vegetation – Forest & Woodlands</i>
Objective: Grassland/Shrubland/Riparian: Reduce conifer encroachment on 74,000 acres of riparian areas, shrublands, and grasslands.
<i>Wildlife</i>
Goal: Sage Grouse: Sagebrush habitat supports sage grouse and pygmy rabbit populations by providing suitable sage grouse brood-rearing habitat on at least 40% of the sagebrush habitat within 18 kilometers of documented active or inactive sage grouse leks and the area mapped as potential pygmy rabbit habitat.
Objective: Sage Grouse: Maintain or improve sagebrush height, and canopy and grass-forb canopy of sagebrush habitat, emphasizing habitat within 18 kilometers of documented active or inactive sage grouse leks and the area mapped as potential pygmy rabbit habitat.
<p>Sensitive and Federally Listed Species: Information in the following sources should be considered when designing projects that may affect sensitive species or federally listed species.</p> <ul style="list-style-type: none"> • Management Plan and Conservation Strategies for Sage Grouse in Montana
Standard 8: Within 18 kilometers of documented active or inactive sage grouse leks, do not remove sagebrush within 300 meters of riparian zones, meadows, lakebeds or farmland, unless site specific analysis indicates such removal promotes achievement of the sagebrush habitat goal. Springs developed for livestock water in these areas must be designed to maintain free water and wet meadows.
Boise National Forest – Boise National Forest Plan
<i>Vegetation – General</i>
<p>Desired Condition - Grassland and Shrubland Vegetation: Chapter 3, p. III-29 (Vol. 1, FLRMP)</p> <p>Grasslands and shrublands exhibit variable patterns of multiple-aged shrubs, grasses, and forbs. Shrublands are found in mosaics of canopy closures across the landscape, reflecting a combination of successional development, disturbance regimes and management activities. Some mid- to high-elevation grasslands are primarily meadow complexes that are dominated by sedges, rushes, grasses, and forbs.</p> <p>Appendix A - Vegetation, p. 17 (Vol. 2, FLRMP)</p> <p>Shrublands: Shrublands occur on areas not classified as forestland and where shrub cover has the potential to be >10 percent. Desired conditions have been developed for some shrubland communities that occur on the Forest. The shrubland groups reflect the LANDFIRE Environmental Site Potentials (ESPs) (refer to the</p>

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Vegetation Classification section for descriptions of shrubland types). Like the forested vegetation, these groupings reflect similar environmental characteristics, site productivity, and disturbance regimes. Table A-9 displays the fire regimes for the shrubland communities.

Table A-9. Shrubland environmental site potential groups by fire regime

Fire Regime	Shrubland Environmental Site Potential Group
Mixed1	Low Sagebrush
Mixed1-Mixed2	Mountain and Wyoming Big Sagebrush
	Montane Shrub

Desired Condition Ranges for Sagebrush Species:

Mt. Big Sagebrush:

Grass/Forb = <10% Canopy Cover over 13-33% of area.

Low = 10-25% Canopy Cover over 27-47% of area.

Moderate = 26-35% Canopy Cover over 12-32% of area

High = >36% Canopy Cover over 8-28% of total area

Wyoming Big Sagebrush:

Grass/Forb = <10% Canopy Cover over 25-30% of area.

Low = 10-25% Canopy Cover over 20-35% of area.

Moderate = 26-35% Canopy Cover over 13-33% of area

High = >36% Canopy Cover over 12-32% of total area

Low Sagebrush:

Grass/Forb = <10% Canopy Cover over 0-20% of area.

Low = 10-25% Canopy Cover over 80-100% of area.

Moderate = 26-35% Canopy Cover over 0% of area

High = >36% Canopy Cover over 0% of total area

Guideline: VEGU06 - When sagebrush cover types are determined to need rest from livestock grazing following a wildfire, areas should be rested for a minimum of two growing seasons. Evaluate whether additional rest is needed after two growing seasons. Base this determination on the following factors:

- a) The ecological status of the sagebrush community prior to the wildfire,
- b) How long the sagebrush community had a density or canopy closure greater than 15 percent prior to the wildfire,
- c) The severity and intensity of the fire,
- d) The amount, diversity, and recovery of forbs, grasses and palatable shrubs that are present after 2 years of rest in relation to desired conditions.

In areas other than sagebrush cover types, an appropriate rest period should be determined. Base this determination on the following factors: soil conditions, the amount, diversity and recovery of forbs, grasses, and palatable shrubs in relation to the desired condition that are present after the 2 years of rest.

Guideline: BTGU03 - When available and not cost-prohibitive, seeds and plants used for seedings and plantings in revegetation projects should originate from genetically local sources of native species. When project objectives justify the use of non-native plant materials, documentation explaining why non-natives are preferred should be part of the project planning process.

Special Status Species – Wildlife - Sage-grouse

Objective: TEOB07 - During fine-scale analyses, identify practices or facilities that are adversely affecting

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TEPC species or their habitats, and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species.
Objective: TEOB19 - During fine-scale analyses in areas where TEPC species occur, identify opportunities to maintain desired habitat conditions or restore degraded habitat for TEPC species.
Objective: TEOB28 - During fine-scale analyses in areas where dispersed and developed recreation practices or facilities are identified as a potential concern or problem contributing to adverse effects to TEPC species or degradation of their habitats, evaluate and document where the problems are and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species.
Standard: TEST04 - Management actions that have adverse effects on Proposed or Candidate species or their habitats, shall not be allowed if the effects of those actions would contribute to listing of the species as Threatened or Endangered under the ESA.
Standard: TEST05 - For management actions that include application of insecticides, herbicides, fungicides, or rodenticides, mitigation shall avoid or minimize adverse effects on TEPC species or their habitats.
Standard: TEST06 - Management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats. For listed fish species, use Appendix B for determining compliance with this standard.
Standard: TEST12 - Mitigate, through avoidance or minimization, management actions within known nest or denning sites of TEPC species if those actions would disrupt reproductive success during the nesting or denning period. During project planning, determine sites, periods, and appropriate mitigation measures to avoid or minimize effects.
Standard: TEST13 - Mitigate, through avoidance or minimization, management actions within known winter roosting sites of TEPC species if those actions would adversely affect the survival of wintering or roosting populations. During project planning, determine sites, periods, and appropriate mitigation measures to avoid or minimize effects.
Standard: TEST29 - Avoid or minimize adverse effects from locatable mineral operations to TEPC animal species or their habitats.
Guideline: TEGU03 - Management actions in occupied Proposed or Candidate species habitat should be modified or relocated if the effects of the actions would contribute to a trend toward ESA listing for these species.
Guideline: TEGU05 - The Forest should cooperate with USFWS and NMFS as appropriate by providing information, data, and assistance for the evaluation of species that are petitioned, or proposed, or candidates to be listed under the ESA, and for evaluation of proposed critical habitat.
Guideline: TEGU06 - Coordinate with Forest resource specialists to consider TEPC habitat needs when designing and implementing management activities that may affect TEPC species and their habitats.
Guideline: TEGU08 - Fire Resource advisors should be trained in techniques to mitigate, through avoidance or minimization, adverse effects to TEPC species.
Guideline: TEGU10 - Land exchanges that would result in a net loss of quality or quantity of habitat for TEPC species should not be considered unless benefits of the exchange outweigh the benefits to those species in the long term.
Guideline: TEGU12 - Where the authority to do so was retained, proposed or existing special use authorizations should be issued, re-issued, or amended upon expiration, only if adverse effects of the authorizations on TEPC species can be minimized.
<i>Management Area Direction</i>
The Lower South Fork Boise River MA on the Mountain Home Ranger District: <ul style="list-style-type: none"> • Vegetation Objective 0133 - Within the 1992 Foothills Fire area, maintain existing and newly established shrub stands in the Mountain Big Sagebrush and Bitterbrush vegetation groups to improve shrub diversity.

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<ul style="list-style-type: none"> • Wildlife Resources Guideline 0140 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 0156 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 0157 - Whenever possible, modify developed springs and other water sources to restore free-flowing water and wet meadows in sage grouse habitat.
<ul style="list-style-type: none"> • Fire Management Objective 0159 - Limit the use of prescribed fire in existing and newly established stands of mountain big sagebrush and bitterbrush within the 1992 Foothills Fire area in order to restore canopy closure, and restore or maintain shrub diversity.
<p>Caribou-Targhee National Forest – Caribou National Forest Revised Forest Plan</p>
<p><i>Special Status Species – Wildlife - Sage-grouse</i></p>
<p>Objective: Sage Grouse: Within five years of signing the ROD, map functional and degraded sage grouse nesting and winter habitat within 5 miles of known leks. Identify opportunities to increase quality or quantity of that habitat</p>
<p>Action: Standard: In project analyses affecting the habitats listed below, assess impacts to habitat and populations for the following management indicator species:</p> <ul style="list-style-type: none"> • Grassland and open canopy sagebrush habitats--Columbian Sharp-tailed Grouse • Sagebrush habitats--Sage Grouse • Mature and old forest habitats--Northern Goshawk
<p>Action: Standard: Cooperate with other state and federal agencies and private landowners to survey, inventory, and manage habitats for sage grouse and Columbian sharp-tailed grouse</p>
<p>Action: Guideline: Current guidelines for sage and sharp-tailed grouse management, such as Connelly et al. (2000), should be used as a basis to develop site-specific recommendations for proposed sagebrush treatments</p>
<p>Action: Guideline: Management activities should consider proximity to active lek locations during site-specific project planning. Those within 10 miles of an active sage grouse lek and 2 miles of active sharp-tailed grouse leks should be considered further for suitability as grouse habitat</p>
<p>Action: Guideline: If management activities would impact courtship, limit physical, mechanical, and audible disturbances in the breeding complex during the breeding season (March to May) within three hours of sunrise and sunset each day.</p>
<p>Action: Guideline: Where management actions will disturb nesting grouse, avoid manipulation or alteration of vegetation during the nesting period (May to June)</p>
<p>Action: Guideline: In sagebrush habitats, manage herbaceous cover to conceal nests through the first incubation period for ground and low shrub-nesting birds. It is assumed that proper use of rest-rotation or deferred-rotation grazing should meet these conditions, although not every year on every area (Idaho Partners in Flight 2000)</p>
<p>Caribou-Targhee National Forest - Curlew National Grassland Management Plan</p>
<p><i>Vegetation - Rangeland</i></p>
<p>Grassland-wide Goal: Sagebrush is managed to maintain current levels of sagebrush in the >15% canopy cover class--about 60% of the Grassland. Emphasis will be on creating and maintaining areas suitable for sage grouse nesting habitat over the long term.</p>
<p>Grassland-wide Standard: Conduct a risk assessment for all sagebrush herbicide treatments, including aerial applications, using the most current Multi-Regional Risk Assessment.</p>
<p>Grassland-wide Standard: Areas where threetip sagebrush (<i>Artemisia tripartita</i>), rabbitbrush, and horsebrush</p>

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have canopy cover values of greater than 5 percent will be carefully evaluated before treatment due to their ability to sprout after disturbance.
Grassland-wide Guideline: Emphasize native plant species where they would meet the desired resource conditions. Introduced species may be used in project seedings: (1) where native species would not meet the objectives of erosion control, such as in high use or impact areas, and where the effects on local, native flora is minimal; (2) on sites that are currently dominated by introduced species and the use of non-native species has not degraded the adjacent native flora; (3) on sites where the management objective is to use non-native species in one area to prevent degradation of other natural areas; or (4) when native seed is unavailable or cost prohibitive.
Grassland-wide Goal: Manage sagebrush community habitats to reduce fragmentation and maintain or restore connectivity at the Grassland level.
Grassland-wide Objective: Assess the changes to sagebrush habitats in the Greater Curlew Valley, including canopy cover, adjacent land use, understory conditions, every five years. Coordinate this effort with the Natural Resource Conservation Service and Greater Curlew Valley Sage Grouse Local Working Group.
Grassland-wide Guideline: Identify and maintain those habitats that have sagebrush with native understory vegetation.
Grassland-wide Guideline: Manage for a mosaic of age and structural sagebrush communities across the Grassland in patches of at least 320 acres.
Guidelines: Prescription 6.5 – Rangeland Vegetation And Upland Bird Habitat Management, Vegetation Consider maintaining dense (>15%) sagebrush cover adjacent to private land that has less sagebrush than is desirable for quality sage grouse habitat.
Grassland-wide Goal: Habitat conditions on the Grassland contribute to sustaining populations of sage and Columbian sharp-tailed grouse in the Greater Curlew Valley.
<i>Special Status Species – Wildlife - Sage-grouse</i>
Grassland-wide Goal: Continue coordination with the Greater Curlew Valley Sage Grouse Local Working Group and other interested parties to manage sage grouse populations on the Curlew National Grassland.
Grassland-wide Goal: Maintain and increase, where possible, the distribution and abundance of sage grouse.
Grassland-wide Objective: Develop a map in cooperation with Idaho Department of Fish and Game to identify functional and degraded breeding habitat and winter habitat within two years of signing the Record of Decision.
Grassland-wide Standard: The habitat requirements of management indicator species (MIS) will be considered in all resource development projects. The MIS for sagebrush habitat is sage grouse and for riparian/wetland areas is a breeding bird complex.
Grassland-wide Guidelines: Management activities will consider proximity to active lek locations during site-specific project planning.
Grassland-wide Guidelines: If management actions would impact courtship, limit physical, mechanical and audible disturbances within the breeding complex during the breeding season (March – May) within three hours of sunrise or sunset.
Grassland-wide Guidelines: Where management actions may disturb nesting grouse, avoid manipulation or alteration of vegetation during the nesting period (May-June).
Standard: Prescription 6.5 – Rangeland Vegetation And Upland Bird Habitat Management, Wildlife Do not treat sagebrush within 0.25 miles of an active sage grouse lek.
Guideline: Prescription 6.5 – Rangeland Vegetation And Upland Bird Habitat Management, Wildlife Time treatment practices to provide the least impact to wildlife with emphasis on upland game birds.
Guideline: Prescription 6.5 – Rangeland Vegetation And Upland Bird Habitat Management, Wildlife Current guidelines for sage and sharp-tailed grouse management will be used as a basis to develop site-

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specific recommendations for proposed sagebrush treatments. Lek buffers as described in the most current guidelines do not apply to the Grassland, because of the highly fragmented nature of the area and the distance that hens are known to move to nest (Biologist Meeting 10/24/01). Rationale for deviation from the other guidelines will be identified in the site-specific project analysis.
Guideline: Prescription 6.5 – Rangeland Vegetation And Upland Bird Habitat Management, Wildlife When implementing vegetation seeding treatments, provide for a seed mix with species that are preferred by native upland birds during the pre-nesting, nesting and brood-rearing periods, where possible. See Appendix C.
<i>Cultural Resources and Tribal Coordination</i>
Goal: Grassland-wide Desired Future Conditions: Functional restoration of the ecosystem provides the capability to support harvestable levels of species of interest to the tribes.
<i>Recreation and Visitor Services</i>
Grassland-wide Guidelines: Manage dispersed recreation use such that activities do not adversely impact wildlife species such as upland game birds during critical periods of the annual life cycle.
<i>Other Administrative Designations</i>
Standards: Prescription 3.4.1 – Special Wildlife Areas, Vegetation: Native and non-native grass, forb and shrub species will be used in the composition for revegetation after disturbance and reflect those species preferred by native grouse for pre-nesting, nesting and brood rearing.
Salmon-Challis National Forest – Salmon National Forest Plan
<i>Wildlife</i>
Goal: Provide habitat of sufficient quantity and quality to sustain populations of management indicator species (p. IV-1)
Action: Habitat for each vertebrate wildlife species on the Forest will be managed to insure viable or target populations (p. IV-19).
<i>Livestock Grazing</i>
General Direction: Coordinate range improvement and management activities with wildlife habitat needs, especially on key habitat areas such as winter ranges, calving areas, riparian areas, and sage-grouse leks (p. IV-22).
Salmon-Challis National Forest – Challis National Forest Plan
<i>Wildlife and Fish</i>
Goal 1: Provide habitat to ensure viability and recovery of threatened and endangered and Forest Service sensitive plants and animals.
Objective 1 – Implement the T&E Recovery Plans as they are approved
Goal 2 – Maintain or improve the current productivity level of wildlife and fish habitat
Objective 4 – Place priority on improving essential wildlife and fish habitats (e.g., aspen, mahogany, riparian, aquatic) and seasonal ranges.
Objective 5 – Manage Forest vegetation to provide habitat diversity for all species
Emphasize habitat improvement for Threatened and Endangered Species, Forest Service Sensitive, and economically and socially important species
The Elk Habitat Relationships for Central Idaho, Guidelines for Management of Pronghorn Antelope and the Western State Sage Grouse Guidelines will be used as guides.
Management Area Direction – East Fork: Maintain or improve quality of wet meadows, springs, mule deer and elk winter range, elk calving and sage grouse brood-rearing areas.
Inventory wildlife habitat with emphasis on refining winter ranges, key sage grouse seasonal ranges, riparian areas, wet meadows, aspen types and on identifying improvement needs

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Within key sage grouse habitat, manage to increase forbs and provide adequate sagebrush cover										
Management Area Direction – South Lost River: Cooperate with Idaho Department Of Fish and Game in transplant of Bighorn sheep and sage grouse. Use Sage Grouse Workshop Guidelines in identifying criteria for Habitat evaluation.										
Management Area Direction – Sawmill Canyon: Maintain quality and use of MIS big game and grouse summer forage areas, emphasizing complexes comprising moist habitats. Protect moose and elk calving and grouse brood-rearing areas.										
Management Area Direction- Antelope Creek: Improve quality and use of big-game winter range and other critical habitat; emphasize complexes comprising moist habitats. Sage-grouse Workshop Guidelines should be used as a guideline.										
Sawtooth National Forest – Sawtooth National Forest Revised Forest Plan										
<i>Vegetation - General</i>										
Shrubland desired conditions are represented by canopy cover of shrubs based on the following groupings: <ul style="list-style-type: none"> ▪ Grass/Forb = <10% canopy cover ▪ Low = 10–25% canopy cover ▪ Moderate = 26–35% canopy cover ▪ High = ≥36% canopy cover 										
Table A-11. Desired Condition Ranges for Low Sagebrush Environmental Site Potential Groups										
<table border="1"> <thead> <tr> <th>Canopy Cover</th> <th>Percent of Area</th> </tr> </thead> <tbody> <tr> <td>Grass/Forb</td> <td>0–20</td> </tr> <tr> <td>Low</td> <td>80–10</td> </tr> <tr> <td>Moderate</td> <td>0</td> </tr> <tr> <td>High</td> <td>0</td> </tr> </tbody> </table>	Canopy Cover	Percent of Area	Grass/Forb	0–20	Low	80–10	Moderate	0	High	0
Canopy Cover	Percent of Area									
Grass/Forb	0–20									
Low	80–10									
Moderate	0									
High	0									
Table A-12. Desired Condition Ranges for Mountain Big Sagebrush and/or Basin Big Sagebrush ESP Groups										
<table border="1"> <thead> <tr> <th>Canopy Cover</th> <th>Percent of Area</th> </tr> </thead> <tbody> <tr> <td>Grass/Forb</td> <td>13–33</td> </tr> <tr> <td>Low</td> <td>27–47</td> </tr> <tr> <td>Moderate</td> <td>12–32</td> </tr> <tr> <td>High</td> <td>8–28</td> </tr> </tbody> </table>	Canopy Cover	Percent of Area	Grass/Forb	13–33	Low	27–47	Moderate	12–32	High	8–28
Canopy Cover	Percent of Area									
Grass/Forb	13–33									
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Moderate	12–32									
High	8–28									
Table A-13. Desired Condition Ranges for Wyoming Big Sagebrush										
<table border="1"> <thead> <tr> <th>Canopy Cover</th> <th>Percent of Area</th> </tr> </thead> <tbody> <tr> <td>Grass/Forb</td> <td>25–30</td> </tr> <tr> <td>Low</td> <td>20–35</td> </tr> <tr> <td>Moderate</td> <td>13–33</td> </tr> <tr> <td>High</td> <td>12–32</td> </tr> </tbody> </table>	Canopy Cover	Percent of Area	Grass/Forb	25–30	Low	20–35	Moderate	13–33	High	12–32
Canopy Cover	Percent of Area									
Grass/Forb	25–30									
Low	20–35									
Moderate	13–33									
High	12–32									

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Table A-14. Desired Condition Ranges for Montane Shrub Environmental Site Potential Groups	
Canopy Cover	Percent of Area
Grass/Forb	0
Low	5–25
Moderate	5–25
High	60–80

Special Status Species – Wildlife – Sage-grouse

Desired Condition: The amount, distribution, and characteristics of source habitat are present at levels necessary to support persistence of native and desired non-native wildlife species within their respective ranges across the planning unit. For Region 4 Sensitive species, management actions retain desired source habitat conditions, or lead to restoration of those conditions. Habitat conditions contribute to the persistence of species and do not lead to listing under the ESA or as a Region 4 Sensitive Species. Human activities do not affect source environments in a manner that prevents wildlife populations from attaining desired distribution and abundance during critical life stages. Habitat conditions support sustainability of species of socio-economic and tribal interest.

Goal: TEGO02 - Habitat within the respective ranges of Proposed or Candidate species contributes to keeping them from becoming listed under ESA.

Goal: TEGO04 - Environmental conditions and habitat components support reproductive needs important to sustainable populations of Threatened, Endangered, Proposed, and Candidate (TEPC) species.

Goal: TEGO05 - Well-distributed habitat capable of maintaining self-sustaining, complex interacting groups of TEPC species exists within their respective ranges across the planning unit.

Goal: TEGO06 - Habitat capable of maintaining stable or increasing trends in abundance of TEPC species in all recovery units within the planning unit exists.

Objective: TEOB01 - Continue to map and update locations of species occurrence and habitat for TEPC species during fine- or site/project-scale analyses. Incorporate information into a coordinated GIS database and coordinate with the Idaho Conservation Data Center.

Objective: TEOB02 - Cooperate with USFWS and NMFS to develop an Information and Education program for special use authorizations within TEPC habitat.

Objective: TEOB03 - Identify and reduce road-related effects on TEPC species and their habitats using the Watershed and Aquatic Recovery Strategy (WARS), *the Vegetation and Wildlife Habitat Restoration Strategy and Source Environment Restoration Strategy*, and other appropriate methodologies.

Objective: TEOB05 - Coordinate with research for TEPC species to determine basic life history requirements and potential effects from management activities. Coordinate efforts and information with the Idaho Conservation Data Center, universities, Forest Service Research Stations, etc.

Objective: TEOB07 - During fine-scale analyses, identify practices or facilities that are adversely affecting TEPC species or their habitats, and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species.

Objective: TEOB11 - Update appropriate NRIS database modules for TEPC species and their habitats on a biennially basis to incorporate latest field data.

Objective: TEOB14 - During mid- or project-scale analysis, identify and prioritize opportunities for restoration of habitat linkage zones for terrestrial TEPC species to promote genetic integrity and species distribution (refer to Wildlife Source Environment Restoration Strategy Map in Appendix E).

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Objective: TEOB18 - During fine-scale analyses in areas where TEPC species occur, identify opportunities to maintain desired habitat conditions or restore degraded habitat for TEPC species.
Objective: TEOB21 - Develop Integrated Weed Management plans to maintain or restore habitats for TEPC plants and other native species of concern where they are threatened by noxious weeds or non-native invasive plants.
Objective: TEOB22 - Develop operational resources (maps, keys, desk guides, etc.) within 1 year of signing the ROD, to coordinate TEPC species concerns and practical mitigations, and include those resource tools in the Fire Management Plan. Consult with NMFS and USFWS on operational resources on an annual basis. As part of this process consider the following relative to initial attack: <ul style="list-style-type: none"> a) How these resource tools will be provided to initial attack personnel. b) Locations or identification of occupied TEPC plant habitat, TEPC fish-bearing streams, surface water with direct delivery to TEPC fish bearing streams and associated RCAs. c) Criteria and potential mitigation concerning decisions to place incident bases, camps, helibases, helispots, and other centers for incident activities within occupied TEPC plant habitat or RCAs. d) Criteria and potential mitigation concerning decisions to use draft hoses in TEPC fish-bearing streams that do not have appropriate screening. e) Criteria and potential mitigation concerning decisions to use chemical retardant, foam or other additives in RCAs where surface waters have direct delivery to TEPC fish-bearing streams. f) Criteria and potential mitigation concerning decisions to use heavy equipment in RCAs.
Objective: TEOB25 - Use land acquisition, exchange, and conservation easements, where appropriate, to meet riparian and aquatic goals and objectives, and to facilitate restoration of TEPC species habitat.
Objective: TEOB26 - Where the authority to issue special-use authorizations and agreements was not retained (i.e., FERC, mineral leases), work with permit holders to negotiate changes to meet TEPC species desired habitat conditions.
Objective: TEOB27 - During fine-scale analyses in areas where dispersed and developed recreation practices or facilities are identified as a potential concern or problem contributing to adverse affects to TEPC species or degradation of their habitats, evaluate and document where the problems are and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species.
Standard: TEST04 - Management actions that have adverse effects on Proposed or Candidate species or their habitats, shall not be allowed if the effects of those actions would contribute to listing of the species as Threatened or Endangered under the ESA.
Standard: TEST05 - For management actions that include application of insecticides, herbicides, fungicides, or rodenticides, mitigation shall avoid or minimize adverse effects on TEPC species or their habitats.
Standard: TEST12 - Mitigate, through avoidance or minimization, management actions within known nest or denning sites of TEPC species if those actions would disrupt reproductive success during the nesting or denning period. During project planning, determine sites, periods, and appropriate mitigation measures to avoid or minimize effects.
Standard: TEST13 - Mitigate, through avoidance or minimization, management actions within known winter roosting sites of TEPC species if those actions would adversely affect the survival of wintering or roosting populations. During project planning, determine sites, periods, and appropriate mitigation measures to avoid or minimize effects.
Standard: TEST29 - Avoid or minimize adverse effects from locatable mineral operations to TEPC animal species or their habitats.
Guideline: TEGU02 - For proposed actions that may affect potential habitat of TEPC species, identify potential habitat and determine species presence within or near the project area. Document the rationale for not identifying potential habitat and determining species presence for TEPC species in the project record.
Guideline: TEGU03 - Management actions in occupied Proposed or Candidate species habitat should be

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modified or relocated if the effects of the actions would contribute to a trend toward ESA listing for these species.
Guideline: TEGU05 - The Forest should cooperate with USFWS and NMFS as appropriate by providing information, data, and assistance for the evaluation of species that are petitioned, or proposed, or candidates to be listed under the ESA, and for evaluation of proposed critical habitat.
Guideline: TEGU06 - Coordinate with Forest resource specialists to consider TEPC habitat needs when designing and implementing management activities that may affect TEPC species and their habitats.
Guideline: TEGU08 - Fire Resource advisors should be trained in techniques to mitigate, through avoidance or minimization, adverse effects to TEPC species.
Guideline: TEGU10 - Land exchanges that would result in a net loss of quality or quantity of habitat for TEPC species should not be considered unless benefits of the exchange outweigh the benefits to those species in the long term.
Guideline: TEGU12 - Where the authority to do so was retained, proposed or existing special use authorizations should be issued, re-issued, or amended upon expiration, only if adverse effects of the authorizations on TEPC species can be minimized.
<i>Rangeland Resources</i>
Guideline: RAGU05 - Where rangeland facilities or practices have been identified as potentially contributing to the degradation of water quality, aquatic species, wildlife species of concern, or occupied sensitive or watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, or changes in management strategy, alteration, or discontinuance.
<i>Recreation and Visitor Services</i>
Objective: REOB01 During fine-scale analyses in areas where recreation facilities are identified as a potential concern or problem contributing to degradation of water quality, aquatic species, wildlife species of concern or occupied sensitive or Watch plant habitat, evaluate and document the location of the facilities causing degradation and prioritize opportunities to mitigate effects. (REOB01).
Objective: REOB20 - During fine-scale analyses in areas where recreational trails are identified as a potential concern or problem contributing to degradation to other resources, evaluate and document the location of the trail degradation and prioritize opportunities to mitigate effects.
Guideline: REGU07 Where recreation facilities or practices have been identified as potentially contributing to degradation of water quality or aquatic species, wildlife species of concern or occupied sensitive and watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, changes in management strategy, alteration, or discontinuance.
<i>Lands and Realty</i>
Guideline: LSGU01 - Acquisitions of land and interest in lands should be guided by the following criteria: Priority 1 Acquisitions: (not listed in any order of priority) a) Lands and associated riparian ecosystems on water frontage such as lakes and major streams. b) Critical habitat lands needed for protection of TEPC fish, wildlife, or plant species. c) Other environmentally sensitive lands, such as important wetland and riparian areas. d) Lands needed for the protection of significant historical or cultural resources when these resources are threatened or when management may be enhanced by public ownership. e) Lands that enhance recreation opportunities, public access, and protection of aesthetic values. f) Lands needed for protection and management of administrative and Congressionally designated areas. g) Lands needed to reduce expenses of both the Forest Service and the public in administration and utilization. Consolidation of split estates. h) Lands with water rights that can be used to accomplish purposes for which the National Forest

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<p>was created, or related resource obligations.</p> <p>Priority 2 Acquisitions: (not listed in any order of priority)</p> <p>a) Key tracts of an ecosystem that are not urgently needed, but will promote more effective management of the ecosystem and will meet specific needs for vegetative management, watershed management, research, public recreation, or other defined management objectives. Generally, these tracts will support consolidation objectives.</p> <p>b) Buffer lands needed for protection of lands acquired for purposes listed above.</p> <p>c) Lands needed to protect resource values by eliminating or reducing fire risks, soil erosion and occupancy trespass.</p> <p>Priority 3 Acquisitions: All other lands desirable for inclusion in the National Forest System.</p>
<p><i>Locatable Minerals</i></p> <p>Objective: MIOB08 - During fine-scale analyses in areas where mine facilities are identified as a potential concern or problem contributing to degradation of water quality, aquatic species, wildlife species of concern or occupied sensitive or Watch plant habitat, evaluate and document where the contributing mine facilities are and prioritize opportunities to mitigate effects.</p> <p>Guideline: MIGU11 - Where mine facilities or practices have been identified as potentially contributing to degradation of water quality, aquatic species, wildlife species of concern, or occupied sensitive and watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, changes in management strategy, alteration, or discontinuance.</p>
<p><i>Travel and Transportation</i></p> <p>Objective: FROB12 - During fine-scale analyses in areas where roads and facilities are identified as a potential concern or problem contributing to degradation of water quality, aquatic species, wildlife species of concern or occupied sensitive or Watch plant habitat, evaluate and document where the contributing facilities are and prioritize opportunities to mitigate effects.</p>
<p><i>Management Area Direction</i></p> <p><u>Management Areas on the Minidoka District:</u> MA-11 – Rock Creek (Sawtooth LRMP, Volume 1 pages III-228-237)</p> <ul style="list-style-type: none"> • Vegetation Objective 1116 - Restore and maintain sagebrush and bitterbrush composition, age class, and canopy cover components (as described in Appendix A) in the Low Sage, Basin Big Sage, and Mountain Big sagebrush vegetation groups, with emphasis on improving wildlife winter ranges and sage grouse habitat near the Forest Service boundary. • Wildlife Resources Guideline 1124 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions. • Rangeland Resources Objective 1141 – When possible, modify developed springs and other water sources to restore natural free-flowing water and wet meadows in sage grouse habitat. • Rangeland Resources Guideline 1142 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks. <p>MA-12 – Cottonwood Creek (Sawtooth LRMP, Volume 1 pages III-238-245)</p> <ul style="list-style-type: none"> • Vegetation Objective 1215 - Restore shrub composition in the Low Sage, Basin Big Sage, and Mountain Big Sagebrush cover types; with emphasis on improving wildlife winter ranges in areas degraded by increasing juniper cover. • Wildlife Resources Guideline 1225 - Management actions in sage grouse habitat should be designed to meet desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be

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designed to maintain or restore cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 1233 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<p>MA-13 – Trapper Creek/Goose Creek (Sawtooth LRMP, Volume 1 pages III-246-255)</p> <ul style="list-style-type: none"> • Vegetation Objective 1321 - Restore canopy covers to desired conditions, as described in Appendix A, within the Basin Big Sagebrush, Low Sage, and Mountain Big Sagebrush vegetation groups where these groups have been altered.
<ul style="list-style-type: none"> • Non-native Plants Objective 1327 - Reduce cheatgrass by restoring native perennial grass/forb composition of plant communities in the Low Sage, Basin Big Sage, Pinyon-Juniper, and Mountain Big Sagebrush vegetation groups below 6,000 feet elevation.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1329 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Objective 1342 - Whenever possible, modify developed springs and other water sources to restore natural free-flowing water and wet meadows in sage-grouse habitat.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 1344 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<p>MA-14 – Shoshone Creek (Sawtooth LRMP, Volume 1 pages III-256-262)</p> <ul style="list-style-type: none"> • Vegetation Objective 1048 - Restore and maintain sagebrush and bitterbrush composition, age class, and canopy cover components (as described in Appendix A) in the Low Sage, Basin Big Sage, and Mountain Big sagebrush vegetation groups, with emphasis on improving wildlife winter ranges and sage grouse habitat near the Forest Service boundary.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1413 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Objective 1418 – Whenever possible, modify developed springs and other water sources to restore natural free-flowing water and wet meadows in sage-grouse habitat.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 1419 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<p>MA-15 – Albion Mountains (Sawtooth LRMP, Volume 1 pages III-264-271)</p> <ul style="list-style-type: none"> • Vegetation Objective 1513 - Restore mountain big sagebrush canopy cover to desired conditions, as described in Appendix A, in Robinson Creek headwaters, Big Rocky Creek, Summit Creek, North and South Carson Creeks, Myers Canyon, and Fairchild Creek.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1524 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<p>MA-16 – Howell Creek (Sawtooth LRMP, Volume 1 pages III-272-281)</p> <ul style="list-style-type: none"> • Vegetation Objective 1618 - Restore Mountain Big Sagebrush canopy cover to desired conditions, as described in Appendix A, in Broad Hollow, Brim Canyon, and Cooney Hollow.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1631 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.

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<ul style="list-style-type: none"> • Rangeland Resources Objective 1644 - Whenever possible, modify developed springs and other water sources to restore free-flowing water and wet meadows in sage grouse habitat.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 1645 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks
<p>MA-17 – Independence Lakes (Sawtooth LRMP, Volume 1 pages III-282-289)</p> <ul style="list-style-type: none"> • Vegetation Objective 1712 - Restore and maintain shrubland communities, particularly the Basin Big Sage vegetation group, as described in Appendix A.
<ul style="list-style-type: none"> • Vegetation Objective 1713 - Restore Mountain Big Sagebrush canopy cover and juniper densities to desired conditions, as described in Appendix A, in the Dry Creek area to address fire hazard.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1725 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Objective 1736 - Whenever possible, modify developed springs and other water sources to restore free-flowing water and wet meadows in sage grouse habitat.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 1737 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<p>MA-18 – Raft River (Sawtooth LRMP, Volume 1 pages III-290-299)</p> <ul style="list-style-type: none"> • Vegetation Objective 1818 - Restore and maintain species composition, productivity, vigor, and canopy cover (as described in Appendix A) of the Mountain Big Sagebrush vegetation group in the George Peak, The Meadows, and the Rosevere Point areas.
<ul style="list-style-type: none"> • Wildlife Resources Objective 1826 - Restore or maintain sage grouse habitat through shrubland vegetation management.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1828 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<p>MA-19 – Black Pine (Sawtooth LRMP, Volume 1 pages III-300-309)</p> <ul style="list-style-type: none"> • Vegetation Objective 1917 - Restore canopy cover, as described in Appendix A, within the Mountain Big Sagebrush and Pinyon-Juniper cover types in the southern and western portions of the management area.
<ul style="list-style-type: none"> • Vegetation Objective 1919 - Evaluate the need for sagebrush re-establishment in the northern portion of the management area that burned in 1999 and 2000.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 1929 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Objective 1933 - Whenever possible, modify developed springs and other water sources to restore natural free-flowing water and wet meadows in sage grouse habitat.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 1934 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<p>MA-20 – Sublett (Sawtooth LRMP, Volume 1 pages III-310-317)</p> <ul style="list-style-type: none"> • Vegetation Objective 2013 - Restore canopy cover to desired levels (described in Appendix A) within the Basin Big Sagebrush and Mountain Big Sagebrush vegetation communities. Restore native perennial grass/forbs composition of plant communities in these same areas
<ul style="list-style-type: none"> • Vegetation Objective 2014 - Restore riparian vegetation along Sublett Creek through management of dispersed recreation and livestock grazing.

**Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans**

<ul style="list-style-type: none"> • Wildlife Resources Guideline 2017 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, actions should be designed to maintain or restore canopy cover conditions.
<ul style="list-style-type: none"> • Rangeland Resources Objective 2025 - Whenever possible, modify developed springs and other water sources to restore free-flowing water and wet meadows in sage grouse habitat.
<ul style="list-style-type: none"> • Rangeland Resources Guideline 2026 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.
<p>MA-05 – Little Wood River (Sawtooth LRMP, Volume 1 pages III-144-163)</p> <ul style="list-style-type: none"> • Vegetation Objective 0532 - Restore structure and species composition in the Alpine Meadows, Dry Meadows, and Mountain Big Sagebrush vegetation groups in the Little Wood River and Copper Creek drainages where these groups have been altered due to fire exclusion and permitted and recreational livestock grazing.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 0541 - Management actions in sage-grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage-grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<p><u>Management Areas on the Fairfield District:</u> MA-07 – Little Smokey Creek (Sawtooth LRMP, Volume 1 pages III-164-173)</p> <ul style="list-style-type: none"> • Vegetation Objective 0720 - Restore the herbaceous component of the Mountain Big Sagebrush communities adjacent to riparian areas in narrow drainages.
<ul style="list-style-type: none"> • Vegetation Objective 0721 - Restore hydric and woody shrub species composition and density in bottom riparian areas within the Grindstone Creek, Carrie Creek, Worswick Creek, Red Rock Creek, Rosetta Creek, Wood Gulch, Camp Creek, Sawmill Creek, and Cannonball Creek drainages, where vegetation has been altered by livestock grazing.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 0727 - Management actions in sage-grouse habitat should be designed to meet the desired conditions for sagebrush described in Appendix A. Where greater than 40 percent of the sage-grouse habitat in the management area has less than 10 percent canopy cover, actions should be designed to maintain or restore canopy cover conditions.
<p>MA-09 – Lime Creek (Sawtooth LRMP, Volume 1 pages III-208-217)</p> <ul style="list-style-type: none"> • Vegetation Objective 0917 - Restore the herbaceous plant ground cover component of the Mountain Big Sagebrush vegetation group in the South and North Fork Lime Creek drainages.
<ul style="list-style-type: none"> • Wildlife Resources Guideline 0924 - Management actions in sage grouse habitat should be designed to meet the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.
<p>MA-10 – Soldier Creek/Willow Creek (Sawtooth LRMP, Volume 1 pages III-218-227)</p> <p>Vegetation Objective 1016 - Restore and maintain canopy closures (as described in Appendix A), and restore the herbaceous plant ground cover component of low-elevation benches and slopes within the Mountain Big Sagebrush vegetation group to reduce the effects of fire exclusion and livestock use in the Soldier Creek and Willow Creek areas.</p>
<p>Vegetation Objective 1016 - Restore and maintain canopy closures (as described in Appendix A), and restore the herbaceous plant ground cover component of low-elevation benches and slopes within the Mountain Big Sagebrush vegetation group to reduce the effects of fire exclusion and livestock use in the Soldier Creek and Willow Creek areas.</p>
<p>Wildlife Resources Guideline 1024 - Management actions in sage grouse habitat should be designed to meet</p>

Table G-1
GRSG and Sagebrush Habitat Guidance in Land Use Plans

<p>the desired conditions for sagebrush, as described in Appendix A. Where greater than 40 percent of the sage grouse habitat in the management area has less than 10 percent canopy cover, management actions should be designed to maintain or restore canopy cover conditions.</p>
<p>Rangeland Resources Guideline 1042 - When constructing or reconstructing fences, design or relocate them to avoid potential sage grouse mortality near leks.</p>
<p>Targhee National Forest</p>
<p><i>Vegetation – Rangeland (“non-forested”)</i></p>
<p>Goal: Use vegetation management to achieve a broad array of multiple-use and ecosystem management objectives, including maintenance, improvement, and restoration of</p> <ul style="list-style-type: none"> • forest health, • scenic viewsheds and corridors, • wildlife habitat effectiveness and quality, • hazardous fuels reduction, • biological diversity of plant and animal communities, riparian and watershed health and function, vegetation structure, composition, and distribution in larger landscapes
<p>Guideline: Sagebrush/grassland habitats. Within big sagebrush (<i>Artemisia tridentata</i> & varieties)/grassland habitats strive for canopy coverage distributions on a subwatershed basis (generally 2,000 to 6,000 acres in size) of</p> <ul style="list-style-type: none"> • Less than five percent of a subwatershed in a less than five percent canopy coverage class. • Seventy-five percent of a subwatershed in a well distributed mosaic of canopy coverage. ranging from 5-30 percent. • Twenty percent of a subwatershed in a greater than 30 percent canopy coverage class.

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Appendix H

BLM Areas of Critical Environmental Concern and Forest Service Zoological Areas Evaluation



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H. BLM ACECs AND FOREST SERVICE ZOOLOGICAL AREAS EVALUATION

H.1 Introduction

During the scoping process for this LUPA/EIS the BLM invited the public to nominate or recommend areas on public lands for GRSG and their habitat to be considered as ACECs. In response to this invitation, the BLM received ACEC nominations from a number of interested organizations. In addition to nominating ACECs on BLM-administered lands, during scoping, interested organizations also identified potential GRSG-related RNAs for National Forest System lands.

FLPMA Section 103 (a) defines ACECs as public lands for which special management attention is required (when such areas are developed or used or when no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes or to protect life and safety from natural hazards. Section 202(c)(3) of the Federal Land Policy and Management Act (FLPMA) requires that priority be given to the designation and protection of areas of critical environmental concern (ACEC).

Research Natural Areas are areas with valuable ecological resources. These areas are protected and maintained in natural conditions, for the purposes of conserving biological diversity, conducting non-manipulative research and monitoring, and fostering education.

The identification and establishment of a national network of RNAs is Congressionally mandated in the National Forest Management Act (NFMA) (36 CFR Sec. 219.25; 36 CFR 251.23). The need for, and value of, research natural areas has a fundamental basis, as well, in NFMA which states that land and resource management plans will include a plan to monitor and evaluate the effects of implementing the management plan (36 CFR Sec. 219.11(d))

H.2 ACEC Nominations

During the scoping process for this LUPA/EIS the BLM received specific ACEC nominations in scoping letters submitted by Western Watersheds Project, Wild Earth Guardians and the Greater Yellowstone Coalition. The Wild Earth Guardians letter represented a consortium of environmental organizations. Nominated ACECs identified by Western Watersheds Project contained various amounts and extents of sage-grouse habitat and non-habitat. Both Wild Earth Guardians and the Greater Yellowstone Coalition nominated areas within identified preliminary priority habitat. The boundary of the and GYC externally nominated ACECs were developed through identifying preliminary priority habitat within southwestern Montana and the Upper Snake areas, as described in their scoping letter. Wild Earth Guardians proposed two separate scenarios: 1) all preliminary priority habitat areas excluding significantly impacted lands near active oil and gas wells; and 2) a system of ACECs to provide for habitat

needs of GRSG. Both of these scenarios were evaluated. Under the first scenario all PPH areas were delineated and evaluated and this resulted in 15 separate areas in Idaho and southwestern Montana, grouped by local working group area. Under the second scenario BLM evaluated PPH areas to describe a system of nominated ACECs which, in addition occurring with PPH areas, also contain relatively intact and high quality habitat. This evaluation resulted in 18 separate areas throughout Idaho.

Using the above mentioned criteria, nearly all identified preliminary priority sage-grouse habitat in Idaho and Southwestern Montana was included within an ACEC nomination.

H.3 ACEC Evaluation Process

Based on the nominations received, all identified PPH was taken through the evaluation process.

In compliance with BLM Manual 1613-Areas of Critical Environmental Concern, a BLM interdisciplinary team conducted an initial evaluation of all GRSG mapped occupied habitat to decide which if any areas should be carried forward for further evaluation in the land use planning process. The ACEC evaluations were conducted by the BLM's GRSGS core team, which included wildlife biologists and land use planners assigned to the project. Additional input was provided by specialists from each Field and District Office that has GRSG habitat within their respective boundaries. The BLM's multi-step evaluation process consisted of:

1. BLM core team evaluated external ACEC nominations 1 to determine relevance and importance.
2. Habitat was broken down between southwestern Montana and Idaho, and within Idaho further delineated according to local working group boundaries.
3. Draft evaluation tables and maps were created that were reviewed by the full BLM IDT and ad hoc IDT members (which includes representatives from each field office).

H.4 Relevance and Importance Criteria

As mentioned in the introduction, to be considered for designation as an ACEC, an area must meet the requirements of relevance and importance as described in the Code of Federal Regulations (43 CFR 1610.7.2). The definitions for relevance and importance are as follows:

H.4.1 Relevance

An area is considered relevant if it contains one or more of the following:

1. A significant historic, cultural, or scenic value (for example, rare or sensitive archaeological resources and religious or cultural resources important to Native American Indians).

2. A fish and wildlife resource (for example, habitat for endangered, sensitive, or threatened species or habitat essential for maintaining species diversity).
3. A natural process or system (for example, endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities; and rare geologic features).
4. A natural hazard (for example, areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action could meet the relevance criteria if it is determined through the resource management planning process that it has become part of the natural process.

H.4.2 Importance

The value, resource, system, process, or hazard described above must have substantial significance to satisfy the importance criteria, which generally means it is characterized by one or more of the following:

1. Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared with any similar resource.
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to change.
3. Has been recognized as warranting protection to order to satisfy national priority concerns or to carry out the mandates of FLPMA.

As part of the ACEC evaluation process the BLM determined that the mere presence of GRSG or GRSG habitat does not constitute a significant wildlife resource (43 CFR 1610.7.2). Direction associated with the BLM's National GRSG planning strategy asked each State to identify preliminary priority habitat (PPH). PPH comprises areas that have been identified as having the highest conservation value to maintaining sustainable GRSG populations. It was determined that areas nominated for ACEC Designation did not meet the relevance criteria if they were outside identified preliminary priority habitat. Therefore potential ACEC boundaries were identified based on PPH delineated areas.

As part of the external nominations, proposed ACECs extend across State boundaries. In addition Wild Earth Guardians and GYC's proposals included all PPH independent of administrative boundaries, for the purposes of this evaluation proposed ACECs include both BLM-administered and National Forest System lands. Forest Service does not designate ACECs and therefore any identification of special areas on Forest Service administered lands would be referred to as Zoological Areas.

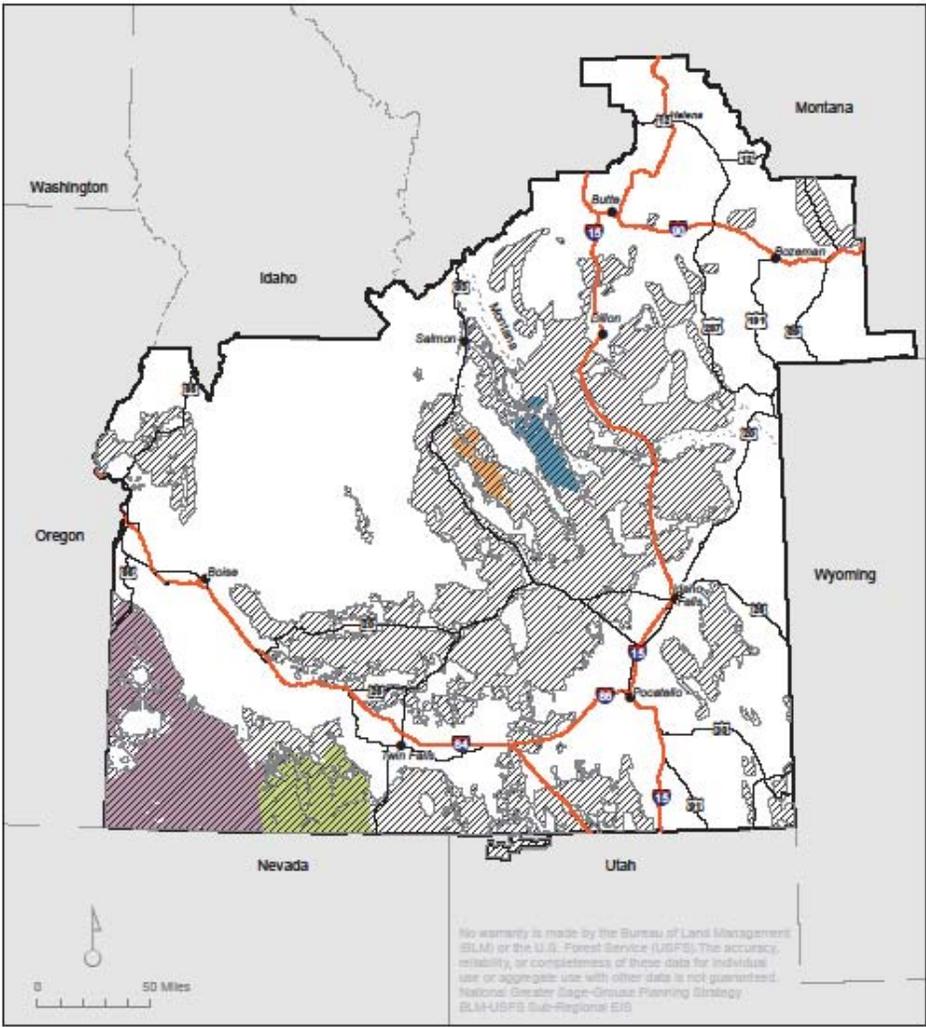
As a result of the evaluation process, it was determined that xx areas met the relevance criteria.

All areas that met the relevance criteria were determined to have importance because protection of GRSG is a national priority for BLM. **Table H.1**, Potential ACEC and Zoological Areas, includes information on each of the individual areas evaluated by the BLM and Forest Service. Nominations that met relevance and importance criteria are displayed on Maps H.1 – Proposed ACECs Alternative C; H.2 – Proposed ACECs Alternative F – All Preliminary Priority Habitat; H.3 – Proposed ACECs Alternative F – System of ACECs.

H.5 Zoological Areas

After the BLM completed its ACEC evaluation process, the Forest Service evaluated GRSG habitat adjacent to potential ACECs found to have relevance and importance. The Forest Service is considering designating these areas as Zoological Areas to ensure consistent management across the landscape. When considering Zoological Areas, the Forest Service is not required to go through the same screening criteria that the BLM is required to go through when considering ACEC designation. In addition to considering zoological areas that are contiguous to BLM-administered lands, the Forest Service is considering designating some disconnected GRSG habitat as a zoological area.

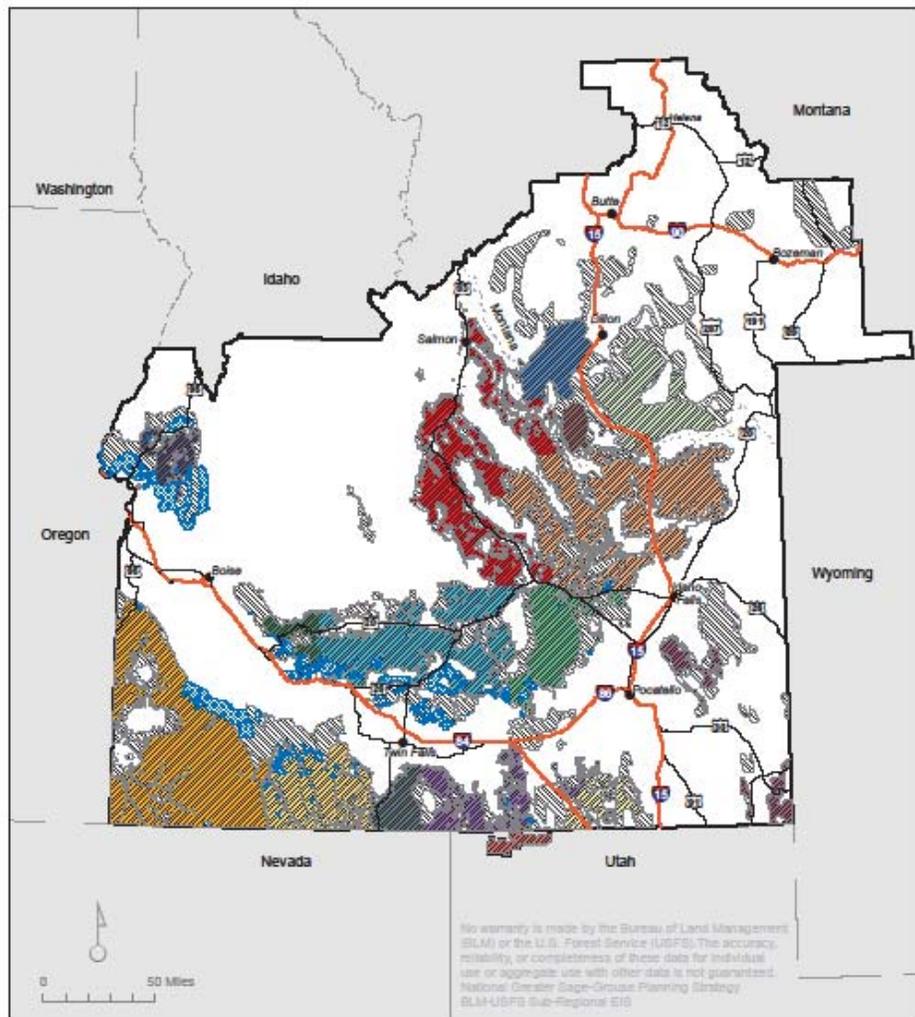
Map H.1 – Proposed ACECs Alternative C



- ID-01 ID-OR Borderlands and Owyhee Front
- ID-02 Sagebrush Sea
- ID-03 Pahsimeroi
- ID-04 Canyon/Big Timber Project & Birch Creek Watershed
- Preliminary Priority Management Area
- Analysis Boundary

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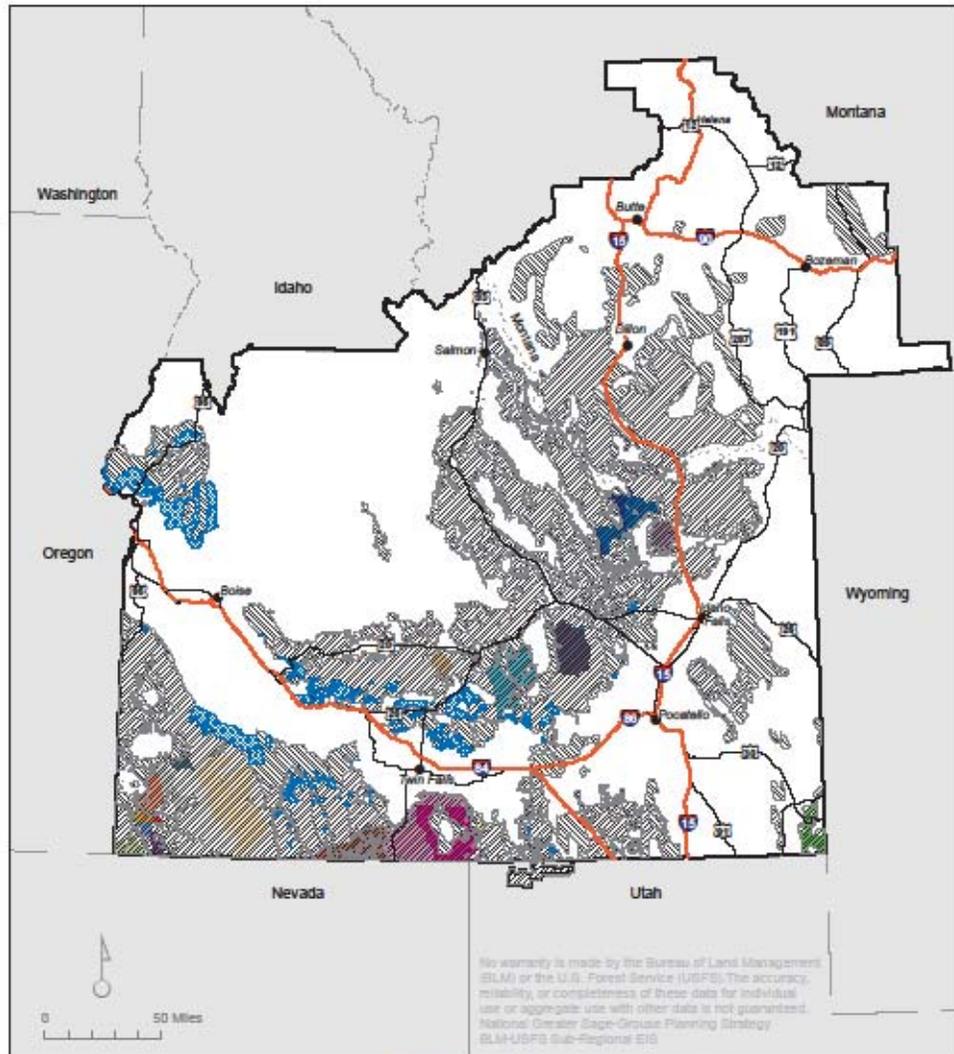
Map H.2 - Proposed ACECs Alternative F All Preliminary Priority Habitat



- | | | | |
|--------------------------------|--------------------------|--------------------------|--------------------------------|
| Preliminary Priority Mgt. Area | ID-01 Owyhee | ID-07 North Magic Valley | MT-01 Clark Canyon |
| Preliminary General Mgt. Area | ID-02 Jarblidge | ID-08 Big Desert | MT-02 Lima |
| Restoration Area | ID-03 Shoshone Basin | ID-09 Upper Snake | MT-03 Red Rock |
| Analysis Boundary | ID-04 South Magic Valley | ID-10 Challis | UT-01 Sawtooth Zoological Area |
| | ID-05 Curlew | ID-11 West Central | |
| | ID-06 Mountain Home | ID-12 East Idaho Uplands | |

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Map H.3 - Proposed ACECs Alternative F System of ACECs



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Table H.1
Potential ACEC and Zoological Areas (ACEC refers to BLM areas, ZOA refers to Forest Service areas)

Delineation	Name	State	Description	Nominated By	Alternative	BLM Acres	FS Acres
ID-ACEC-C-01	ID-OR Borderlands and Owyhee Front	Idaho	BLM PPH within Owyhee and Bruneau Field Offices	Western Watersheds Project	C	1,795,610	0
ID-ACEC-C-02	Sagebrush Sea	Idaho	BLM PPH within the southern 2/3 of the Jarbidge Field Office	Western Watersheds Project	C	765,068	0
ID-ACEC-C-03	Pahsimeroi	Idaho	BLM PPH within the Pahsimeroi area of the Challis FO	Western Watersheds Project	C	128,579	0
ID-ACEC-C-04	Canyon/Big Timber Project and Birch Creek Watershed	Idaho	BLM PPH within the Canyon/Big Timber Project Area	Western Watersheds Project	C	169,796	0
MT-ACEC-F-01a MT-ZOA-F-01a	Clark Canyon	Montana	PPH West of Dillon	Greater Yellowstone Coalition & Wild Earth Guardians	F	198,770	29,845
MT-ACEC-F-02a MT-ZOA-F-02a	Lima	Montana	PPH West of I-15 and South of Clark Canyon Area	Greater Yellowstone Coalition & Wild Earth Guardians	F	54,393	52,698
MT-ACEC-F-03a MT-ZOA-F-03a	Red Rock	Montana	PPH Area primarily East of I-15	Greater Yellowstone Coalition & Wild Earth Guardians	F	202,088	83,509
ID-ACEC-F-01a	Owyhee	Idaho	All PPH Areas	Wild Earth Guardians	F	1,796,060	0
ID-ACEC-F-02a	Jarbidge	Idaho	All PPH Areas	Wild Earth Guardians	F	769,426	0
ID-ACEC-F-03a	Shoshone Basin	Idaho	All PPH Areas	Wild Earth	F	122,674	66,850

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Delineation	Name	State	Description	Nominated By	Alternative	BLM Acres	FS Acres
ID-ZOA-F-01a				Guardians			
ID-ACEC-F-04a ID-ZOA-F-02a	South Magic Valley	Idaho	All PPH Areas	Wild Earth Guardians	F	253,875	134,371
ID-ACEC-F-05a ID-ZOA-F-03a	Curlew	Idaho	All PPH Areas	Wild Earth Guardians	F	177,791	41,231
ID-ACEC-F-06a ID-ZOA-F-04a	Mountain Home	Idaho	All PPH Areas	Wild Earth Guardians	F	83,576	15,467
ID-ACEC-F-07a ID-ZOA-F-05a	North Magic Valley	Idaho	All PPH Areas	Wild Earth Guardians	F	997,642	13,408
ID-ACEC-F-08a	Big Desert	Idaho	All PPH Areas	Wild Earth Guardians	F	559,546	0
ID-ACEC-F-09a ID-ZOA-F-06a	Upper Snake	Idaho	PPH within areas described in July 2006 Idaho Sage-Grouse Conservation Plan; All PPH Areas	Greater Yellowstone Coalition; Wild Earth Guardians	F	936,010	182,093
ID-ACEC-F-10a ID-ZOA-F-07a	Challis	Idaho	All PPH Areas	Wild Earth Guardians	F	981,609	301,769
ID-ACEC-F-11a	West Central	Idaho	All PPH Areas	Wild Earth Guardians	F	77,224	0
ID-ACEC-F-12a ID-ZOA-F-08a	East Idaho Uplands	Idaho	PPH within areas described in July 2006 Idaho Sage-Grouse Conservation Plan; All PPH Areas	Greater Yellowstone Coalition; Wild Earth Guardians	F	55,826	1,623
UT-ZOA-F-01a	Sawtooth	Utah	All PPH Areas	Wild Earth Guardians	F	0	71,827
ID-ACEC-F-01b	Tent Creek	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	37,337	0
ID-ACEC-F-02b	Garat 4	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	27,411	0
ID-ACEC-F-03b	Garat 3	Idaho	Extensive System of	Wild Earth	F	12,776	0

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Delineation	Name	State	Description	Nominated By	Alternative	BLM Acres	FS Acres
			ACECs	Guardians			
ID-ACEC-F-04b	Garat 2	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	13,166	0
ID-ACEC-F-05b	Garat 1	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	2,284	0
ID-ACEC-F-06b	Deep Creek Owyhee	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	58,823	0
ID-ACEC-F-07b	Deep Creek Bruneau	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	59,315	0
ID-ACEC-F-08b	Bruneau	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	306,508	0
ID-ACEC-F-09b	Big Springs	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	19,618	0
ID-ACEC-F-10b	Jarbidge Foothills	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	121,711	0
ID-ACEC-F-11b	Shoshone Basin/South Hills	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	163,182	0
ID-ACEC-F-12b	Sawmill Canyon Sage-Grouse	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	4,979	0
ID-ACEC-F-13b	Wedge Butte	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	34,268	0
ID-ACEC-F-14b	Wildhorse	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	210,250	0
ID-ACEC-F-15b	Quaking Aspen Butte	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	148,345	0
ID-ACEC-F-16b	Bear Lake	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	42,909	0
ID-ACEC-F-17b	Table Butte/Camas Butte	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	72,903	0
ID-ACEC-F-18b ID-ZOA-F01b	Medicine Lodge/Birch Creek	Idaho	Extensive System of ACECs	Wild Earth Guardians	F	112,184	165

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Appendix I

Greater Sage-Grouse Habitat Delineations



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A Framework to Identify Greater Sage-grouse Preliminary Priority Habitat and Preliminary General Habitat for Idaho

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April 2012



Executive Summary

In September 2011, Idaho BLM completed initial efforts to model greater sage-grouse (sage-grouse) priority areas and general areas (PAs and GAs) for Idaho, using Western Association of Fish and Wildlife Agencies' Sage-grouse Management Zone IV for the analysis boundary, to provide regional context. This initial effort mapping effort is referred to hereinafter as Version 1, and is described in detail in Chapter 1. The delineation of PAs in Version 1 was based solely on sage-grouse breeding bird (lek) density and lek connectivity models described in the literature. Sage-grouse GAs were modeled using BLM's Currently Occupied Habitat map and a sage-grouse population persistence model, which is essentially an index of sagebrush cover on the landscape. Version 1 was used during winter 2012 for public scoping for BLM and U.S. Forest Service (FS) sage-grouse planning strategy effort.

While the Version 1 map provided a repeatable means for displaying sage-grouse preliminary priority areas based on lek information, additional internal discussions and input from local and regional sage-grouse experts and others identified a need for refinements. This led to an update, referred to hereinafter as Version 2, described in detail in Chapter 2. In Version 2, the terms Preliminary Priority Habitat and Preliminary General Habitat (PPH/ PGH) were formally adopted, to provide consistency with terminology in BLM national policy. New information incorporated into Version 2, includes 1) additional lek data, 2) seasonal habitat information, 3) identified movement and migration corridors, 4) addition of local sage-grouse priority areas of the Challis Local Working Group, 5) areas of habitat connectivity, 6), incorporation of refinements suggested by the U.S. Forest Service, and 7) exclusion of modeled agricultural and timber lands.

In addition to refining the sagebrush components of PPH and PGH in greater detail in Version 2, we also incorporated certain potential restoration habitats as a subset of PPH. Many of these areas, currently characterized as perennial grasslands or conifer encroachment areas, have recently undergone (or may, in the foreseeable future) various efforts to enhance or restore habitat extent or improve connectivity. The final, overall map for PPH/PGH Version 2 is shown in Chapter 2, Figure 8. Figure 9 provides additional detail regarding the various vegetation categories of PPH including sagebrush, perennial grassland and conifer encroachment.

To facilitate future discussions of possible conservation actions or activities within PPH and PGH, Chapter 3 provides general suggestions for consideration. Depending on the nature and extent of sage-grouse habitat conditions locally and on the broader landscape, conservation efforts in some PPH or PGH areas may require more of a focus on habitat maintenance, to retain current habitat values. Conversely, other areas may require more of a focus on habitat improvement or restoration. Alternative approaches or strategies for management of PPH/PGH may also be identified as BLM and conservation partners move forward with sage-grouse conservation efforts.

Introduction

In March 2010, U.S. Bureau of Land Management (BLM) Washington Office Instruction Memorandum (IM) 2010-071 (Bureau of Land Management 2010) directed field office managers to implement appropriate conservation actions in priority sage-grouse habitat. Subsequent guidance (Washington Office IM 2012-043) provided interim conservation measures for use within preliminary priority habitat (PPH) and preliminary general habitat (PGH) areas, while BLM is amending land use plans. PPH is defined as areas that have been identified as having the highest conservation value to maintaining greater sage-grouse populations; PGH is defined as areas of occupied seasonal or year-round habitat outside of priority habitat.

The purpose of this paper is 1) to document the background, rationale and processes used in identifying greater sage-grouse (sage-grouse) PPH and PGH for Idaho; and, 2) to describe preliminary considerations for use of this information in conservation planning.

Many areas of sage-grouse habitat in Idaho are contiguous with habitats in the neighboring states of Utah, Nevada, Oregon, and Montana. Therefore we chose to use the Western Association of Fish and Wildlife Agencies (WAFWA) Sage-grouse Management Zone IV (MZ IV; Figure 1) as the primary analysis boundary, to provide a regional context for Idaho's PPH and PGH. While MZ IV encompasses the vast majority of the sage-grouse habitat in Idaho, it excludes habitat in the Bear Lake Plateau area located in the extreme southeastern portion of the state. This area is associated with WAFWA MZ II (Wyoming Basin) so PPH/PGH in that part of Idaho was identified separately.

It should be noted that due to the regional scale of the analysis and nature of the modeling techniques used, PPH and PGH may encompass inclusions of non-habitat especially at finer, more local scales. Consequently, additional information including local knowledge will be necessary when planning more site specific conservation efforts and in interpreting PPH/PGH.

The process leading to the most current (April 2012) PPH/PGH map involved two versions. Version 1 was completed in September 2011, and relied solely on sage-grouse breeding bird density and lek connectivity information for delineating priority areas. Early in the process we assigned the terms "Priority Area" (PA) and "General Area" (GA) for simplicity. These labels are retained in the forthcoming discussion and associated map figures for Version 1 to maintain the integrity of the original documentation, metadata and map labels. Version 1 also was used as the basis for Idaho's PPH/PGH map shown during public scoping for BLM's sage-grouse planning strategy in winter 2012.

Version 2 was completed in April 2012, following scoping, and incorporated additional important information provided by Idaho Department of Fish and Game, BLM, US Forest Service and others, including sage-grouse seasonal habitats, movement corridors, habitat connectivity, locally important leks and telemetry data. Version 2 also incorporates filters for agriculture and timber lands, excluding those areas from PPH/PGH, and more closely aligns with Idaho's "Sage-grouse Habitat Planning Map" which has been in use since 2000, for general conservation planning purposes. Overall, Version 2 provides a more detailed and comprehensive

portrayal of preliminary PPH/PGH in the state, and is intended to replace Version 1 in its entirety.

Background-Related Mapping Efforts

Other sage-grouse habitat mapping efforts over the past decade have guided sage-grouse conservation planning in Idaho, and provide important context for the sage-grouse habitat mapping/modeling efforts described in this document.

Idaho Sage-grouse Habitat Planning Map: In 2000, Idaho BLM drafted “*A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Public Lands in Idaho-Sage-grouse*” (Sather-Blair et al. 2000). This document, released to Idaho BLM field offices via Idaho BLM IM 2000-059 (Bureau of Land Management, 2000) outlined recommended field protocols for assessing sage-grouse habitats and also described a process for mapping sage-grouse habitat and potential restoration areas at the broad scale, to aid in conservation planning in the state. The resulting *Idaho Sage-grouse Habitat Planning Map* (sometimes referred to informally as the “Key habitat map”) has been updated annually since that time, based primarily on wildfire polygons, expert opinion and/or other new information. However, this map displays only general habitats (i.e., key habitat, defined as areas of generally in-tact sagebrush that provide sage-grouse habitat during some portion of the year, and potential restoration areas comprised of perennial grasslands, annual grasslands and conifer encroachment areas.). It does not reflect the relative importance or priority of those habitat areas with respect to sage-grouse population characteristics.

Sage-grouse Strongholds and Isolated Populations: Additional state and federal agency collaborative mapping efforts in Idaho during the past decade identified sage-grouse population areas assumed to be “strongholds” or “isolated populations”, based on local biological expertise and lek information. This map was briefly utilized by Idaho BLM and conservation partners as a means to identify potentially important population areas as well as several presumed isolated populations. However, this map was never updated from the original version (c.a. 2002) due to a lack of adequate sage-grouse population-level information, and has since been abandoned pending the availability of more suitable and defensible population data and analytical techniques.

Seasonal Habitat Models: In 2006, the Idaho Sage-grouse Advisory Committee (SAC) completed the “*Conservation Plan for the Greater Sage-grouse in Idaho*” (State Plan; Idaho Sage-grouse Advisory Committee 2006), which incorporated recent science and conservation measures into a more comprehensive state-level sage-grouse conservation plan. Recognizing the limitations of the Idaho Sage-grouse Habitat Planning Map, the SAC recommended in a 2009 update to Chapter 6 of the State Plan, that Idaho “continue to explore and review emerging remote-sensing tools and products that would have the capability and accuracy to refine or replace the Sage-grouse Habitat Planning Map.” As a follow-up to that recommendation, Idaho BLM and Idaho Department of Fish and Game (IDFG) embarked on a Challenge Cost Share project in 2010 to model sage-grouse general habitat and seasonal habitats using telemetry, observational, land cover and climatic data. These spatial models (Knetter et al., *in progress*) may be useful in future refinements to sage-grouse habitat maps and models.

Breeding Bird Density: To provide a more consistent analytical foundation and to further promote the mapping of sage-grouse priority habitats at the state level, the BLM Washington Office in 2010 entered into an Assistance Agreement with the U.S. Fish and Wildlife Service (FWS) to model sage-grouse “breeding bird density”, or “BBD” at three scales: 1) across the range of the species; 2) by WAFWA sage-grouse management zone; and 3) by individual state, following Doherty et al. (2011).

Chapter 1: Version 1- September 2011- Modeling Sage-grouse Priority and General Areas (PAs and GAs)

Study Area: Stiver et al. (2006) identified seven “sage-grouse management zones” (Figure 1) within the geographic distribution of the greater sage-grouse, based on sage-grouse populations and subpopulations occurring within seven floristic provinces (Connelly et al. 2004). These zones reflect ecological issues and similarities conducive to more effective and efficient conservation planning.

Idaho is almost entirely within MZ IV with the exception of a small corner of southeastern Idaho. Zone IV also includes portions of southwestern Montana, northwestern Utah, northern Nevada and southeastern Oregon. While Idaho comprises the majority of MZ IV, numerous sage-grouse leks and potentially important habitats and populations/subpopulations occur in proximity to Idaho’s border in the adjoining MZ IV states. Therefore, Idaho BLM chose to expand its priority area analysis to incorporate available sage-grouse and habitat information for those adjoining states. This approach has important conservation implications in that it incorporates aspects of interstate population and habitat connectivity that would be overlooked if we limited the scale of analysis to Idaho. A regional approach to sage-grouse conservation planning such as this warrants consideration by other states that are a part of multi-state WAFWA management.

Methods and Results: A primary goal in modeling draft PAs and GAs was to integrate currently available population and habitat data and current modeling techniques into a transparent and repeatable framework. A second goal was to ensure that the draft PAs and GAs were driven by the biology and ecology of sage-grouse. Lek data were acquired, with permission, from state wildlife agencies within MZ IV. For habitat data, BLM Idaho used the BLM currently occupied habitat (COH) model (Durtsche et al. 2009) and assumed for purposes of this analysis that the COH product provides a reasonable portrayal of occupied sage-grouse habitat across the range of the species. Other seamless sage-grouse habitat models were not available however new habitat models can be considered and incorporated into the PA analysis as they become available.

In modeling sage-grouse PAs, BLM Idaho used 1) a Breeding Bird Density (BBD) index of sage-grouse abundance based on male attendance at leks, and 2) lek connectivity to inform the broader spatial distribution of leks. BLM Idaho assumed that BBD adequately informs the PA model as to the relative “importance” of areas with respect to recent breeding bird numbers. Lek connectivity informs the PA model as to the likely, longer-term connectedness between leks, assuming that leks in proximity to one another are more “connected” than those farther apart (Knick and Hanser 2011). Spatial data on sage-grouse late brood-rearing, fall or winter habitats were not readily available, and therefore not included in the model. However, given the buffers (6.4 km and 8.5 km) used in the BBD component and the 18 km window of the lek connectivity analysis, a significant portion of these non-breeding habitats are likely included.

Breeding Bird Density: BBD analyses involve ranking leks by attendance (e.g. highest to lowest numbers of males) and summing the number of males until a desired percent-population threshold is met (e.g., the top 25%, 50%, 75% etc., of the population). With lek locations and

abundance being large drivers in the model, BBD results are, by definition, highly correlated with breeding habitat.

We evaluated two BBD methods: 1) the original Doherty et al. (2011) model which uses a 10-year time period (2001-2010), the most recent average annual maximum lek counts, and a minimum male count =1 to identify high male abundance areas and 2) a modified Doherty version using a more restricted rule set of a 5 year time period (2006-2010), maximum lek count over the 5-yr period, and minimum male count of 2. This modified rules et incorporates the assumptions currently used to designate “occupied leks” in Idaho by IDFG. In both methods we followed the Doherty et al. (2010) lek buffering approach (add 74.6 – 76.0). Specifically, leks in the 1-75% BBD percentiles were buffered by 6.4 km (4 miles) to account for a majority of nesting areas and 76-100% BBD percentiles were buffered by 8.5 km (5.3 miles) (Doherty et al. 2010 citing Holloran and Anderson 2005), since leks in those classes tend to be farther apart, in lower densities, and potentially in more fragmented habitat.

We compiled 2001 – 2010 male Sage-grouse lek attendance data within MZ IV from state fish and wildlife agencies in Idaho, Nevada, Utah, Oregon, and Montana. A total of 1,655 leks were analyzed to evaluate the original Doherty et al. (2010) method and n=1,481 leks for the modified version (Figure 2). Summary statistics for both datasets were evaluated based on the average and range of male lek counts by lek and the total maximum male lek counts across all leks. While the modified Doherty method identified fewer total leks, the average male counts and total males were highest of the two datasets, better reflecting current populations. In addition, we had concerns with the longer term, ten-year dataset regarding lek location reliability, and variable survey efforts or techniques (i.e., ground vs. aerial) across MZ IV. As a result, we selected the modified Doherty method for the subsequent BBD analysis.

To allow incremental examination of the entire BBD profile, we developed a Python-based model to spatially delineate BBD at 1 percent intervals. We then quantified the amount of greater sage-grouse COH using a modification of Durtsche et al. (2009) at each BBD percent to identify potential patterns or thresholds of COH and non-habitat across the entire BBD profile (Figure 3). The Durtsche et al. (2009) COH map likely underestimates habitat since COH in recent wildfires (since 2006) was omitted from this dataset. Therefore, we used burn severity data from the USGS Monitoring Trends in Burn Severity site (www.mtbs.gov) to update the COH map (Figure 4). Fire polygons (30m pixels) classified as 1=no burn, or 2=low severity were reclassified to the pre-fire land cover type and identified as either COH or not. These areas were then added to the original Durtsche et al. (2009) map. For this exercise, we assumed that areas of low burn severity retained largely the same habitat as before the burn (i.e. patchy burn with small unburned areas). Due to our limited ability to effectively characterize “burn severity” in shrub ecosystems, it is likely that COH in the low severity category is overestimated.

Our results indicate no significant pattern or threshold in COH across the BBD percentage profile (Figure 3). Therefore, we examined two potential thresholds: 1) the BBD 75% value and associated proportion of COH and 2) the associated BBD percent that encompasses 80% of the COH. The 75% BBD captures approximately 60% of the available COH (~40% of available non-habitat) in MZ IV. The remaining 40% habitat (which occurs outside the 75% BBD) is likely the more fragmented habitat (Doherty et al. 2011). The 90% BBD is required to capture

80% of available COH; however, there is a much higher proportion (70%) of non-habitat included, suggesting that the use of the 90% BBD would lead to overstating priority area boundaries. Since BBD is highly correlated with breeding habitat and the BBD 75% class captures the “top” 75% of males along with 60% of the COH, we recommend that the BBD 75% threshold be used as the “high abundance” (or “population”) component of our priority area mapping effort. This threshold provides a meaningful baseline population component for the PA analysis, by conservatively encompassing the least fragmented breeding habitats that are of greatest importance for conservation.

Lek Connectivity: We used the more inclusive Doherty et al. (2010) rule set (i.e., 10 year timeframe, 1 male minimum) to identify lek points for the lek connectivity analysis. We assumed that this more comprehensive, ten-year dataset would yield a more realistic connectivity extent since the sage-grouse is a relatively long-lived bird, and the modified 5-year dataset may not be sufficient for this purpose. We used a kernel density analysis to create a utilization distribution surface. We modified Hagen (2011) and populated a 1 km grid with lek presence and analyzed kernel density using a neighborhood of 18 km. Knick and Hanser (2011) found an 18 km area to be a reliable connectivity threshold for greater sage-grouse (GSG; i.e., leks within 18 km of one another tend to be more connected than those farther out). The resulting “surface” was used to categorize 2 levels of connectivity: 75% (local connectivity) and 90% (seasonal/migratory connectivity) utilization distributions (Figure 5 A and B). Local lek connectivity (75% utilization contour) appears to encompass the “general” lek distribution patterns across MZ IV; therefore, we recommend that local connectivity be used to represent the “lek connectivity” component of our priority area mapping effort.

The connectivity analysis assumed straight-line distances among lek points. Therefore, similar to the BBD analysis, some areas of non-habitat are encompassed within the resulting polygons. In addition, the connectivity analysis does not account for topography, thus overestimating connectivity results in linear basin and range systems (e.g., the Challis/Salmon area). For example, applying the 18 km connectivity neighborhood to leks occurring within narrow valley bottoms, that average only 12 km in width, likely captures some adjacent areas of nonhabitat on nearby steep, timbered or rocky slopes.

MZ IV Sage-grouse Priority Area Delineation: For PA delineation, we integrated aspects of “population” and “habitat”. To portray a population context, we intersected the 75% breeding density polygons with the 75% utilization local connectivity polygon (Figure 6). For context, the resulting PAs are also shown overlapping the 2010 version of the Idaho sage-grouse Habitat Planning Map (Figure 7; BLM 2010b).

For each PA polygon within MZ IV, we then assigned a unique alpha identification code and calculated summary statistics. Summary statistics included total polygon area, total number of leks, maximum male attendance, average maximum male attendance and standard deviation, as well as total area and percent of COH within the polygon (Table 1). We then used total maximum male attendance to rank the 30 priority area polygons. In aggregate, the PA polygons capture approximately 94% of the identified MZ IV male lek population. Additional statistics found in Table 1 are also reported to help inform future PA and GA evaluations.

MZ IV Sage-grouse General Area Delineation: We used sage grouse population persistence methods (modified Aldridge et al., 2008) to inform GSG General Area delineations within MZ IV. We evaluated long-term sage-grouse population persistence as a function of sagebrush cover on the landscape. We analyzed sage-grouse population persistence based on the availability of sagebrush within a defined area, under the assumption that the modified COH model served as an adequate representation of sage-grouse habitat/sagebrush within the analysis area. Based on recent lek connectivity work (Knick and Hanser 2011), 18 km was assumed to be an effective distance for characterizing local lek connectivity over most of MZ IV. However, in the linear basin and range systems (e.g., the Challis/Salmon region in Idaho) general valley floor width was less than 18 km (range 8 – 16 km) and could potentially overestimate persistence. Therefore, we selected a smaller 12 km distance to more accurately reflect available area. We used the USGS National Hydrologic Dataset 4th order hydrologic units to identify the linear basin and range systems within MZ IV (Figure 8 A). We resampled the modified 2009 COH model (30m) to 1 km (with an inclusion threshold of 50% COH). The resulting 1 km grid cells (value 1, 0) were then analyzed using a moving window analysis and separate 12 km and 18 km neighborhoods (Figure 8 B). The resulting combined map “surface” was then used to categorize persistence probability. Areas of 25-65% probability represent *Low* sage-grouse population persistence over the long-term, and areas > 65% probability represent *High* sage-grouse population persistence (Aldridge et al. 2008) (Figure 8 B).

We used a persistence threshold of $\geq 25\%$ to identify the General Area polygons within MZ IV (Figure 8 C). All or portions of certain GA polygons may be important to sage-grouse in terms of connectivity between PA polygons or as refugia in the event of stochastic events in PAs. In some cases, areas are designated as GAs because lek data are lacking due to limited surveys, resulting in BBD or connectivity values that are too low to be captured by the PA model.

Management Zone IV PAs and GAs shown in Figure 9 spatially depict those areas in the MZ IV landscape where sage-grouse conservation efforts might be focused to greater or lesser degrees, depending on management and policy objectives. Given limited resources, conservation efforts generally should focus first on habitats occurring within the PA areas. It must be recognized though, that given the population-centric nature of the PA model and associated analysis buffers, areas of sage-grouse habitat as well as non-habitat are included in those polygons. Consequently, finer-scale habitat information will be necessary at the local, site-specific level. It is also important to recognize that depending on the area of the map or specific PA or GA under consideration, there may be differing management opportunities, strategies, and decision-space for the conservation of sage-grouse. Portions of some PAs or GAs are likely very crucial to local or regional sage-grouse populations or for maintaining connectivity. To identify these areas, additional information is required and is discussed below,

To further refine our understanding of the spatial context of PAs and GAs across MZ IV, and to facilitate discussions of potential management activities within or among these areas, we examined the contribution of a suite of variables to assist in identifying important conservation areas. We combined our continuous persistence, connectivity, and BBD model surfaces to create a single, composite view of the MZ IV landscape. We combined the full range of persistence probability (1-100%) information with lek connectivity (1-100%) and finally the BBD data (with lek counts normalized from 1-100). The resulting map (Figure 10) displays the full range of

surface values to help provide additional spatial context, inform conservation efforts within PA polygons, and to assist in the development of subsequent finer-scale management strategies. In Figure 10, “hotspots” of blue colors indicate those areas of greater relative “importance”, to sage-grouse in MZ IV, where the combination of lek connectivity, BBD and population persistence on the landscape appears to be comparatively high relative to other areas of the map.

Priority Area and General Area Delineation for the Bear Lake Plateau (MZ II): The Bear Lake Plateau area of extreme southeastern Idaho occurs outside of the MZ IV analysis area discussed above. Due to floristic similarities and a closer association with populations and habitats in adjacent areas within Utah and Wyoming, this portion of Idaho is encompassed by the adjacent Wyoming Basin MZ II. While available sage-grouse population and habitat information for this portion of Idaho are somewhat limited, the area nonetheless contains potentially important sage-grouse habitats and populations that should be considered by conservation planners and managers in Idaho.

Logistical and time limitations precluded us from developing a full MZ II analysis; therefore, we incorporated other available data to develop the PA map for this portion of southeastern Idaho. We examined BBD results (Doherty et al. 2011) for MZ II and Key Habitat data from Idaho’s 2010 Sage-grouse Habitat Planning Map. Specifically, we selected the 75% BBD polygons occurring within the Bear Lake Plateau area and merged them with the Idaho Key Habitat data. We then applied a 1 km buffer to the 75% BBD to assist in aggregating the polygons. Any Key Habitat polygons intersecting and extending beyond the 75% BBD polygon were included as part of the final Bear Lake Plateau PA (Figure 11). Remaining key habitat areas not intersected by the 75% BBD and associated 1 km buffer were designated as sage-grouse GAs. Figure 12 displays the full, composite map of MZ IV and Bear Lake Plateau PAs and GAs.

Initial Delineation of Preliminary Priority and Preliminary General Habitat:

On December 9, 2011, the BLM and US Forest Service published a Notice of Intent (NOI) in the Federal Register inviting the public to participate in public scoping meetings to evaluate greater sage-grouse conservation measures in land use plans throughout Idaho and Southwestern Montana, and elsewhere within the general range of the species. A sixty-day scoping period for this effort commenced on January 9, 2012. In conjunction with scoping, Idaho BLM made available to the public a map of PPH/PGH for the Idaho/SW Montana planning subregion (Figure 13). The Idaho portion of this map was derived by clipping the Idaho “PA and GA” areas of the Sage-grouse MZ IV map developed during the Version 1 mapping effort and joining them to Montana’s sage-grouse core areas. The subsequent revision of the Version 1 map is described in the Version 2 discussion later in this document.

Chapter 1 Tables and Figures:

Table 1. Summary statistics for area, lek attributes 2006-2010 and currently occupied habitat (COH) information associated with sage-grouse Priority Areas. Priority areas are sorted by total max male count.

<i>Priority Areas</i>		<i>Lek Attributes</i>							<i>GSG_COH Attributes</i>	
Name	Area [ac]	Total Leks	Total Max Males ¹	Percent Population	PA Cumulative Pop. Percent	MZ IV Cumulative Pop. Percent	Average Males/Lek	StdDev Males/Lek	COH (ac) ²	COH percent of Priority Area
F	8352472	643	13465	44	44	42	20.94	22.33	5019096	60
L	2818028	222	5041	17	61	57	22.71	21.69	1302065	46
Q	971243	86	3337	11	72	67	38.80	38.32	666358	69
D	557820	50	1252	4	76	71	25.04	25.34	505371	91
J	751950	61	1148	4	80	75	18.82	15.00	549389	73
S	579563	28	675	2	82	77	24.11	22.90	297203	51
W	230640	11	462	2	84	78	42.00	38.48	99953	43
K	169149	11	440	1	85	80	40.00	30.77	89186	53
AA	453188	30	416	1	87	81	13.87	9.75	248238	55
U	262389	16	368	1	88	82	23.00	15.25	116674	44
C	350231	20	366	1	89	83	18.30	17.28	108716	31
N	453463	29	355	1	90	84	12.24	7.83	403624	89
H	242069	14	343	1	91	85	24.50	13.72	118158	49
CC	315480	19	341	1	92	86	17.95	12.45	213992	68
X	273520	12	335	1	94	87	27.92	19.21	200559	73
M	158799	11	237	1	94	88	21.55	14.54	87433	55
P	112608	5	232	1	95	89	46.40	17.74	86369	77
Y	211674	14	220	1	96	90	15.71	11.61	106792	50
R	237676	10	190	1	96	90	19.00	12.28	179839	76
O	373690	11	185	1	97	91	16.82	9.55	280991	75
B	260058	11	175	1	98	91	15.91	13.13	250606	96
DD	123281	8	132	<1	98	92	16.50	12.04	59350	48
T	97590	6	115	<1	98	92	19.17	15.97	69129	71
V	114393	3	109	<1	99	92	36.33	43.36	54598	48
A	155665	5	105	<1	99	93	21.00	9.19	113374	73
Z	83132	5	86	<1	99	93	17.20	4.60	37264	45
BB	74241	6	78	<1	100	93	13.00	6.45	28987	39
I	110003	4	54	<1	100	93	13.50	12.97	61389	56
E	32447	2	21	<1	100	93	10.50	2.12	2206	7
G	51471	2	13	<1	100	93	6.50	3.54	17450	34
Total	18977933	1355	30296	--	--	93.5	22.36	23.03	11374362	=60% of MZ4 COH

¹Data represents total of max counts 2006-2010 for leks identified using the modified Doherty 2010 method.

²Modified Durtsche 2009 GSG Currently Occupied Habitat was resampled from 30m to 90m for computational purposes

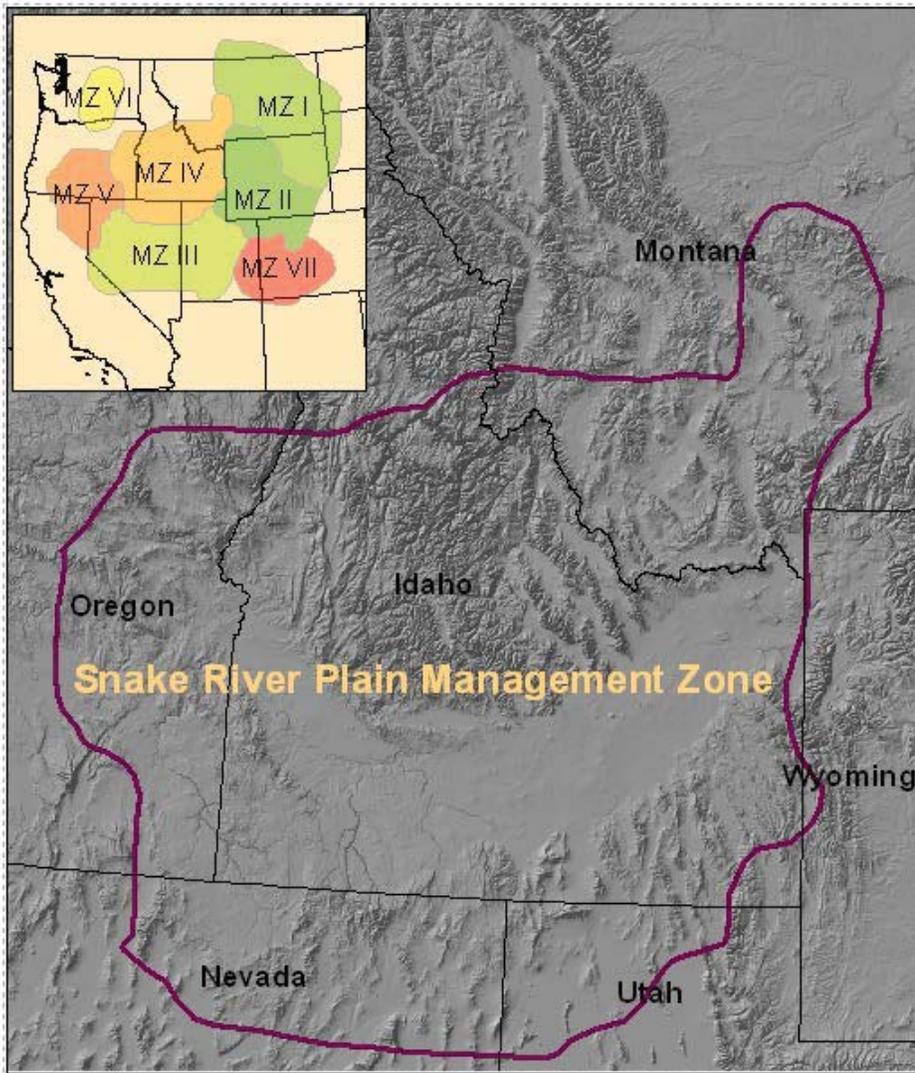


Figure 1. Sage-grouse management zones (Stiver et al. 2006) within the geographic distribution of the greater sage-grouse, based on sage-grouse populations and subpopulations occurring within seven floristic provinces, as described in Connelly et al. (2004). The Management Zone IV analysis area includes portions of southern Idaho, southwestern Montana, northwestern Utah, northern Nevada and southeastern Oregon

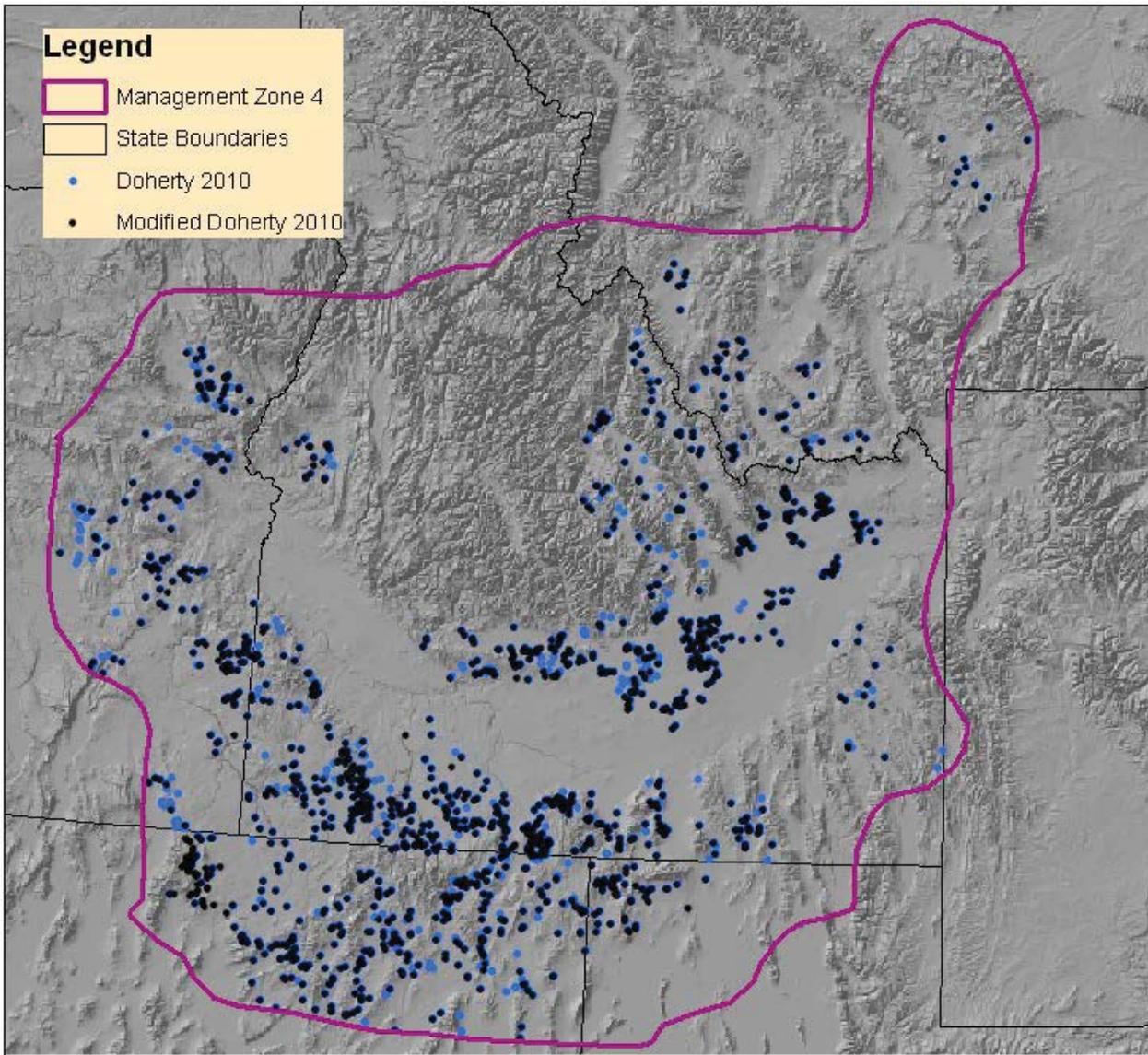


Figure 2. Management zone IV sage-grouse lek location data (2001 – 2010) used to evaluate high male abundance areas using the Doherty 2010 method (n = 1,655 leks; blue symbols) and the modified rule set version (2006-2010) (n = 1,481 leks; black symbols).

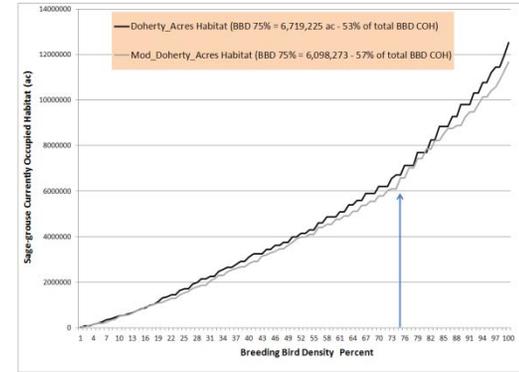
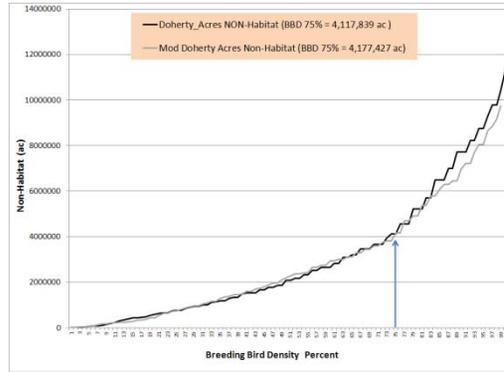
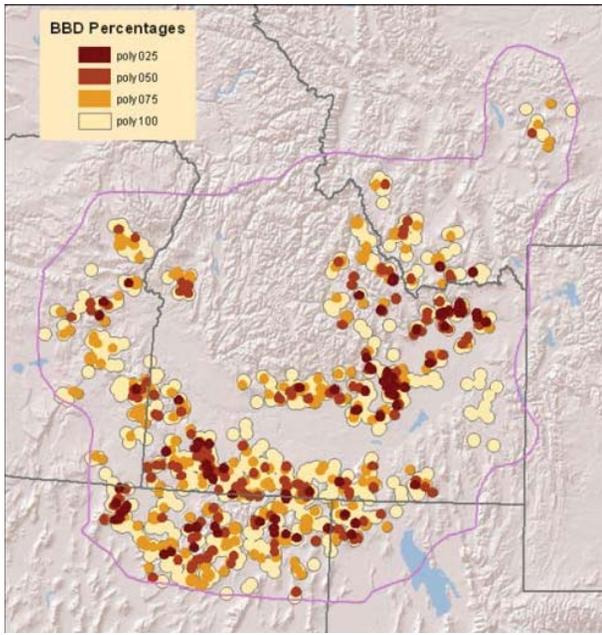


Figure 3. BBD percentiles (left) ranging from dark red to light brown. The dark areas essentially show the “best of the best” areas, based on maximum count data at leks 2006-2010. The darkest areas capture the top 25% of the leks and breeding habitat; darker brown to light brown areas capture 50, 75 and 100% of the data, respectively. The graphs on the right show the relationship between Breeding Bird Density (BBD)

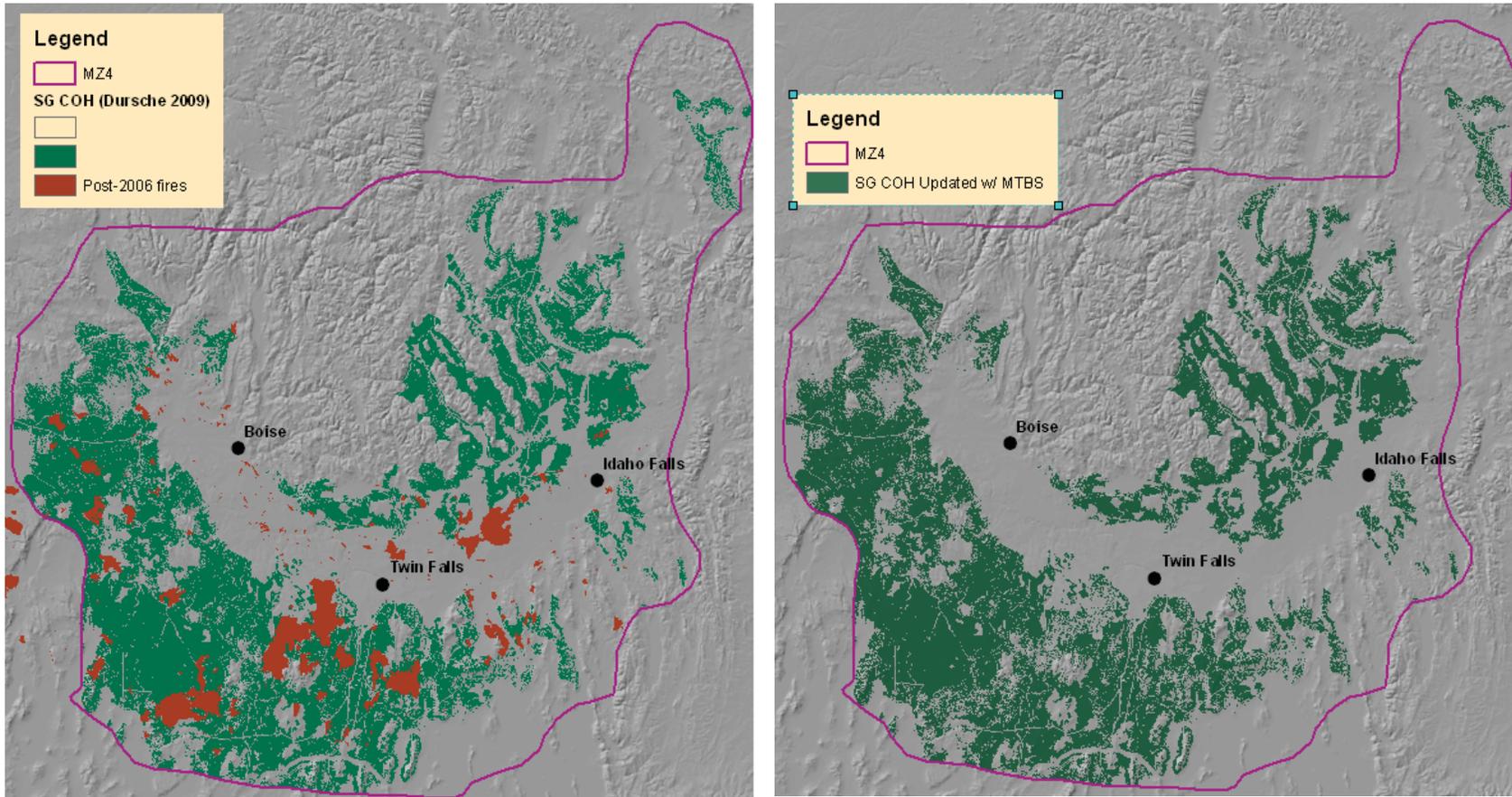
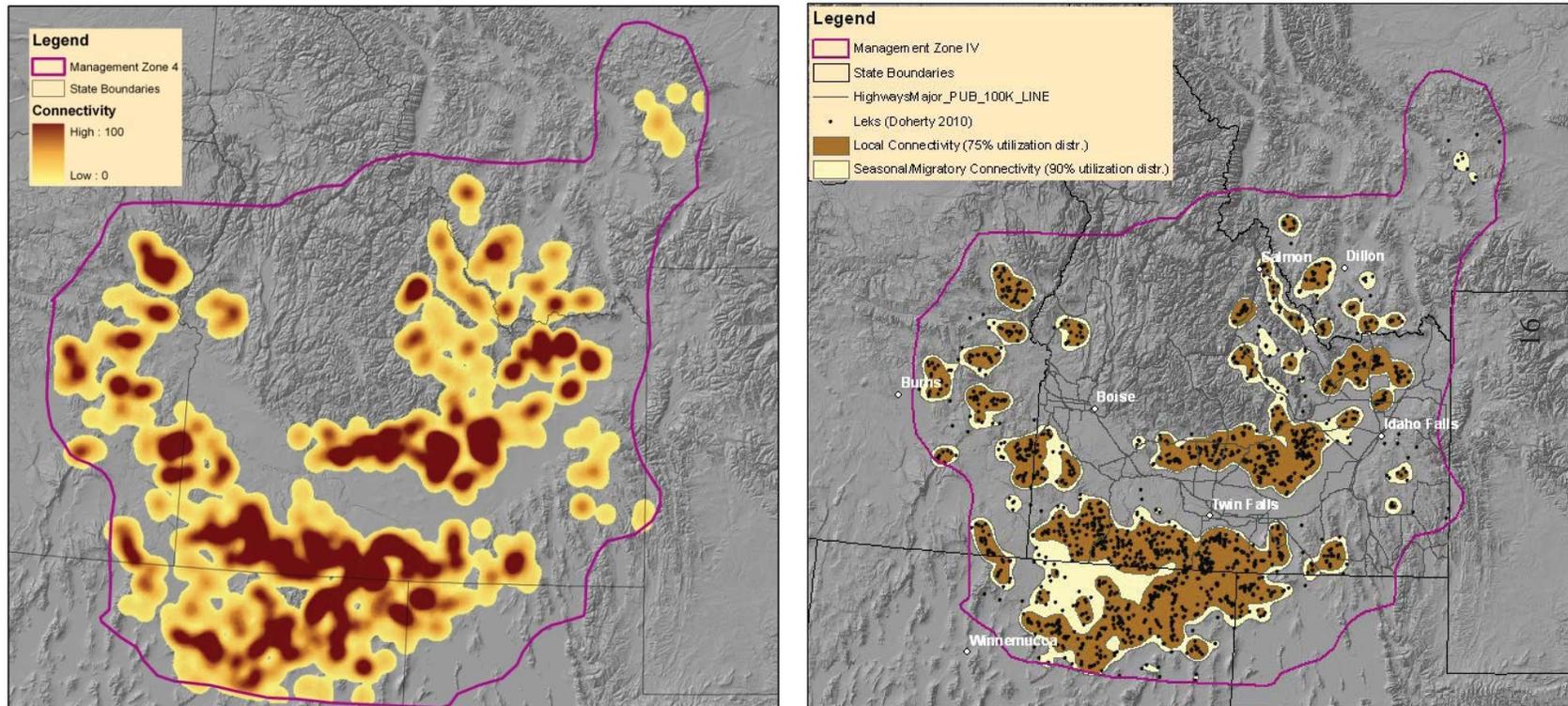


Figure 4. The Durtsche et al. (2009) Greater Sage-grouse Currently Occupied Habitat (COH) map did not include any ar recent fire (since 2006) (red polygons). Therefore, we used Burn Severity data from USGS Monitoring Trends in Burn S (www.mtbs.gov) to update the map. Within fire polygons, areas (30m pixels) classified as 1=no burn, or 2-low severity reclassified to the pre-fire land cover type and identified as either GSG COH or not. These areas were then added to the ori Durtsche et al. 2009 map. Note that due to our limited ability to effectively characterize ‘burn severity’ in shrub ecosy likely that we are overestimating COH in the low severity category. But for this exercise, we assumed that areas of low bur severity retained largely the same habitat as before the burn (i.e. patchy burn).



A

Figure 5. Sage-grouse lek connectivity surface (A). Two utilization levels of connectivity are shown in image B: 75% Connectivity (brown) and the larger 90% Regional Connectivity (yellow) (following Hagen 2011).

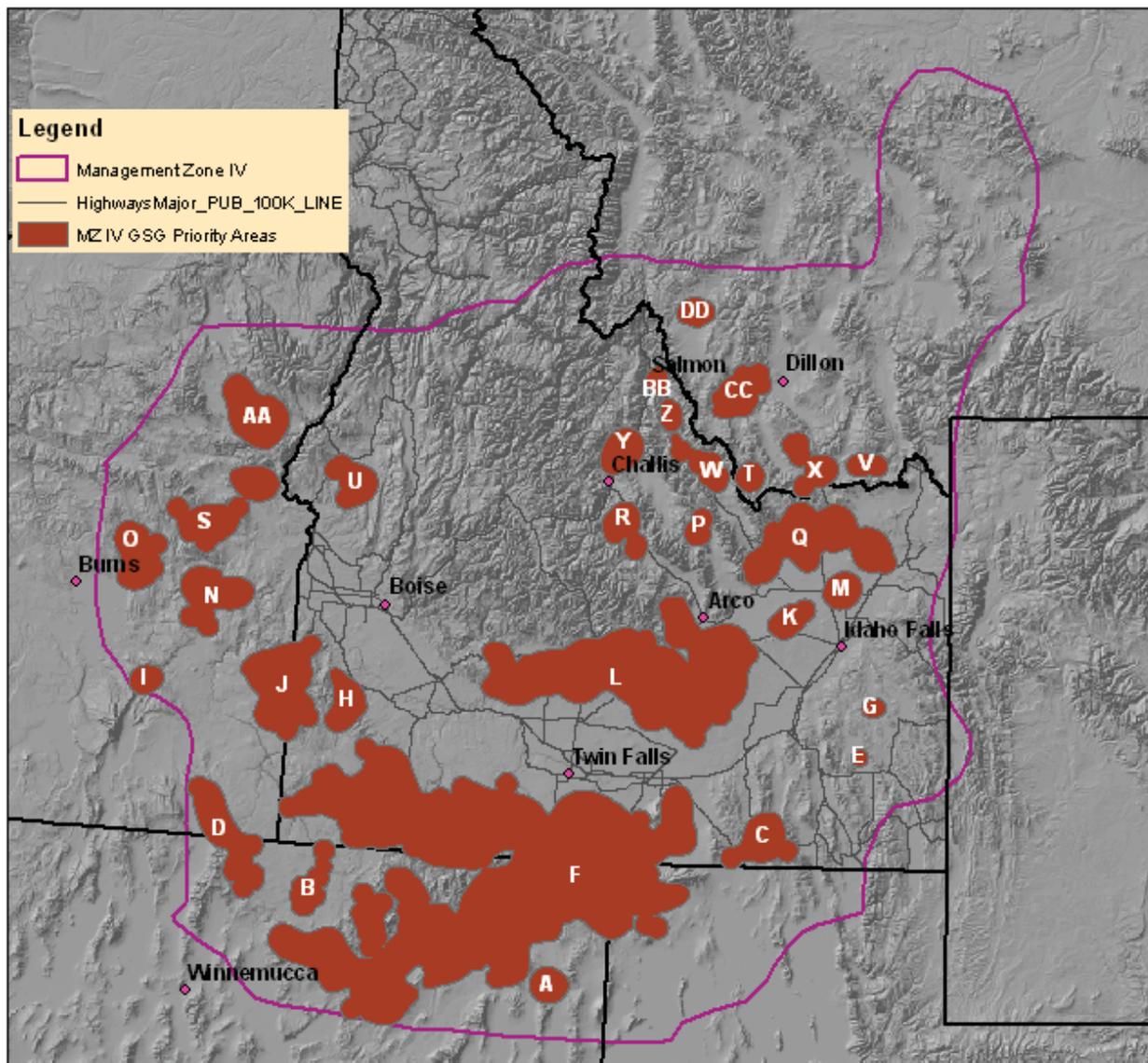


Figure 6. Sage-grouse priority areas delineated in Management Zone IV. Priority areas (red) were delineated by intersecting the 75% connectivity and 75% breeding bird density (BBD) polygons. The letter in each polygon denotes the polygon “name”.

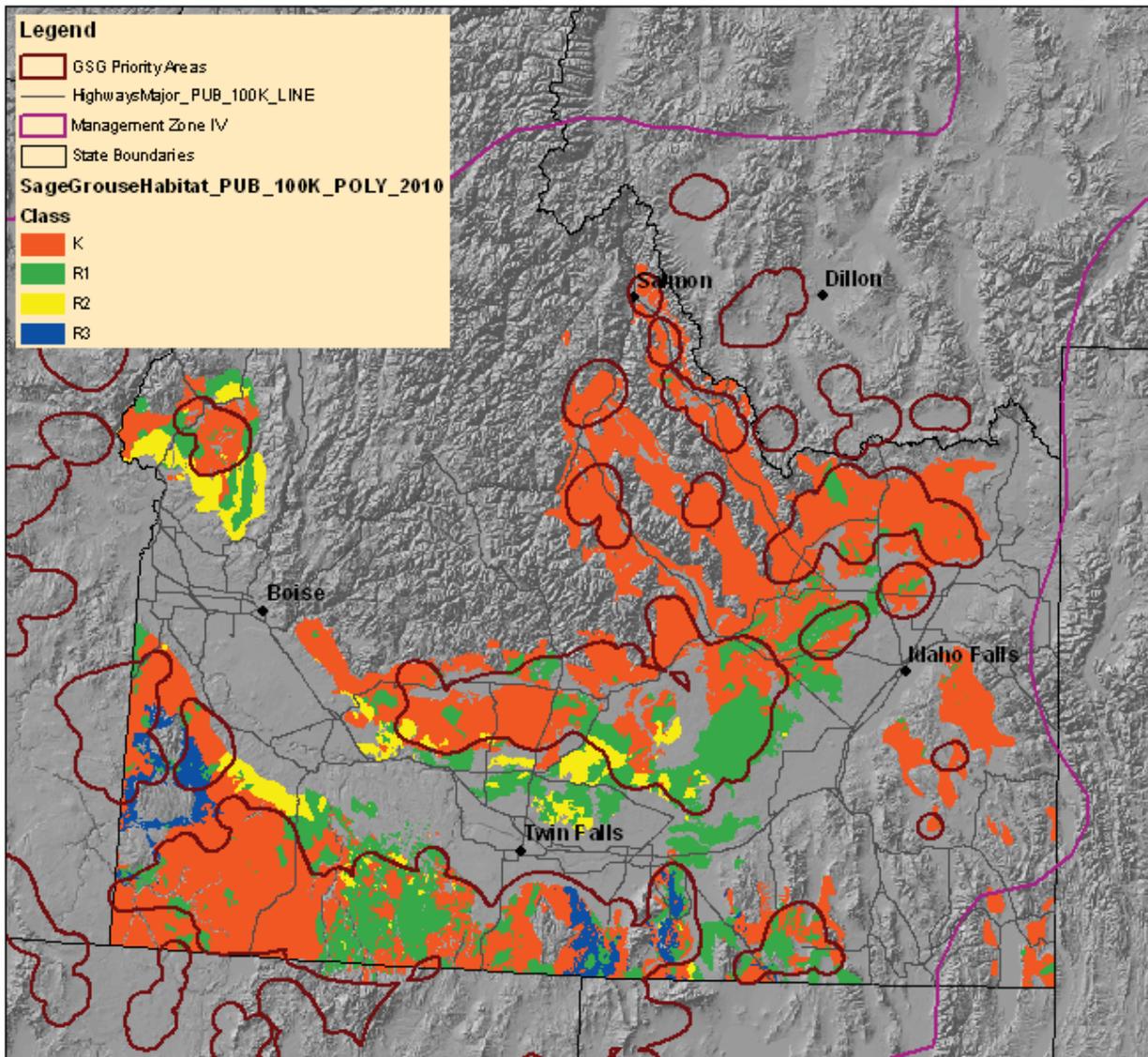


Figure 7. Management zone IV sage-grouse Priority Area (PA) polygons overlain on the 2010 Idaho Sage-grouse Habitat Planning Map. The red areas show key habitat (areas of generally in-tact sagebrush that provide habitat for sage-grouse at some point during the year). The green, yellow, and blue areas respectively show areas of perennial grassland, annual grassland and conifer encroachment restoration potential.

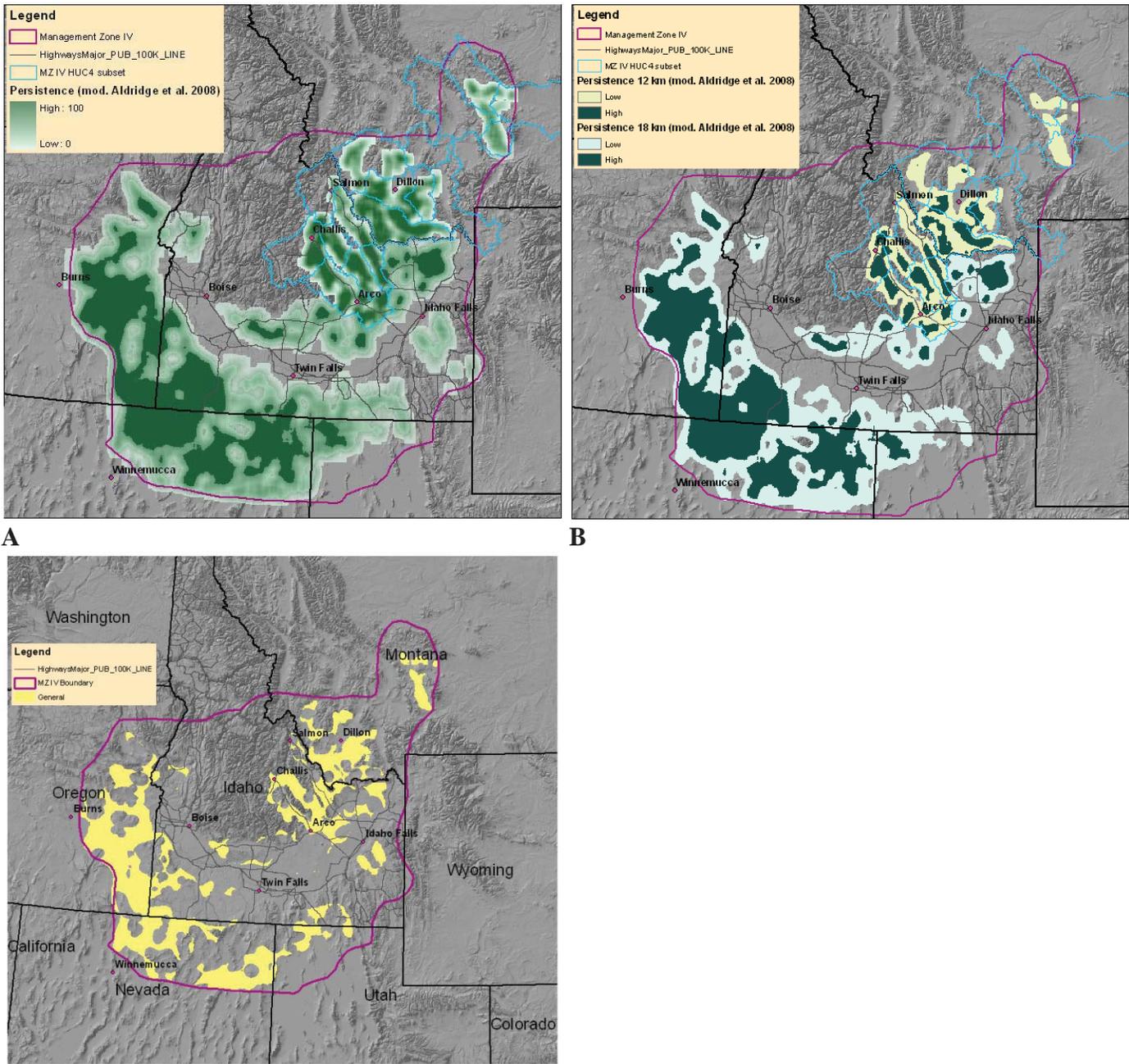


Figure 8. Habitat-based sage-grouse persistence probability surface (modified Aldridge et al. 2008) for management zone IV. (A) Persistence surface represents the relative amount of GSG currently occupied habitat (COH) within an 12 km neighborhood for the identified basin and range subset (combined blue polygons) and 18 km for the remaining portion of management zone IV. (B) Combined Persistence probability categorized as Low (25-65%, light green) and high (>65%, dark green). (C) General Area designations for sage-grouse in management zone IV (data represents persistence value $\geq 25\%$). Priority Areas have been clipped out of the image.

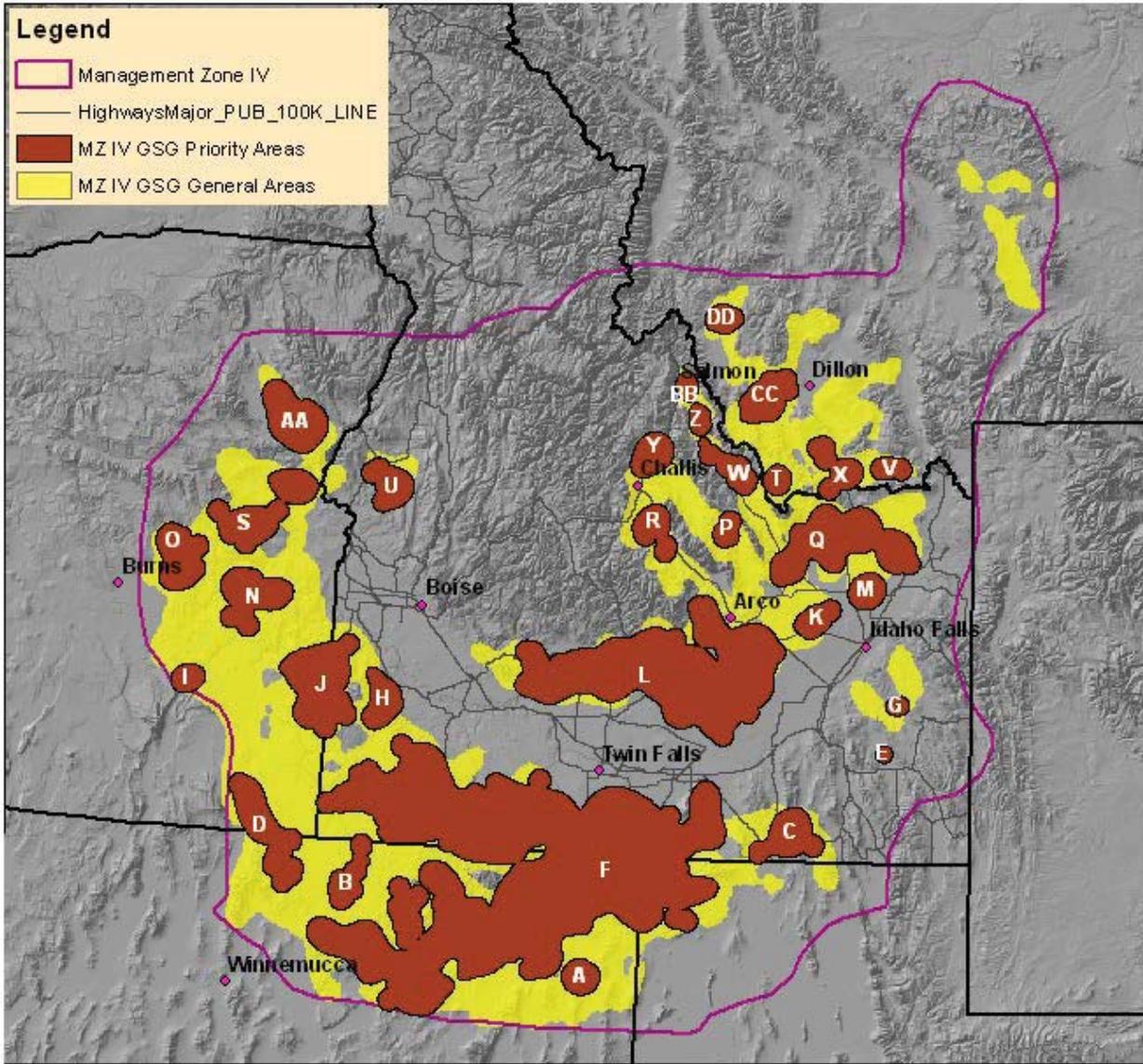


Figure 9. Identified Greater Sage-grouse Priority Areas (PA) and General Areas (GA) in management zone IV.

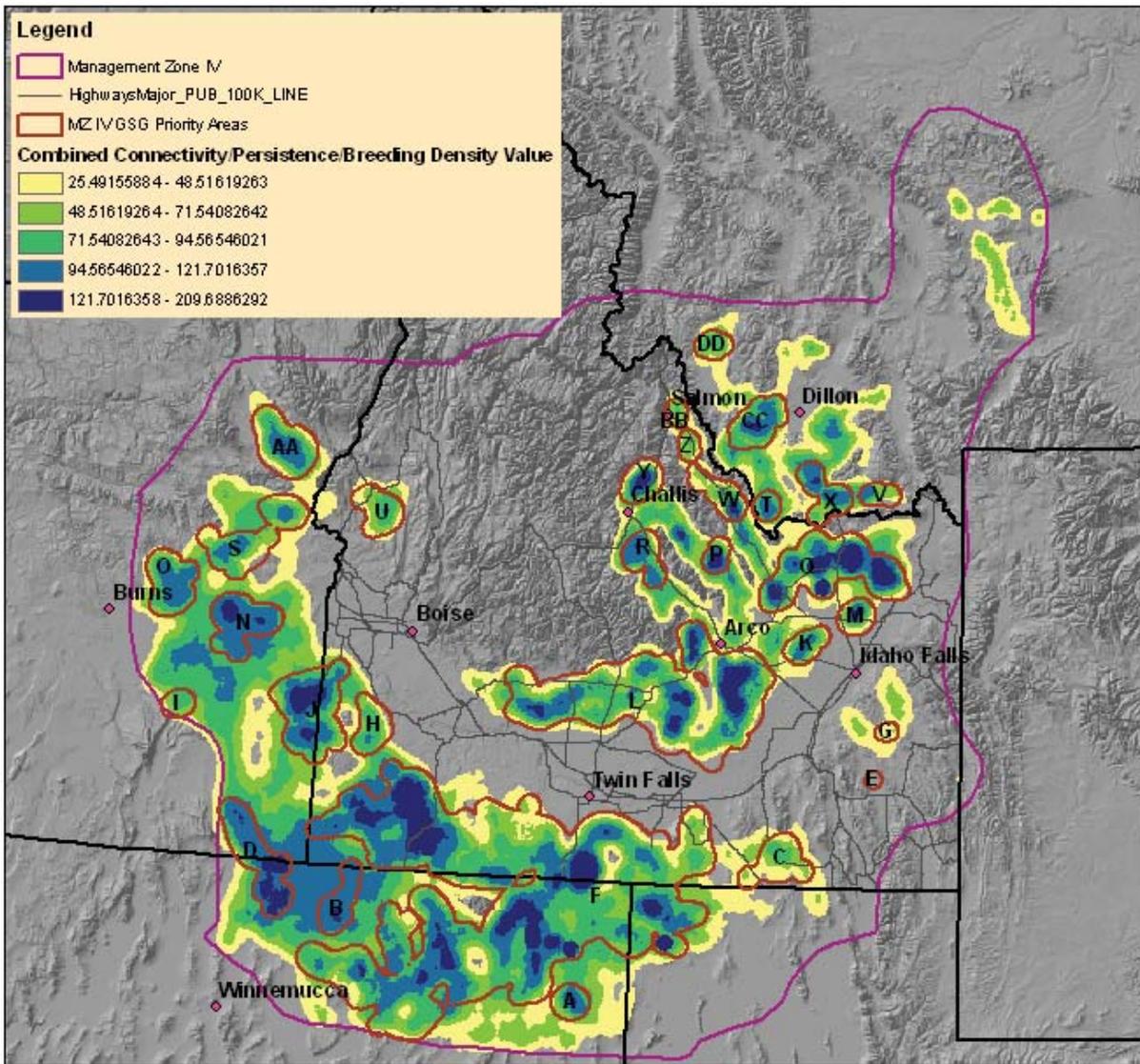


Figure 10. Combined lek connectivity, habitat-based persistence probability, and Breeding Bird Density (BBD) data for MZ IV. Map surface colors indicate Low (light yellow) to High (dark blue) combined value rating for these three factors, overlain by sage-grouse Priority Area (PA) boundaries. Blue to dark blue areas appear to be of high relative importance for conservation and may warrant particular attention during conservation planning efforts.

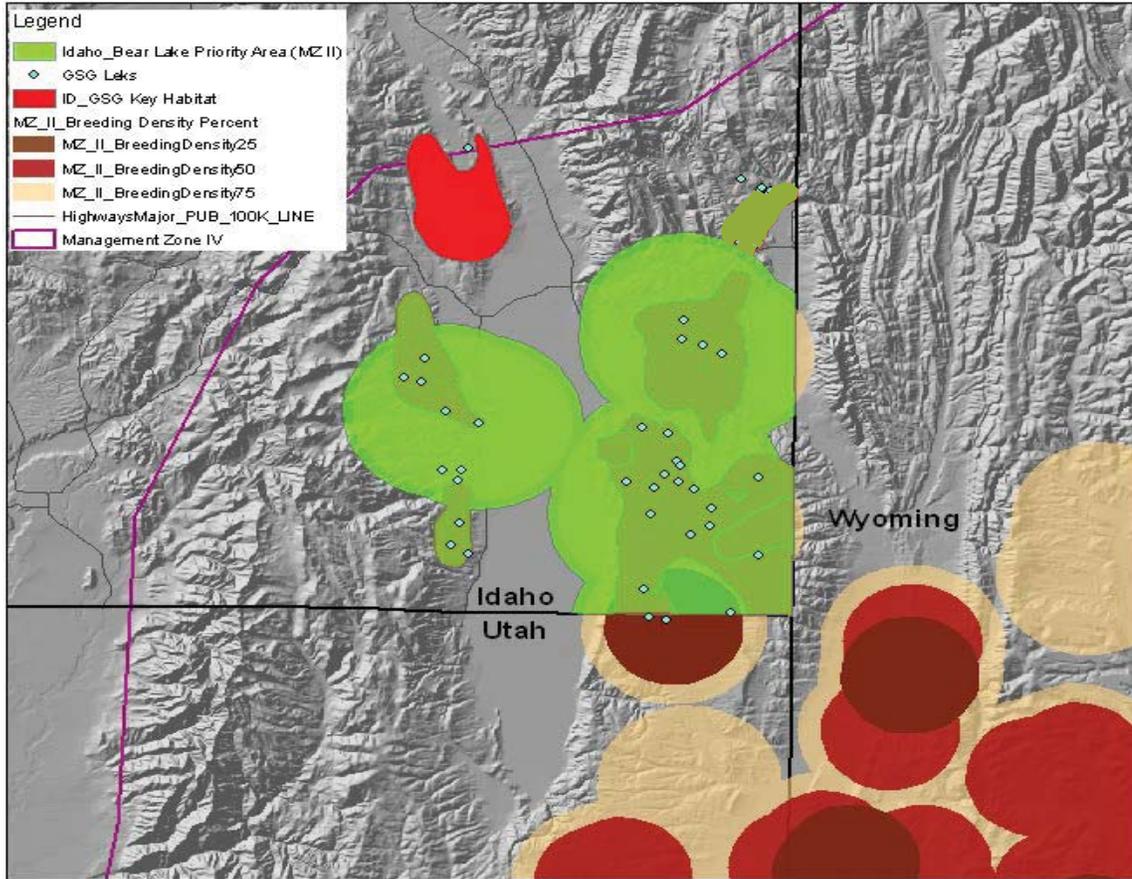


Figure 11. Bear Lake Plateau area (MZ II). Sage-grouse Priority Area (PA) for Idaho is represented by the bright green polygon. Note the 2010 Idaho Key Habitat polygons (shaded red) that are encompassed within the green PA polygon. The colored circles represent Breeding Bird Density results (Doherty et al. 2010) for Management Zone II: 25% BBD (dark red), 50% (red), and 75% (light brown).

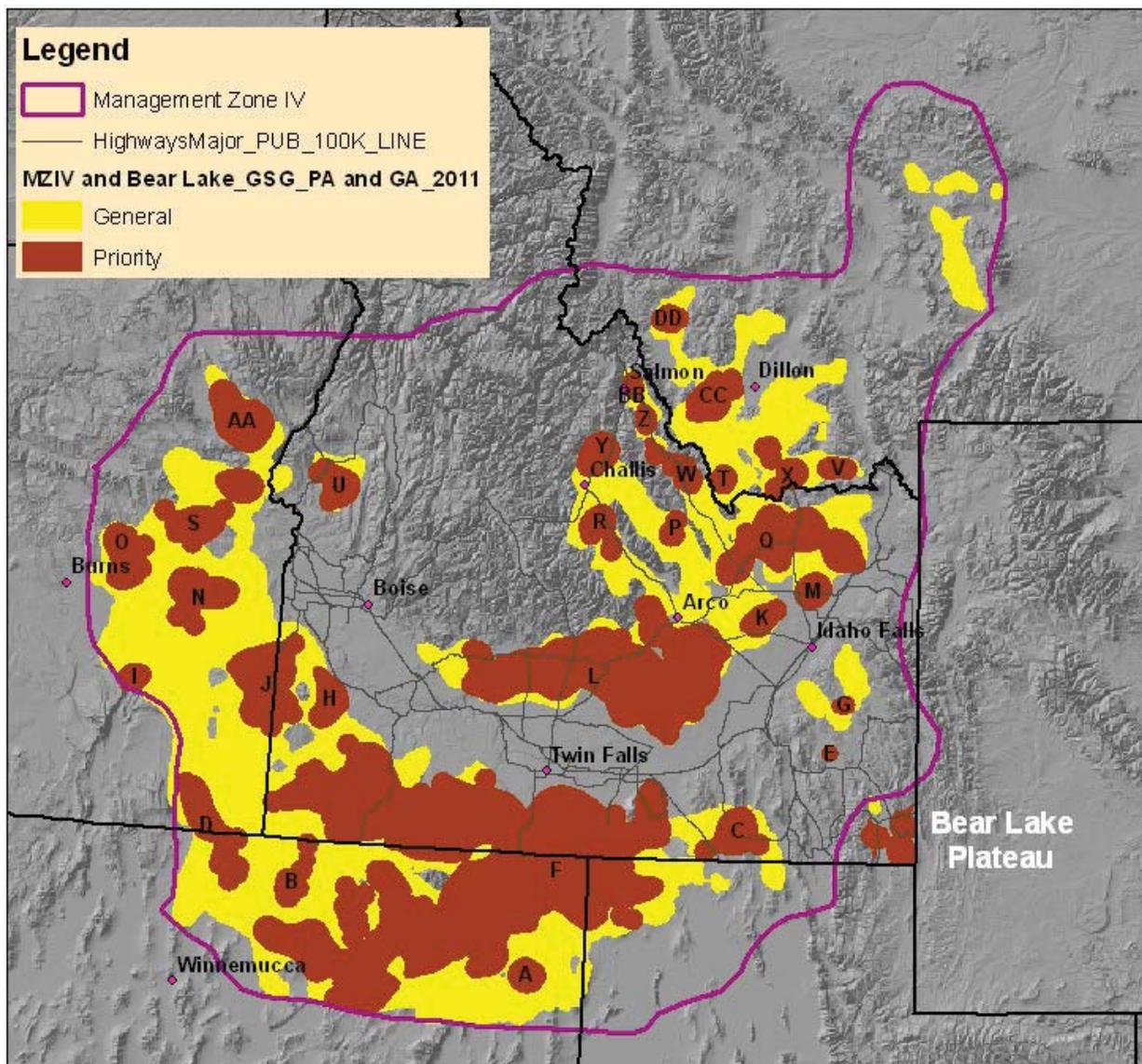


Figure 12. Draft Sage-grouse Priority Area and General Area Designations for Management Zone IV and Idaho – Bear Lake Plateau (MZ II).

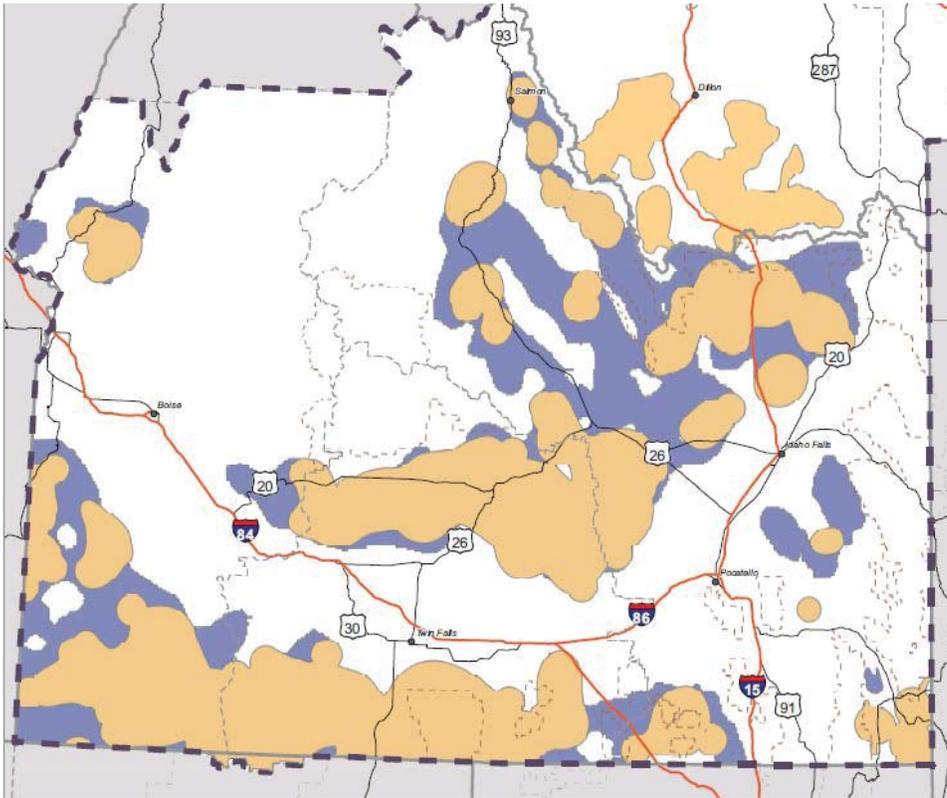


Figure 13. Sage-grouse Preliminary Priority Habitat and Preliminary General Habitat map Provided During Scoping for the BLM Sage-grouse Planning Strategy.

Chapter 2: Version 2 -April 2012- Refinements to Sage-grouse Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) in Idaho

Introduction: In response to additional input from local and regional sage-grouse and habitat experts, new spatial data, and public comments, we initiated a refinement of the Version 1 analysis. Specifically, our refinements focused on 1) further evaluation of the *population* components (leks and lek counts) in the original analysis and 2) incorporation of additional data to inform the sagebrush component of PPH, including: i) seasonal habitat information (e.g., fall, winter, late brood), ii) identified movement and migration corridors, iii) addition of local sage-grouse priority areas, iv) incorporation of additional areas of habitat connectivity, v) incorporation of recommendations arising from FS review, and vi) exclusion of modeled agricultural and timber lands.

In addition to revising PPH/PGH in Version 2 as described above, we also incorporated certain perennial grassland and conifer encroachment “potential restoration areas” as a subset of PPH. Many of these potential restoration habitat types have recently (or may in the foreseeable future) undergone various efforts to enhance or restore habitat extent or improve connectivity. Since these potential restoration habitats are typically intermixed with or in proximity to preliminary priority *sagebrush* areas, and since the potential restoration areas themselves may be used in varying degrees by grouse, managing these areas as a component of PPH may be important to the long-term sustainability of sage-grouse populations in the state. The importance of these potential restoration habitats is also underscored by the fact that Idaho appears to have lost approximately two-thirds of its sage-grouse habitat since pre-settlement times, thus emphasizing the need for ongoing restoration efforts (especially to recover sagebrush) and appropriate management of remaining habitats.

Additional population information: BLM and IDFG Field staff identified a subset (n=10) of “important” high male attendance leks that were not previously captured in the Version 1 PA designations (Figure 1). All of these leks occurred within the 75% BBD coverage, however were not captured in the initial analysis because they did not intersect w/ the 75% utilization lek connectivity surface. The revised 2011PA polygons were then used to provide the foundation for the following integration of additional available sage-grouse habitat and related information, described below.

Additional habitat information: A combination of Key Habitat (Sather-Blair et al., 2000; ISAC 2006; BLM 2012), recently mapped winter and/or breeding habitat (Burak and Moser 2009; NMV LWG 2011), local sage-grouse priority areas previously identified spatially by the Challis Local Working Group, known migration movement corridors, and the revised 2011PA polygons were used to further refine the Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) boundaries. The following criteria were used:

- a. Any Key Habitat (Sather-Blair et al., 2000; ISAC 2006; BLM 2012) inclusions or portions extending beyond the revised 2011 PA polygon boundaries were identified as PPH: 1) if the extension connected to an adjacent revised 2011 PA polygon and/or 2) extended out to the intersection of the Persistence boundary, to exclude areas of low (<25%) persistence (see Chapter 1 - MZ IV Sage-grouse *General Area* Delineation for Persistence discussion, and Figure 2, this chapter).
- b. Any identified sage-grouse winter or breeding (Spring) habitat areas within or extending beyond the revised 2011 PA boundary were identified as PPH (Figure 3).
- c. Priority Areas identified by the Challis Sage-grouse Local Working Group within or extending beyond the revised 2011 PA boundary were identified as PPH (Figure 4).
- d. Sage-grouse movement and migration areas were identified using a combination of expert opinion (primarily discussions with Dr. Jack Connelly) and telemetry location information. Telemetry data spanned a 15 - 20 year period representing targeted local sage-grouse studies and was used to

provide “general” support of sage-grouse movement patterns. Migration and movement areas were identified that connected revised 2011 PPH polygons as well as any identified Key habitat, crucial winter, breeding, or Local Working Group identified priority areas (Figure 5)

- e. Any Key Habitat (Sather-Blair et al., 2000; ISAC 2006; BLM 2012) not connected to the revised 2011 PPH (polygons) or extending beyond the Persistence model’s 25% boundary was identified as Preliminary General Habitat (PGH).
- f. Any PGH (from >25% Persistence model) occurring within the revised 2011 PA polygons was retained as PGH.

Incorporation of Potential Restoration Areas into PPH: In addition to refinement of the sagebrush component of PPH as described above, we also included certain “potential restoration” habitat types into PPH (Figure 6). These were restricted to identified perennial grasslands and areas of conifer encroachment and correspond to those areas shown in BLM 2012 (and as defined in Sather-Blair et al 2000 and ISAC 2006). The following criteria were used:

- a. Any Potential Restoration area Type R1 (perennial grassland) or R3 (conifer encroachment) occurring within the revised 2011 PA polygons was identified as PPH.
- b. Any R1 or R3 Habitat occurring outside the revised 2011 PA polygons was identified as Preliminary General Habitat (PGH).

Incorporation of U.S. Forest Service edits: National Forests within Idaho reviewed draft revised PPH/PGH data during April 2012. Suggested edits, based on local seasonal habitat information were provided to BLM in a geodatabase format by the FS Geospatial Technology Service Center. Polygons were attributed by the FS as either 1) breeding habitat, 2) breeding/summer/early fall habitat, 3) breeding/summer/early fall/ fall/winter habitat; 4) summer/early fall habitat or 5) summer/early fall/fall/winter habitat. We then applied the following rule set to allow for incorporation of FS edits without otherwise compromising other important components of the PPH/PGH analysis.

- a. An initial assumption was made that polygons containing the terms” breeding” and/or “winter” habitat in the “season” data field, were relatively more important than other seasonal habitats, and therefore constituted PPH. Polygons with no reference to breeding or winter habitats in the “season” field and polygons where seasonal descriptors were lacking (n=3; acre total ~500) constituted PGH. Following this initial characterization, we then applied the following rule set:
 - i. Polygons identified as “breeding” and/or “winter” habitat were attributed as PPH. Remaining seasonal habitats were attributed as PGH.
 - ii. Polygons identified as PGH that intersected existing PPH were attributed as PPH.
- b. If Forest Service polygons occurred within areas of migration/movement/connectivity concern, they were attributed as PPH.

Incorporation of Agriculture and Conifer Filters to Refine PPH and PGH: The final step in refining the PPH areas involved applying both an agricultural and conifer filter to exclude those areas from the final PPH product (Figure 7). Agricultural and conifer land cover types were mapped using the Landfire v1.01 land cover dataset. For computational purposes the 30m land cover data was resampled to 90m. Separate 1 km moving window analyses were used to sum agriculture and conifer occurrence, respectively across Idaho. A 25% threshold value (representing 25% occurrence in the 1 km² window) was used as the agricultural filter. Aldridge et al. (2008) reported that sage-grouse extirpations were more likely to occur in areas where cultivated

crops exceeded 25% of a 30 km landscape. A 50% threshold value (representing 50% occurrence in the 1 km² window) was used as the conifer filter. Doherty et al. (2008) reported that sage-grouse avoided coniferous habitats at a 0.65-km² scale.

Any areas of sagebrush, perennial grass, or conifer that were contained within the above agriculture or conifer filters were incorporated into PGH to provide additional context at more local scales and to acknowledge that these edge areas or inclusions, while influenced by conifer or agriculture, may still be utilized by sage-grouse to some degree.

Summary: The Version 2, April 2012 Preliminary Priority Habitat designation encompasses three subcategories of habitat including 1) sagebrush, 2) perennial grassland potential restoration areas, and 3) conifer encroachment potential restoration areas that are assumed to be relatively important for sage-grouse conservation planning efforts based on the above analysis and assumptions. Summary statistics for habitat acreages, land status, and leks are provided in Tables 1 and 2. Figure 8 displays PPH with the three subcategories merged, for simplicity, along with PGH. Figure 9 displays the three subcategories of PPH separately, in addition to PGH.

Chapter 2 - Tables and Figures:

Table 1. Version 2 (April 2012) Preliminary Priority Habitat and General Habitat Acreage and Lek Summary Information.

Category	Idaho Total	Preliminary Priority Habitat	Preliminary Priority Habitat (BLM Admin)	Preliminary General Habitat	Preliminary General Habitat (BLM Admin)
Sagebrush	9,311,962 ac	8,159,000 (~88%)	5,037,000 ac (~62%)	1,222,000 ac (~13%)	225,000 ac (~18%)
Combined Sagebrush Perennial grassland Conifer encroachment	13,460,181 ac	10,522,384 ac (~78%)	6,790,000 ac (~65%)	4,553,000 ac (~34%) Includes acres from Persistence>25%	1,758,000 ac (~39%)
Number of Leks (Idaho)	848 leks	776 leks (~92%)	506 leks (~65%)	52 leks (~6%)	12 leks (~23%)
Male MaxCount (Idaho)	20,204 males	18,479 males (~91%)	11,724 males (~63%)	1,323 males (~7%)	339 males (~26%)

Table 2. Version 2 (April 2012) Preliminary Priority Habitat and General Habitat Land Ownership Summary. These data are for illustrative purposes only. Inclusion in PPH or PGH is partly a function of the relatively broad scale nature of the analysis, and is not intended to imply endorsement by specific land owners or agencies.

Preliminary Priority Habitat (PPH)			Preliminary General Habitat (PGH)		
OWNERSHIP	ACRES PPH	% of PPH	OWNERSHIP	ACRES PGH	% of PGH
BLM	6,789,794	65	BLM	1,758,132	39
BOR	1,326	<1	BOR	21,972	<1
			CORPS. ENGINEERS	2,939	<1
DOE	377,828	4	DOE	182,455	4
HSTRCWTR	1,340	<1	HSTRCWTR	2,422	<1
INDIAN RES.	143,949	1.4	INDIAN RES.	10,672	<1
DOI Bankhead- Jones	56,507	<1	DOI Bankhead-Jones	6,916	<1
USDA Bankhead- Jones	38,025	<1	USDA Bankhead-Jones	7,862	<1
MILITARY	11,142	<1	MILITARY	37,714	<1
NPS	27,313	<1	NPS	222,669	5
NATIONAL WILDLIFE REFUGE	204	<1	NATIONAL WILDLIFE REFUGE	3,149	<1
OTHER	60,637	<1	OTHER	29,449	<1
PRIVATE	1,655,919	16	PRIVATE	1,243,058	27
STATE	616,088	6	STATE	338,264	7
STATE IDFG	23,954	<1	STATE IDFG	24,765	<1
STATE PARKS	2,178	<1	STATE PARKS	5,149	<1
USFS	715,276	7	USFS	655,635	14
MISC	904	<1			
GRAND TOTAL	10,522,384	100	GRAND TOTAL	4,553,224	100

Table 1. Version 2 (April 2012) Preliminary Priority Habitat and General Habitat Summary Information.

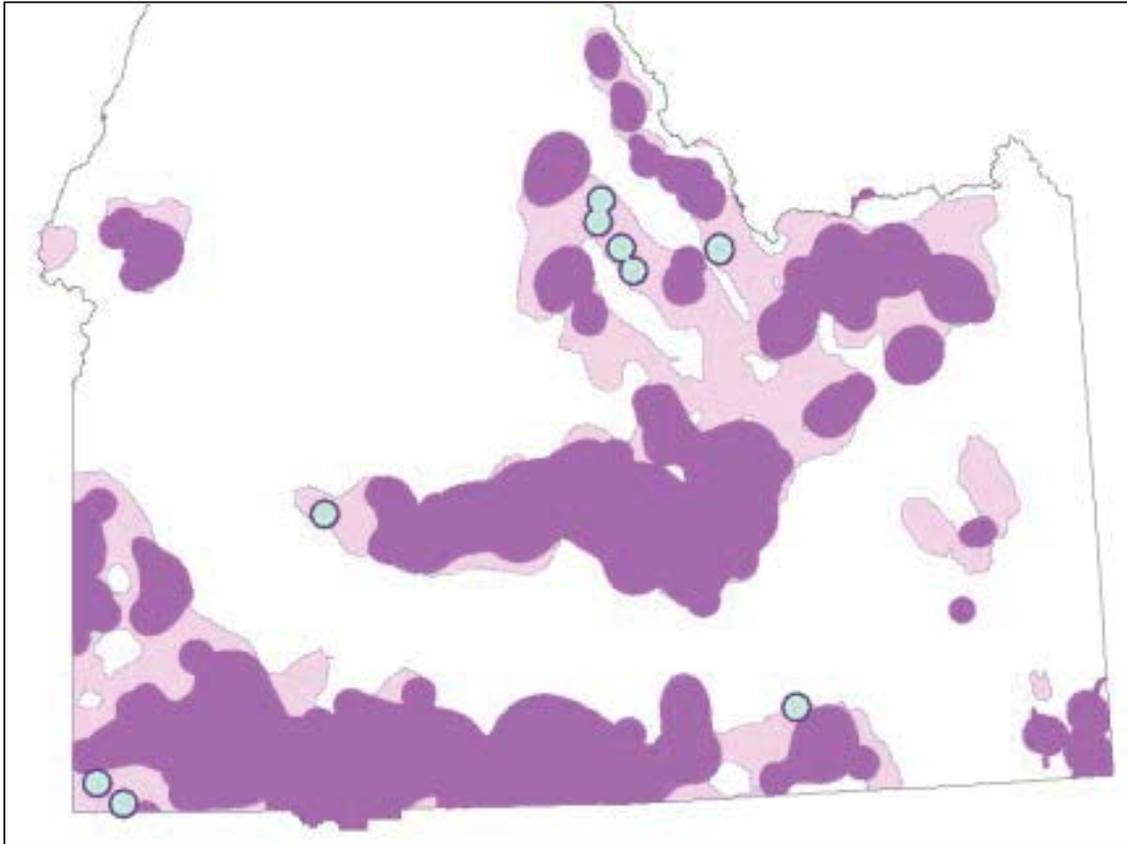


Figure 1. Important areas of high male lek attendance (blue circles) that were added as PPH polygons in Version 2 (April 2012). The purple/pink areas show the original (Version 1, 2011) PA/GA.

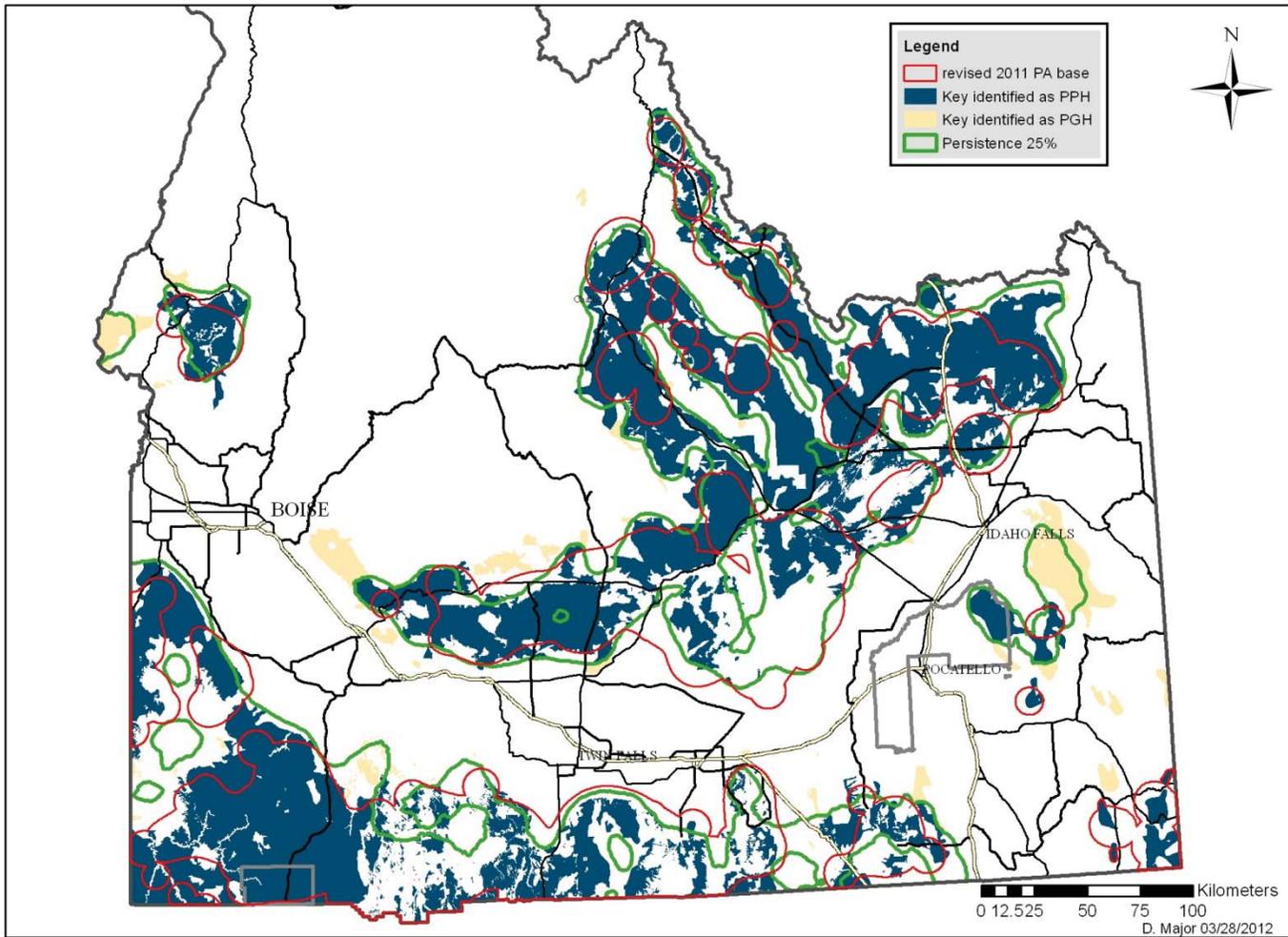
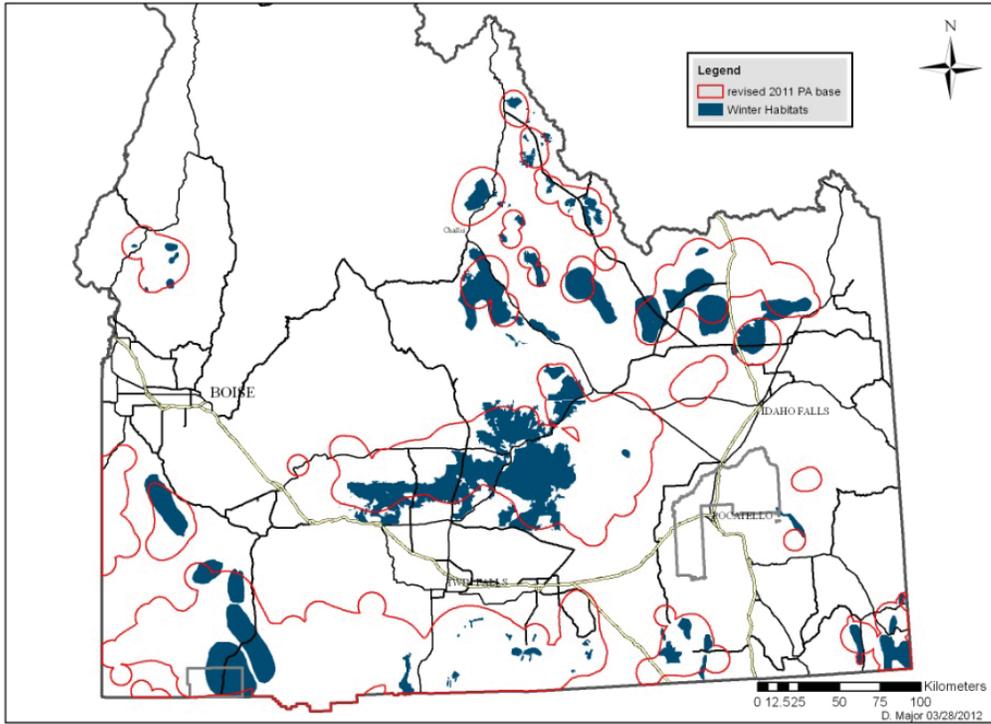


Figure 2. Identified Key Habitat that occurs within the revised 2011 PA polygons (red) or connects among polygons was delineated as PPH. Key habitat areas extending beyond the revised 2011 PA polygon and contained within the Persistence 25% surface (green) were also included as PPH. Other identified seasonal and/or high importance areas within or outside Key habitat were also included as PPH.

A-Winter



B – Breeding

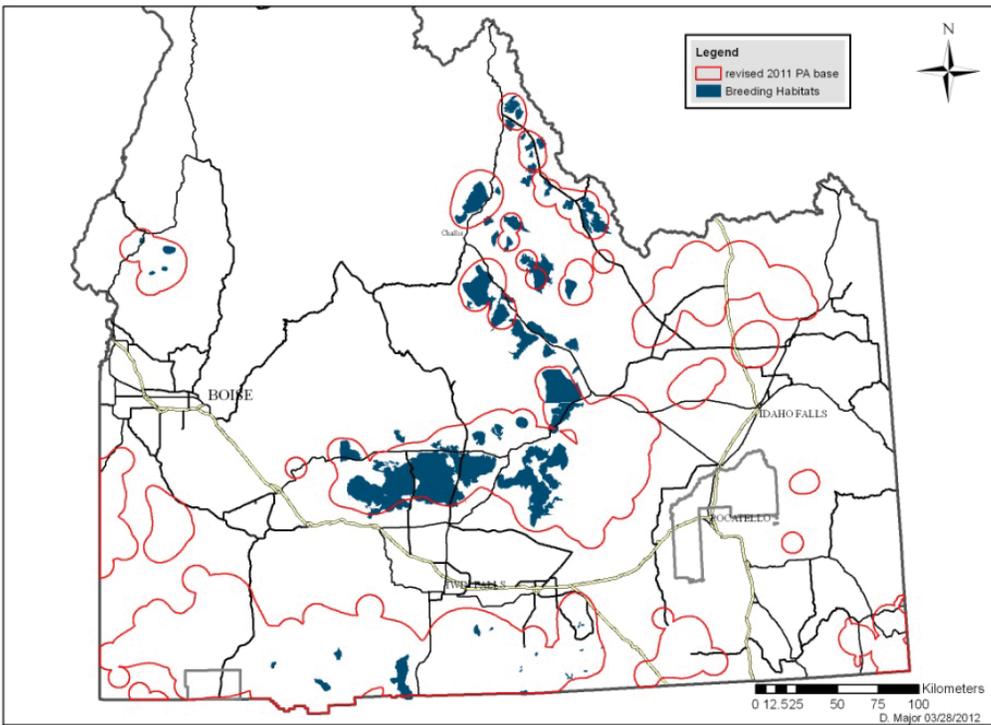


Figure 3. Identified sage-grouse winter (A) and breeding (B) areas.

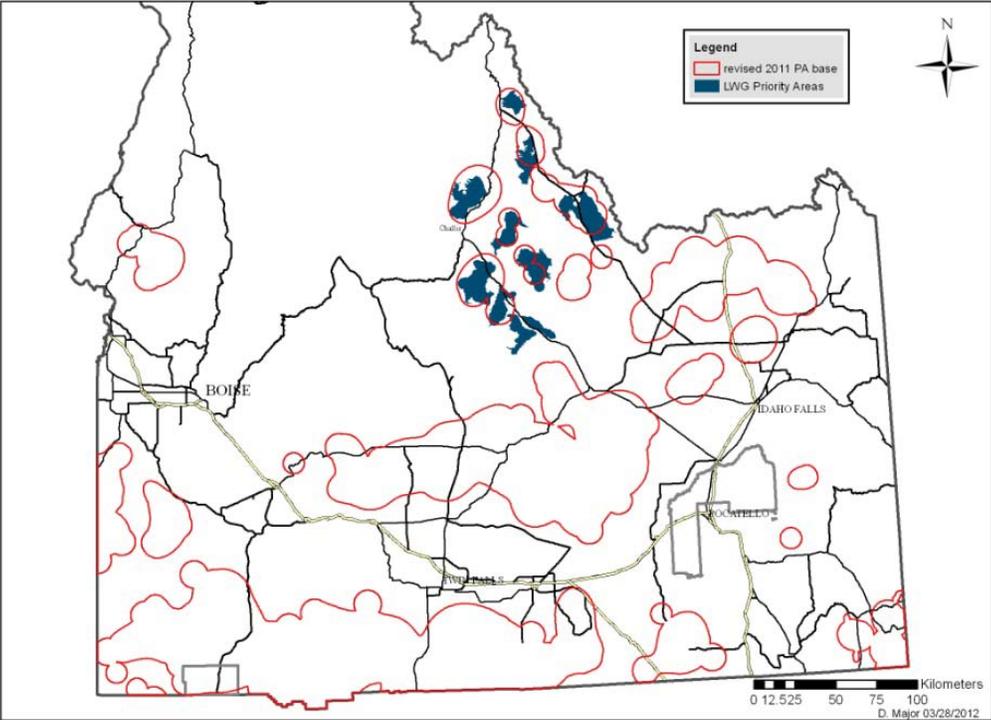
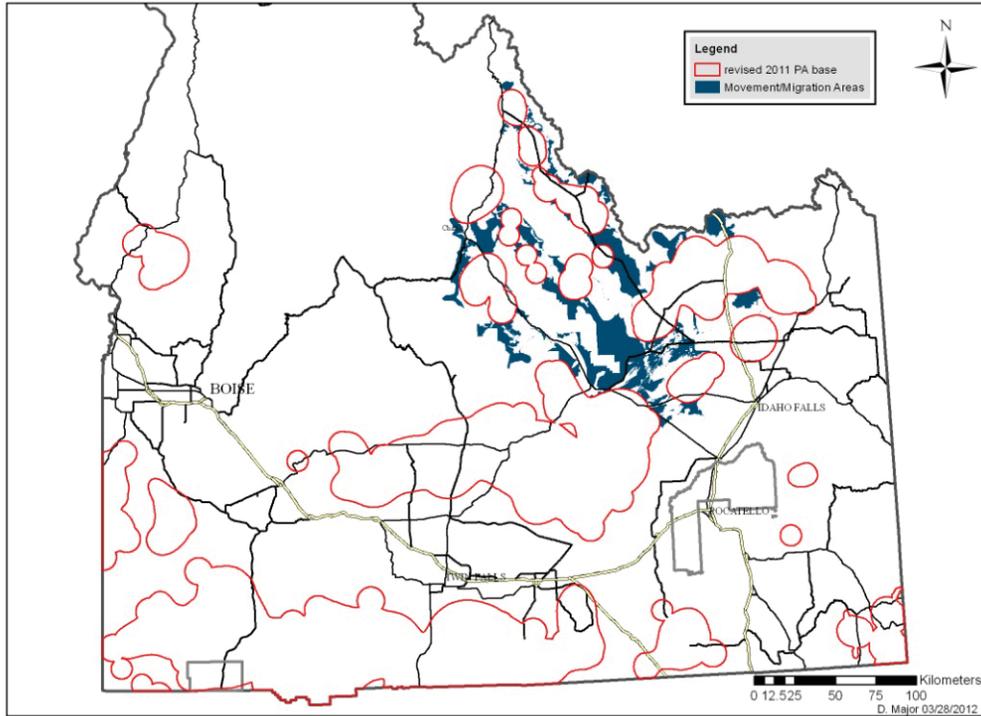


Figure 4. Identified Sage-grouse Local Working Group Priority areas.

A



B

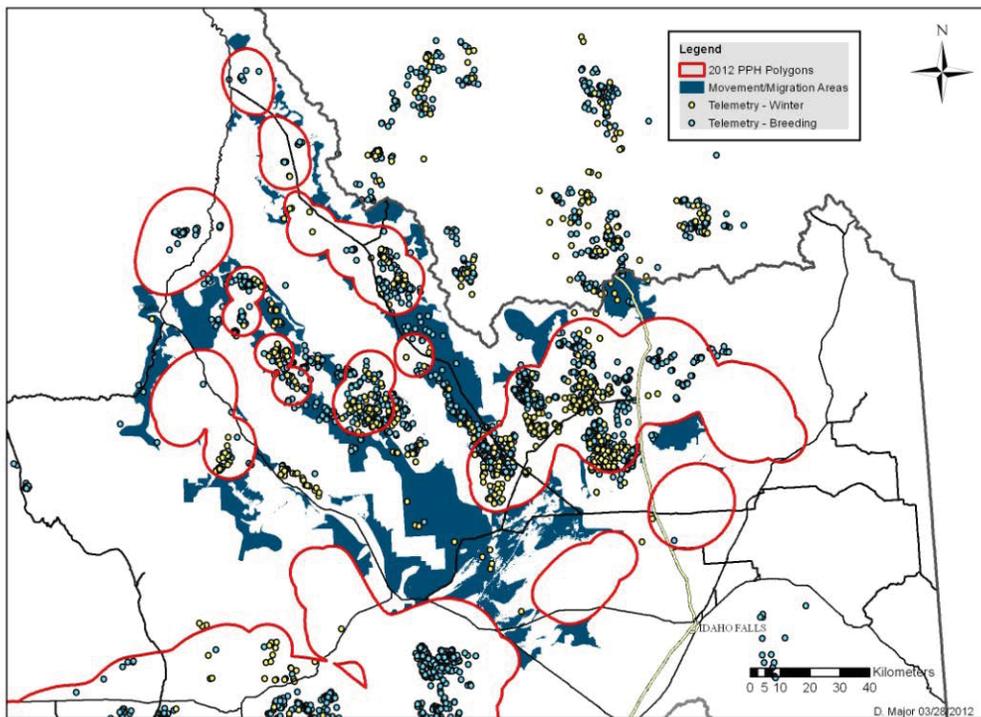


Figure 5. A - Important sage-grouse movement and migration areas identified from expert opinion and telemetry location information. B – Winter (yellow) and Breeding (blue) season telemetry location used to visually examine movement and migration areas.

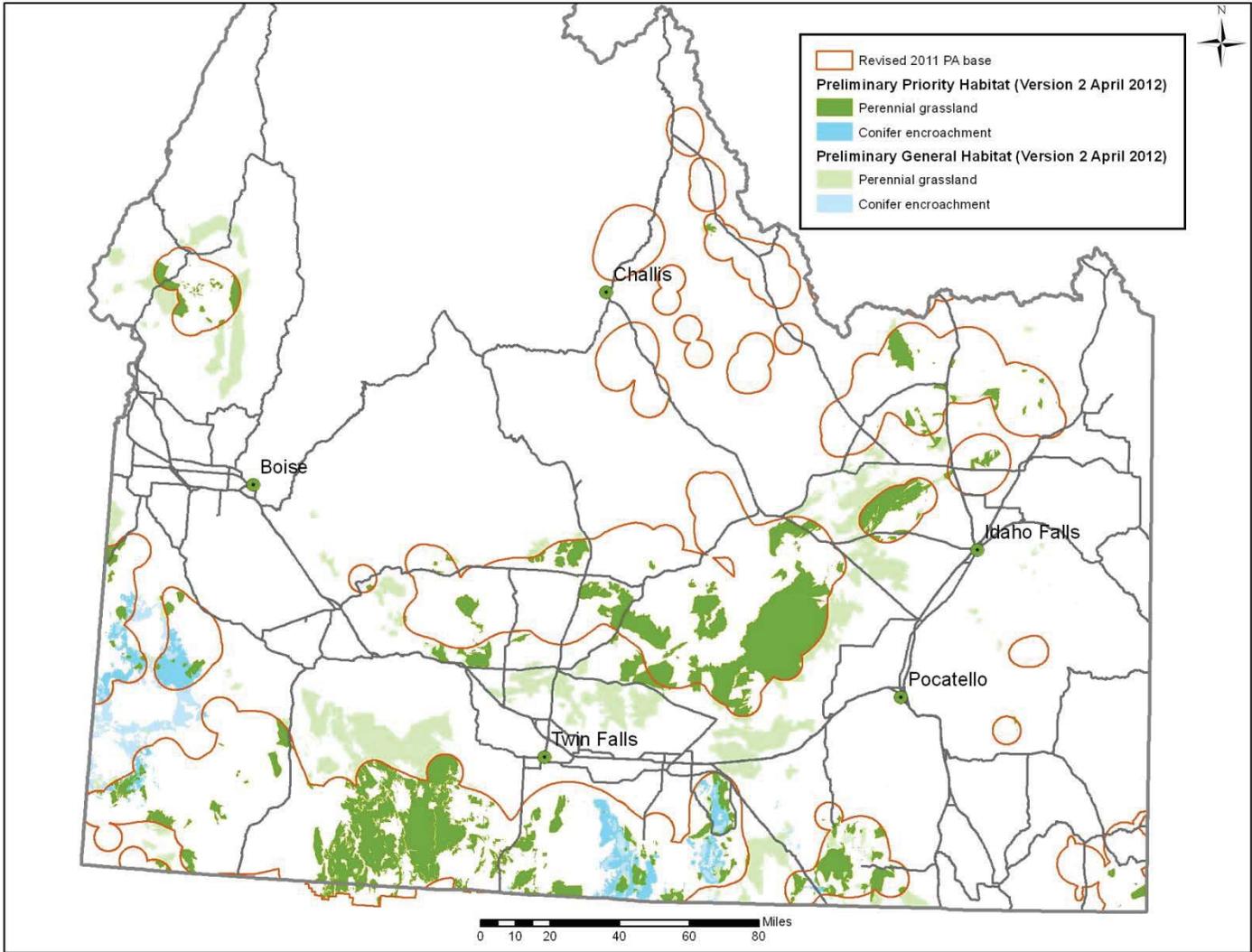
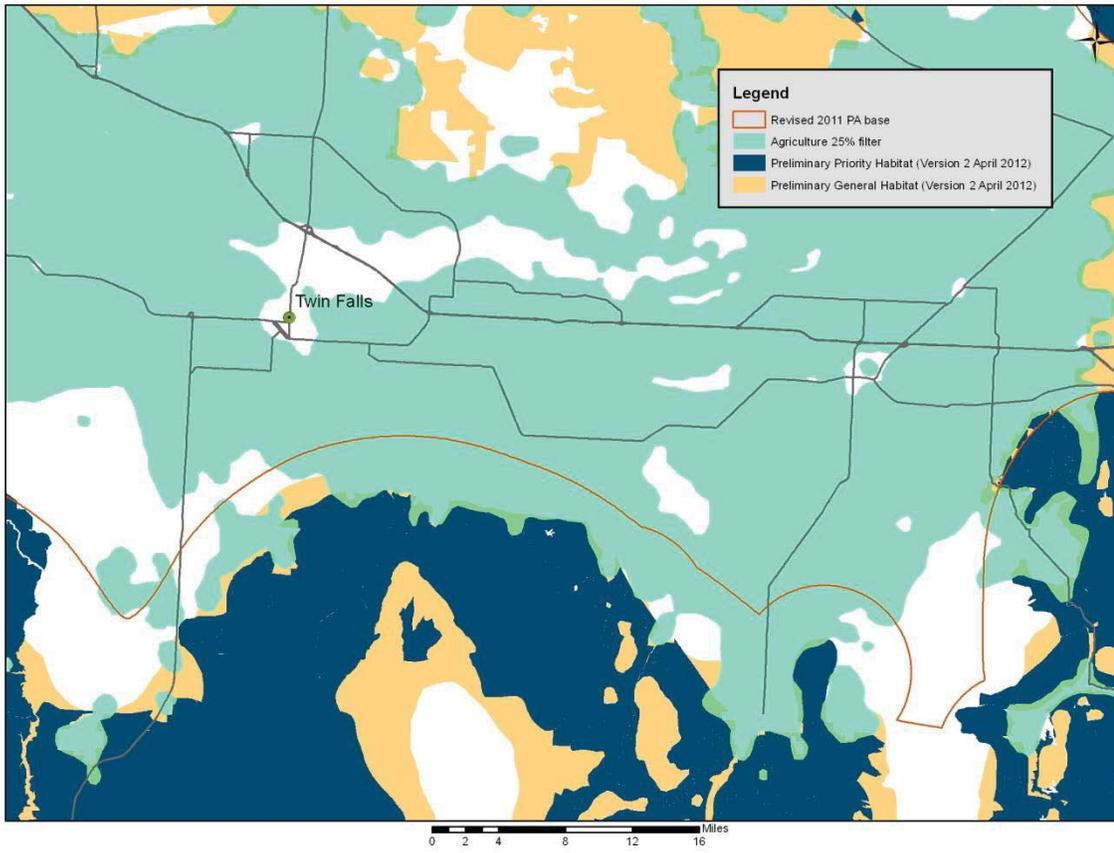


Figure 6. Perennial grasslands and conifer encroachment areas occurring within the revised 2011 PA polygons (red) were delineated as Preliminary Priority Habitat areas for the 2012 revision. Areas outside the polygons were delineated as Preliminary General Habitat. Data represents perennial grassland, conifer encroachment, and some Persistence >25%.

A



B

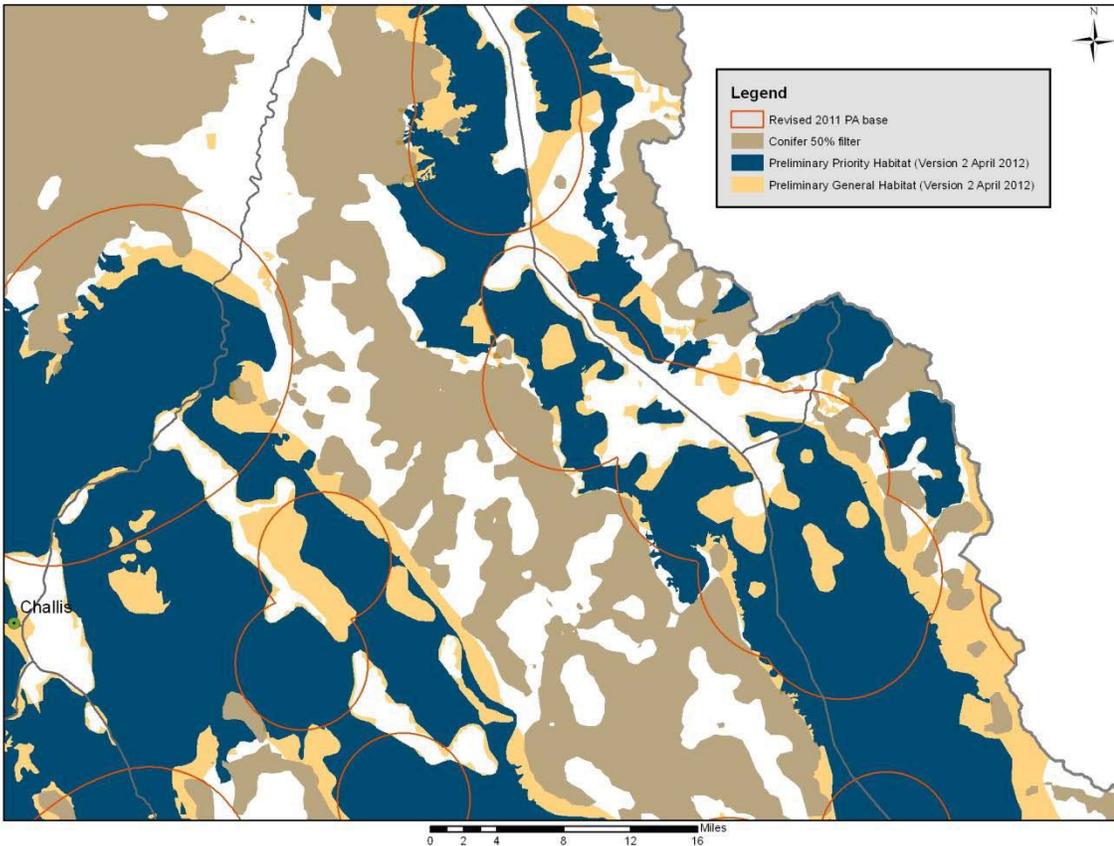


Figure 7. A – Agricultural filter; B – Conifer filter. Vegetation data was obtained from Landfire v1.01.

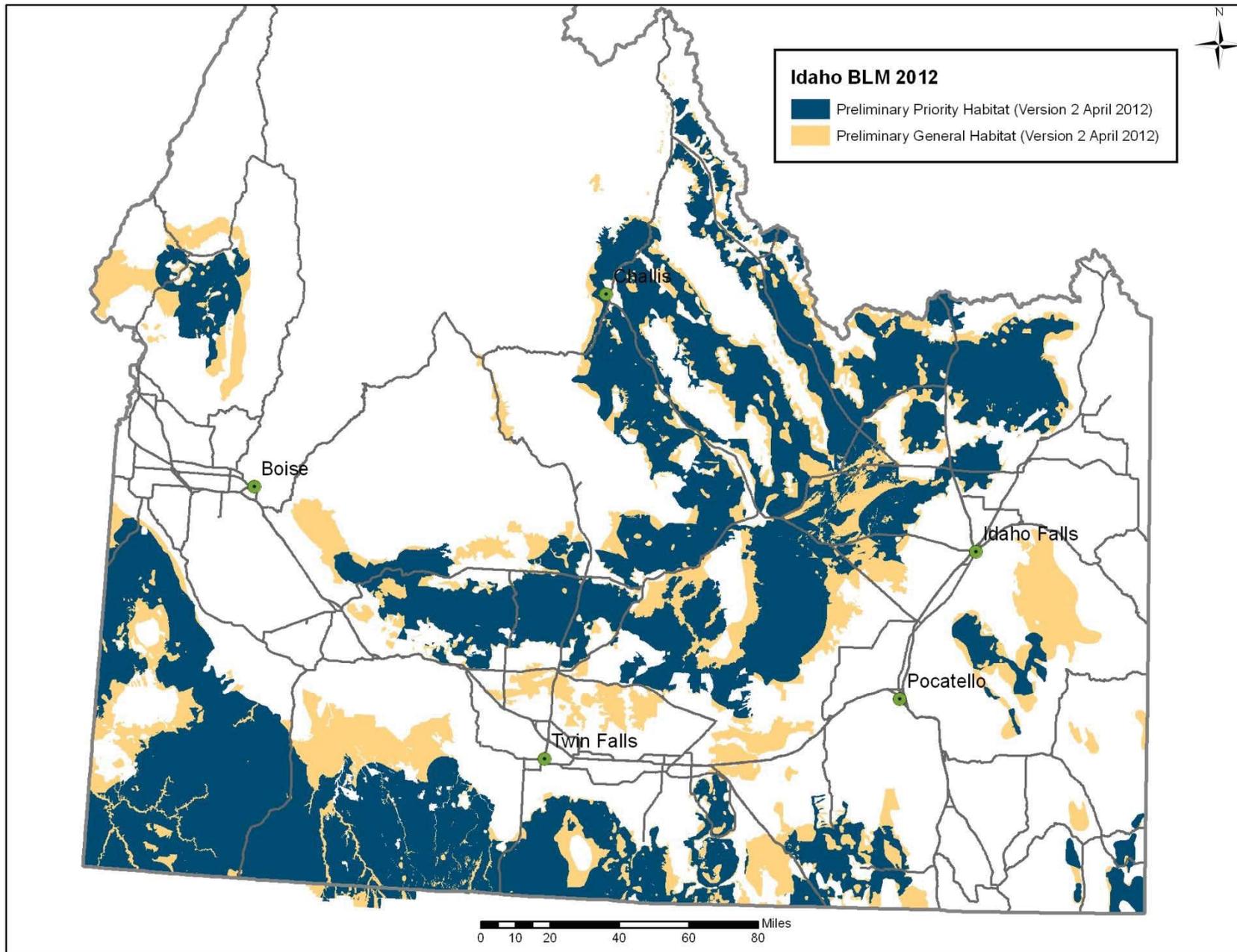


Figure 8. 2012 Sage-grouse Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) in Idaho. 2012 Preliminary General Hab the remaining sagebrush, perennial grassland, conifer encroachment, and some Persistence >25% not accounted for in the 2012 Preliminary Prio Habitat.(Version 2 April 2012).

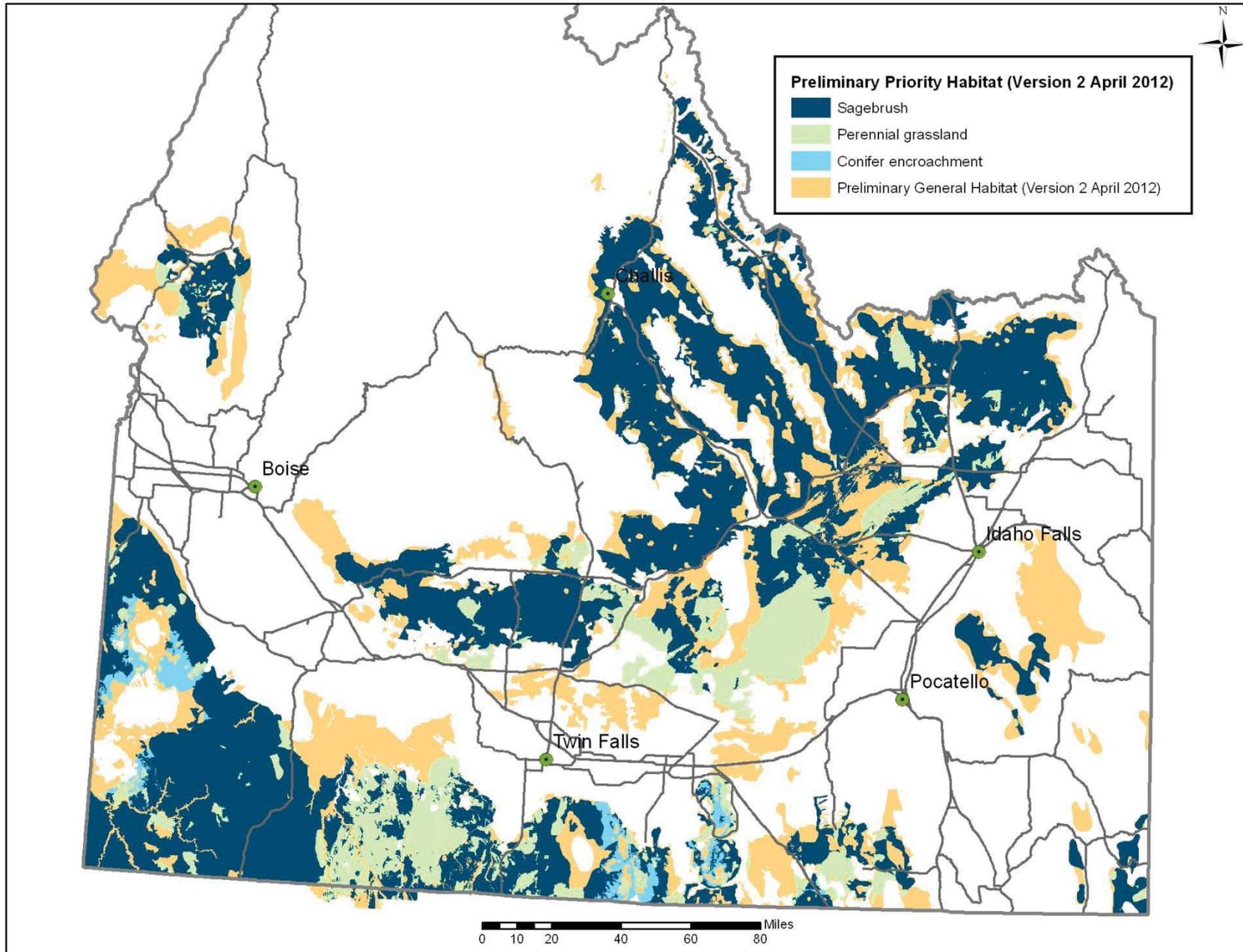


Figure 9. 2012 Preliminary Priority Habitat and Preliminary General Habitat (PGH) areas in Idaho. PPH includes important sagebrush areas as grassland and conifer encroachment areas that are priority restoration areas. (Version 2 April 2012).

Chapter 3: Management Approaches for Consideration

The information presented in this paper should not be construed as policy. It is primarily intended to complement and provide spatial context for interim national BLM sage-grouse policy and a framework for further conservation planning efforts. Specifically, this information can provide helpful context for analyses and decisions associated with future project-level work, authorizations, activity planning or land-use planning that may affect sage-grouse or sage-grouse habitat on BLM lands in Idaho. To inform future discussions of possible management actions for the various PPH or PGH (or portions thereof), we suggest considering two general approaches, as a starting point.

Habitat Maintenance Focus: In some areas, the focus of sage-grouse habitat conservation may best be achieved by an effort to maintain or protect the current extent and health of sagebrush landscapes and sage-grouse population connectivity. These areas might include PPH or portions of PPH that currently provide relatively important, intact sage-grouse habitat and are therefore important for sustaining sage-grouse populations into the future. Examples of management actions could include: 1) the establishment of exclusion zones for certain types of actions (e.g., energy development), or sage-grouse “conservation areas”, Areas of Critical Environmental Concern, or other protective designations to minimize or reduce anthropogenic impacts; 2) application of more stringent project stipulations or protective buffers; and 3) provide aggressive and proactive approaches to wildfire suppression, establishment of strategic fuel breaks, implementation of juniper/conifer control activities, or other protective or maintenance measures appropriate for the landscape.

Habitat Improvement Focus: In some areas, the focus of sage-grouse habitat conservation may best be achieved by an effort to restore the extent and ecological health of sagebrush landscapes to improve sage-grouse habitat quality, quantity and population connectivity. These would be comprised of PPH and/or PGH that currently are constrained due to concerns with habitat quality, fragmentation or other factors that could be ameliorated with restoration activities or other approaches. Management actions could focus on efforts to restore sagebrush and/or the herbaceous components of the habitat, reduce conifer expansion, and protection of restoration investments (i.e., aggressive wildfire suppression).

Future Modeling Opportunities: Given the repeatable and transparent analytical framework described in earlier chapters, we can readily incorporate other geospatial landscape metrics, threat information, or other data as they become available. For example, we could incorporate information on the Human Footprint (Leu et al. 2008), or Core Patch Size Distribution using Patch Analyst for ArcGIS. Other class or landscape metrics (e.g., habitat connectivity, fragmentation or aggregation indices, edge density, etc.) could also be explored to further characterize the nature and context of our connectivity polygons.

In the near future, we will have the opportunity to incorporate sage-grouse seasonal habitat models currently under development for Idaho and MZ IV by IDFG (Knetter and Svancara, in progress) using a Maximum Entropy (MAXENT) climate envelope characterization of sage-grouse habitat. We anticipate these will be helpful in further informing sage-grouse conservation at multiple scales.

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Greater Sage-Grouse Core Areas Designation for Montana Version 1.0

Appendix 1 to Greater Sage-Grouse Habitat Conservation Strategy

Definition, Methods, and Numerical Results
Montana Fish, Wildlife and Parks

Jan 13, 2009

Objective: Designate sage-grouse core areas in Montana that support the greatest sage-grouse abundance or are important for maintaining sage-grouse distribution.

Definition: Sage-grouse core areas are habitats associated with 1) Montana's highest densities of sage-grouse (25% quartile), based on male counts and/or 2) sage-grouse lek complexes and associated habitat important to sage-grouse distribution.

Methods and Criteria for #1 in the Definition

1. **Identifying Highest Density:** Two different point density estimation methods (noted below) were used to identify the highest densities of displaying male sage-grouse based upon lek locations. Both techniques identified the same lek complexes as having the highest densities at the 25% quartile.
 - a. Audubon (K. Doherty) used a 6440-m circular neighborhood analysis (Spatial Analyst Tools ArcGIS 9.2) at 1-km grid cell size. The maximum male count available between 2005 and 2007 was used to evaluate male density. The resulting surface was randomly sampled using 50,000 points to determine the quartile breakpoints.
 - b. Montana Fish, Wildlife and Parks (FWP) used a Fixed Kernel Density Estimator (Hawths Tools, ArcGIS 9.2) with a bivariate normal kernel and a smoothing factor of 10,000 at a 500-m cell size. The kernel was weighted based upon the average of the highest male count for each year from 1998 through 2008. The quartile boundaries are provided by the program.
2. **Focus Area:** Lek complexes and associated habitats, typically within a 10-km search radius of leks in the complex, defined the outside boundaries of this analysis. In some instances, habitat associated with a core lek complex may have extended beyond 10 km.



Overlaying documented seasonal habitats connected to and extending beyond these areas and manual editing were necessary to incorporate these exceptions.

3. **Habitat Suitability Analysis:** For the purposes of this analysis, unsuitable habitats and suitable habitats within or adjacent to core areas were generally defined as follows:

a. **Unsuitable Habitat**

- Cultivated row-crop parcels >600 acres
- Areas where 75% or more of the surrounding 1,000 acres are cultivated land*
- Areas where 20% or more of the surrounding 1,000 acres are forested habitat*
- Areas where 75% or more of the surrounding 1,000 acres exceeded a terrain ruggedness threshold of 13.**

Note: This criteria was not included for intermountain valleys of southwestern Montana because of the unique topographic features and demonstrated habitat use by sage-grouse.

* Land cover values were obtained from the National Land Cover Dataset (NLCD). Analyses were based upon a 30-m grid cell. Percentages are based on a 2-km x 2-km search window (1,000 acres).

** Terrain ruggedness is the standard deviation of elevation surrounding an area based upon a 30-m grid cell. The threshold was chosen based on 95% of leks having a value of 13 or lower.

b. **Suitable Habitat**

- Areas where 75% or more of the surrounding 1,000 acres had a 10% or greater probability of supporting a sage-grouse lek.
 1. The majority of core area boundaries were based upon this delineation.
 2. The probability used is based upon a habitat suitability model that used lek locations to identify suitable habitat. This model was produced by the Montana Natural Heritage Program. See "Surveys for Grassland Birds of the Malta Field Office-BLM, including a Seven-year Study in North Valley County, April 2008" at the Montana Natural Heritage Program, Publications, [Birds](#) webpage.

Methods and Criteria for #2 in the Definition

1. Key areas for maintaining sage-grouse distribution in Montana are among the highest 50% density (50% quartile, using methods described above) occurring in the outer boundaries of the sage-grouse's range in Montana.
2. Key habitat corridors important for conductivity and sage-grouse distribution beyond Montana are also included under this definition (e.g., portions of northern Valley County).
3. Non-habitats and habitat boundaries within or adjacent to core areas follow the same criteria as under #3 above.

Refinement Process:

1. Field biologists from FWP and Bureau of Land Management (BLM) reviewed printed maps showing the habitat parameters described above to identify outer boundaries of core areas and determined general accuracy of designated non-habitats. Printed maps were at a scale of 1:200,000.
2. Based upon those biologists expert opinion, refinements were made to the core area boundaries. This allowed for inclusion of nesting and brood rearing areas not captured by the lek driven model.
3. Telemetry data was utilized to refine core area boundaries in southwestern Powder River and southeastern Bighorn counties and Beaverhead and Madison counties to help refine mapping of core habitats in these areas. Data from Powder River and Bighorn counties was obtained from research done by Dr. Dave Naugle, University of Montana. Data from Beaverhead and Madison counties was obtained from research done by the BLM.
4. The mapped habitat, refinements based upon biological expert opinion and integration of existing research data were incorporated to develop Version 1.0.
5. As additional information becomes available, Core Area designations will be refined.

Numerical Results:

Core Areas mapped as Version 1.0 include 56% of the state's sage-grouse leks (953 of 1,693 leks) and 71% of displaying males based on average male counts over the last 10 years (13,439 of 18,910 sum of average males).



Appendix J

Forest Service Alternative D Language



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Version 1 - Revised as of 8/15/13

**Draft Standards and Guidelines for GRSG Amendment for the Land and
Resource Management Plans in Idaho and Southwest Montana for the
Preferred Alternative - Alternative D**

Boise National Forest

Beaverhead-Deerlodge National Forest

Caribou-Targhee National Forest

Curlew National Grassland

Salmon-Challis National Forest Service

Sawtooth National Forest

Note – all of the following standards and guideline apply to all GRSG habitat unless a specific Management Area is identified.

D-SSS-1: Greater Sage-grouse Management Area Designation

Designate Preliminary Priority Management Areas (PPMA), Preliminary Medial Management Areas (PMMA), and Preliminary General Management Areas (PGMA) (see Table 2-x).

PPMA includes areas that have the highest conservation value to GRSG. Key characteristics include areas of higher lek attendance and lek connectivity, lower habitat fragmentation, important movement corridors and winter habitat. PMMA includes areas of moderate to high conservation value to GRSG that are generally adjacent to PPMA's but reflect reduced GRSG population and/or habitat characteristics. PGMA is occupied (seasonal or year-round) habitat outside of PPMA and PMMA.

D-WFM-1: Wildfire Suppression Standard

Having provided for firefighter and public safety, property protection, and threatened and endangered species habitat protection, PPMA is the highest priority for conservation during fire suppression decision making, followed by PMMA and then PGMA. Suppress wildland fires in intact GRSG habitats and utilize appropriate management response where needed to restore, enhance, maintain and improve GRSG habitat.

D-LG/RM-16: Livestock Grazing Standard

Manage grazing permits to maintain vegetation composition (including riparian and lentic areas) and structure consistent with appropriate GRSG seasonal habitat objectives relative to site potential.

D-LG/RM-35: Fence Construction Guideline

Avoid building new permanent fences within 2 km of occupied leks, high density fence areas or winter concentration areas. If this is not feasible, ensure that high risk segments are marked with collision diverter devices or as latest science indicates. Utilize temporary fencing (e.g., ESR, drop down fencing) where applicable and appropriate to meet management objectives.

D-LG/RM-43: New Livestock Water Developments Standard

New water developments must benefit, maintain, or have a neutral effect on PPMA and PMMA (such as by shifting livestock use away from critical areas). New developments that divert surface water in PPMA, PMMA and PGMA must be designed to maintain integrity and functionality of riparian or wetland vegetation and hydrology.

D-RC-3: Recreation Special Use Permit Seasonal Restrictions Standard

Incorporate seasonal restrictions for authorized activities to minimize impacts to GRSG and/or their habitat.

D-RC-4: Recreation Sites and Activities Standard

Design and manage recreation activities and developed recreation sites and facilities within lands not designated as a recreation management area to minimize adverse effects to GRSG by directing use away from sensitive areas.

D-TM-10: Winter Travel Restriction Standard

Limit snow machine travel to existing routes in GRSG wintering areas from November 1 through March 31.

D-LR-1: Solar and Wind Energy Development Restriction Standard

In PPMA - Do not authorize solar and wind energy development in PPMA. In PMMA - Do not allow solar and wind energy development where adverse effects cannot be mitigated. Ancillary facilities such as roads, electric lines, etc. may be authorized provided there is no net loss of GRSG habitat through mitigation. In PGMA - Avoid authorizing solar and wind energy development.

D-LR-3: New ROW, Easement, and Land Special Use Permit Restriction Standard

In PPMA, do not authorize new transmission facilities greater than 50kV, wind energy testing and development, commercial solar development, commercial geothermal development, nuclear development, oil and gas development, mineral development, airports, ancillary facilities associated with any of the aforementioned development, paved roads and graded gravel roads, landfills or hydroelectric projects.

In PPMA, PMMA and PGMA, unless otherwise restricted, avoid authorizing new permanent ROW, easement and land special uses. Land authorizations that are temporary in nature (e.g., film permits,

apiaries), that do not result in loss of GRSG habitat are exempt from mitigation requirements regarding habitat loss (except for timing restrictions). Site new authorizations or facilities, not otherwise excluded, outside the 3 km (1.86 miles) occupied lek avoidance buffer areas unless a greater or lesser distance is required, based on topographic features or other mitigating factors. If new distribution lines cannot be sited outside the 3 km buffer, they should be buried or designed to minimize use by avian predators.

In PPMA and PMMA, new ROW, easement, and land use authorizations may not result in a net loss of GRSG habitat.

D-LR-17: Land Ownership Adjustment Guideline

Retain public ownership of GRSG habitat. Allow consideration of Federal land sale or exchange where there is mixed ownership and land exchanges would allow for additional or more contiguous federal ownership patterns within GRSG habitat.

Allow consideration of land exchanges containing historically low-quality GRSG habitat in exchange for lands of higher quality habitat, lands that connect seasonal GRSG habitats or lands providing for threatened and endangered species. These potential exchanges should lead to an increase in the extent or continuity of or provide for improved connectivity of GRSG habitat. Higher priority will be given to exchanges for those intact areas of sagebrush that will contribute to the expansion of PPMA sagebrush areas currently in public ownership. Lower priority will be given to those lands that will promote enhancement in PPMA and PGMA areas.

D-MLS-12: Fluid Minerals Lease Restrictions Standard

In PPMA and PMMA, do not allow new leases in areas of no and low potential for the discovery of fluid minerals (see Table 2-x). In areas of moderate and high potential for the discovery of fluid minerals, allow leasing and require CSU, timing restrictions in breeding and winter habitat, disturbance density not to exceed 1/640 acres, maximum 3% disturbance/section, and NSO within 0.6 mile of occupied or undetermined status leks.

In PGMA, allow leasing and require:

- Timing limitations in breeding and winter habitat,
- 0.6 mile NSO near occupied and undetermined status leks, and
- Implementation of appropriate BMPs.

D-MLS-13: Fluid Minerals Geophysical Exploration Timing Restriction Standard

Apply seasonal timing restrictions to exploration activities.

D-MLM-3: Locatable Minerals Mitigation Standard

In PMMA, require off-site mitigation if effects to GRSG PPMA habitat are unavoidable.

D-MSM-1: Common Variety Mineral Materials Standard

Do not authorize new common variety mineral pits within 3 km of an occupied lek (see Table 2-x). Require seasonal timing restrictions on both new and existing community pits.

D-MNL-1: Non-Energy Minerals New Lease Restrictions Standard

In PPMA and PMMA – Do not allow prospecting or new leases (see Table 2-x) except for lease modifications and fringe leases where valid existing rights may be affected. In PPMA, PMMA and PGMA where leasing is allowed, require CSU, timing restrictions and CSU.

D-MNL-2: Non-Energy Minerals New Lease Restrictions Standard

For existing (undeveloped) and new non-energy mineral leases, require timing restrictions (seasonal and daily) when exploration activities or initial mine development is proposed, as appropriate. Also require restoration of habitat or off-site mitigation, if on-site restoration is not feasible.

D-MSE-2: Surface Disturbance Standard for Non-federal Subsurface Minerals

In PPMA, where the federal government owns the surface, and the mineral estate is in non-federal ownership, require the mineral estate owner to apply a timing restriction stipulation, COAs, and restrict activities within 3 km (1.86 miles) of an occupied lek, when concurring to the approval of authorizations for mineral-related surface disturbance.

Appendix K

Draft Greater Sage-Grouse Wildland Fire and Invasive Species Assessment



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K. GRSG Wildland Fire & Invasive Species Assessment

The following process is a suggestion for a consistent approach in conducting an assessment of the GRSG habitat and wildfire threat at the local planning area level. Variations to this approach may be made based on ID team discussion or unique issues in a given planning area. This example format is intended to portray the degree of specificity required for offices which will complete these assessments. Note that this process has similarities to watershed analysis and ecoregional assessments, and as such these documents may prove useful where they exist.

K.1 Introduction

Greater Sage-Grouse (GRSG) Wildfire and Invasive Species Habitat Assessments (hereafter referred to as “stepdown assessments”) are interdisciplinary evaluations of the threats posed by wildfire and invasive species, as well as identification of priority areas/treatment opportunities for fuels management, fire management, and restoration. Priority areas are spatial delineations where treatments, management actions, or other emphasis should be placed due to factors such as habitat quality, threats, or opportunities to protect, enhance, and restore GRSG habitat. The stepdown assessments will serve as a bridge between RMPs and project level planning, and will position planning efforts to conduct project-scale NEPA following RMP Records of Decision.

The stepdown assessment process involves four steps, beginning with characterization of the planning area and concluding with spatial delineation of priority areas. The content and methods used by Forest Service (FS) and the Bureau of Land Management (BLM) in these documents should be consistent to ensure that priority areas are defined using similar criteria. These criteria and methods should be narratively described such that the US Fish and Wildlife Service (FWS) and other audiences can understand the factors considered.

K.2 Step 1: Characterization of Greater Sage-Grouse Habitat

The purpose of this step is to broadly establish context of the planning area and sage-grouse habitat.

K.2.1 Location and Spatial Extent

Describe the location of the planning area, and the relationship of GRSG habitat within the planning area.

K.2.2 Relationship to the Larger Scale Setting

How does the planning area lie within the larger context of GRSG habitat?

K.2.3 Quantifying Habitat within Planning Area

Brief description of GRSG habitat described in terms of acreage, habitat classes (e.g., PPH, PGH, and/or PACs)

Note: A summary map showing the planning area with habitat features is appropriate in Step 1. A tabular summary may also be included.

K.3 Step 2: Issues and Key Management Questions

The purpose of this step is to devise management questions related to the issues of fuels management, fire management, and restoration. Note that this step should not answer each management question. Rather, management questions are answered in Step 4 through specific, quantified data.

K.3.1 Overview

In coordination with state wildlife agencies, the FWS, and your interdisciplinary team, develop an introductory section here which describes why fire or vegetation conditions pose a threat to GRSG in the local planning area. Describe where fire or vegetation conditions are a significant threat to GRSG habitat, and where fire, fuels, and restoration activities may help enhance habitat. In a brief paragraph or two, summarize the relationships between wildland fire, fuels management and invasives/restoration in the planning area. Examples would include annual grass/wildfire cycle, juniper encroachment into GRSG habitat, recently disturbed areas, etc.

K.3.2 Key Management Questions

Issue #1: Fuels Management

In narrative format, develop management questions such as:

1. Based on fire risk to important GRSG habitats, what types of fuels treatments should be implemented that will reduce the risk? Where should fuels treatments be prioritized, and what's the amount of treatment acres/miles needed for long-term enhancement and protection of GRSG habitat?
2. Based on opportunities for fire to improve/restore GRSG habitats, what types of fuels treatments should be implemented that will increase ability to allow fire? Where should fuels treatments be prioritized, and what amount of treatment is needed for long-term enhancement and protection of GRSG habitat?
3. What fuel reduction techniques will be most effective; including, but not limited to grazing, prescribed fire, chemical, biological and mechanical treatments?
4. What are the criteria for defining priority fuels management areas (example would be the intersection of high burn probability, PPH, lek locations, and established GRSG population)?
5. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries?
6. Are there areas where fuel treatments help restore GRSG habitat as well as reduce risk?



Issue #2: Fire Management

In narrative format, develop management questions such as:

1. Where is the greatest wildfire risk, considering trends in fire occurrence, fuel conditions, and highly valued GRSG habitat?
2. Where will fire suppression resources be most successful to mitigate the risk and protect GRSG Habitats?
3. Where do opportunities exist that could enhance or improve suppression capability in important GRSG habitats?
 - a. For example, increased water availability through installation of heli wells or water storage tanks.
 - b. Decreased response time through pre-positioned resources or staffing remote stations.
4. Where should wildfire be managed to achieve Land Use Plan (LUP) objectives for improving or restoring GRSG habitat (limiting juniper expansion)?
5. What are the criteria for defining priority fire management areas? An example would be the intersection of PPH, lek locations, and high burn probability.
6. How can fire management be coordinated across jurisdictional boundaries to reduce risk or to improve GRSG habitat?

Issue #3: Restoration

In narrative format, develop management questions such as:

1. Are there opportunities for restoration treatments to protect, enhance or maintain GRSG habitat? Assume that funding is not a constraint, and describe which sites are biologically suitable for restoration to GRSG habitat in a reasonable period.
2. Considering the entire planning area, what are the site conditions, such as dominant vegetation, elevation, or precipitation zones, where restoration efforts have been proven to be most successful in the recent past? An example would be mountain sagebrush sites over 5000' in elevation, and in a 16" or greater precipitation zone.
3. What are the criteria for defining priority restoration areas? An example would be recent burns, moderately disturbed sites, or recovering allotment pastures which have not crossed ecological thresholds or become highly degraded. These may or may not be covered by existing ESR plans.
4. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries?

K.4 Step 3: Current Conditions and Trends

The purpose of this step is to develop information relevant to the issues and key questions identified in Step 2. It provides a snapshot of the present condition, statement of causal factors, and a summary of the trends which are occurring.

K.4.1 Biological Summary of Vegetation, Invasive Species, and Fire Regimes

[In this introductory section, provide a general biological summary of the planning area. Provide a narrative description of ecological trends, including description of plant communities, fire regimes, and other dominant biological factors affecting GRSG habitat.]

- Describe how fire has influenced current vegetation patterns. Are there large areas of even-aged communities, fine-scale mosaics, annual grass monocultures?
- Describe if fire regimes are intact, or if they are altered. If they are altered, describe why. Use fire regime variables such as fire frequency, severity, or size to elucidate your points.
- Describe dominant cover types making up the planning area. These can be broad seral stage groupings, general lifeforms, or more fine-scale information such as plant associations, habitat types, or ecological systems. Note: this information should be available in the RMP or FMP.
- What has been the impact of fire exclusion (e.g., increased conifer encroachment, decadent shrub communities, etc)?
- What is the current extent of annual grasses and other invasive species?
- What are the effects of invasive species on land health? On trends in plant succession? On fire regimes?

K.4.2 Fuels Management

- Describe current fuels management practices within the planning area (what are the types of fuels treatments commonly applied to which management issues)?
- How has past fuels management influenced today's planning area (e.g., creation of mosaics, protecting certain features, increasing invasives, etc)?
- What are causal factors which have created a need for fuels management practices?
- What are the trends in the fuels management program related to budget or capability?

K.4.3 Fire Management

- Describe the current fire suppression workload.

- Describe fire occurrence trends (include discussion of fire size, numbers of starts, ignition locations)
- Describe causal factors influencing suppression effectiveness.
- Describe suppression capabilities. Discuss types and numbers of resources within office, through interagency agreements, and through resource sharing

K.4.4 Restoration

- Describe invasive species which are present in the planning area
- Describe landscape conditions which may be suitable for restoration within the planning area, and the results of recent restoration efforts in the planning area
- Describe invasive species occurrence
- Describe causal factors influencing restoration needs.

K.4.5 Methodology

- What are the analysis methods to be utilized and analysis assumptions?

K.4.6 Use of Best Available Science

- Describe data sets used, such as the FSIM layer, local data, etc. [Many data sets being used in RMPs will also be applicable to stepdown assessments].
- What are the elements of science used?

K.5 Step 4: Identification of Treatment Opportunities, Priority Areas, and Actions

The purpose of this step is to utilize the information from steps 2 and 3 in order to quantify the overall need for treatment or other actions. Specifically, this step should spatially identify and quantify priority areas, using the criteria established in Step 2. Next, this step should identify treatment opportunities which fall within priority areas. Furthermore, treatments should be prioritized and an implementation schedule developed, reflecting the reality that not every acre in need of treatment can receive action within the planning horizon.

K.5.1 Fuels Management

- Spatially delineate priority areas for fuels management, based upon criteria established in Step 2. Fuels priority areas should be delineated by type, such as:
 - Linear fuel break along roads
 - Other linear fuel breaks to create anchor points
 - Prescribed burning
 - Mechanical (e.g., conifer removal)
 - Other mechanical, biological, or chemical treatment

- Quantify the number of acres of needed fuels treatments.
- If they exist, spatially delineate areas where fuel treatments would increase the ability to use fire to improve/enhance GRSG habitat?
 - Include tables, maps or appropriate info.
- Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of fuels treatments.
- Quantify a projected level of treatment within fuels management priority areas.
- Identify treatments to be planned within fuels management priority areas.
- Include a priority or implementation schedule for proposed treatments.

K.5.2 Fire Management

- Spatially delineate priority areas for fire suppression, based upon criteria established in Step 2. Priority areas for fire management should be delineated by type, such as:
 - Initial attack priority areas;
 - Resource pre-positioning and movement priority areas;
 - Remote station staffing priority areas, if appropriate
 - Include tables, maps or other supporting information
- Quantify the number of acres of GRSG habitats for aggressive initial attack that were identified at highest risk from losing key habitat components.
- Quantify the number and type of suppression resources that will be staged or otherwise pre-positioned, as well as the associated conditions, in order to enhance initial attack capabilities.
- Spatially delineate areas where opportunities exist to enhance or improve suppression capability.
 - Include tables, maps or other supporting information.
- Spatially delineate areas where wildfire can be managed to achieve RMP objectives.
 - Include tables, maps or appropriate info.
- Quantify the number of acres within fire management priority areas
- Include a priority or implementation schedule for fire suppression proposed actions.

K.5.3 Restoration

- Spatially delineate priority areas for restoration, using criteria established in Step 2. Priority areas for restoration should be delineated by type, such as:
 - Seeding priority areas (aerial, drill, broadcast, or other);
 - Invasive species priority areas (herbicide, mechanical, biological, combination);
 - Priority areas requiring combinations of treatments (e.g., herbicide followed by seeding).
 - Include tables, maps or appropriate info.
- Identify locations where post-fire restoration treatments should be focused.
 - Include tables, maps or appropriate info.
- Spatially identify invasive species occurrence
- Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of restoration treatments.
- Quantify the projected level of treatment within restoration priority areas.
- Identify treatments to be planned within restoration priority areas.
- Include a priority or implementation schedule for proposed restoration treatments.

K.5.4 Annual Treatment Needs

1. Based on the information above and within the planning area, what are the annual needs based on the key questions and summary statements?

K.5.5 Annual Treatment Abilities

1. Putting GRSG habitat protection and enhancement into perspective with other high valued resources and important land management goals, how does the annual need relate to capabilities?
2. What are the realistic annual expectations in fire management, fuels management, and restoration for the next 5 years?

Appendix B

Fuels Management Required Design Features for Sage-Grouse Conservation

1. Where applicable, design fuels treatment objectives to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns 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 burning prescriptions which minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).
4. Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with state fish and wildlife agencies, 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 that promotes use by sage-grouse.
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 treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to sage-grouse habitat. Additionally, develop maps for sage-grouse habitat which spatially display existing fuels treatments that can be used to assist suppression activities.
9. Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands, first to sites which are adjacent to or surrounded by preliminary priority habitat (PPH) or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PPH, but within two miles of PPH. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PPH. 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 or one of that referenced in land use planning documentation.
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 110 yards 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 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 installing fuel breaks and/or 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, etc.) to aid in controlling wildfire, should wildfire occur near PPH or important restoration areas (such as where investments in restoration have already been made).

Appendix C

Fire Operations Required Design Features for Sage-Grouse Conservation

1. Compile District/Forest level information into state-wide sage-grouse tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.
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 resource advisor with sage-grouse expertise, or who has access to sage-grouse expertise, to all extended attack fires in or near sage-grouse habitat. 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. Involve state wildlife agency expertise in fire operations through:
 - instructing resource advisors during preseason trainings;
 - qualification as resource advisors;
 - coordination with resource advisors during fire incidents;
 - contributing to incident planning with information such as habitat features or other key data useful in fire decision making
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. As appropriate, utilize existing fuel breaks, such as roads or discrete changes in fuel type, as control lines in order to minimize fire spread.
6. During periods of multiple fires, ensure line officers are involved in setting priorities.
7. To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) 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.
8. Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near sage-grouse habitat areas to minimize noxious weed spread.
9. Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.
10. Minimize burnout operations in key sage-grouse habitat areas by constructing direct fireline whenever safe and practical to do so.

11. Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.
12. As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.
13. Adequately document fire operation activities in sage-grouse habitat for potential follow-up coordination activities.

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Appendix L

Vegetation Dynamics Development Tool



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L. Great Basin Vegetation Modeling using Vegetation Dynamics Development Tool

L.1 Introduction

Numerous factors influence sagebrush dynamics in the Great Basin. Each year acres of sagebrush increase in density, or are burned, grazed, converted to invasive annual grass, damaged by insects and disease, encroached by conifers, or altered by various management treatments. Due to the importance of sagebrush cover for greater sage-grouse, a process to account for all of these changes in sagebrush communities is important in evaluating trends of greater sage-grouse habitat. The greater sage-grouse land use plan amendments being developed and analyzed in each sub-regional EIS in the Great Basin each have different alternative approaches to management of greater sage-grouse habitat. Alternatives propose actions that will influence the extent and distribution of sagebrush. In order to evaluate and compare the estimated effects of each alternative, a team of vegetation ecologists representing each sub-regional EIS in the Great Basin was assembled. The team used the Vegetation Dynamics Development Tool (VDDT, copyright 1995-2003, ESSA Technologies, Vancouver, BC) to accomplish this task. This modeling effort does not include changes in habitat conditions associated with permitted activities such as infrastructure development, travel management, or mineral development.

L.2 Methods

The Great Basin Region planning area was divided into Analysis Areas based upon the Population/subpopulation areas from the *Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats* (Connelly et al. 2004). These polygons were overlaid on the PPH/PGH layers identified by each state to ensure all habitat was included. The acreage calculations were based on the underlying PPH/PGH. Attachment A shows this base map.

Existing vegetation was determined using a combination of LANDFIRE, local knowledge, GAP analysis, SENS Map in Nevada, and ILAP in Oregon (each state process is described in Attachment B). These acres were estimated for each vegetation class in each vegetation model in each analysis area. Five models were developed to characterize the vegetation:

- Low Sagebrush (shallow, dry)
- Wyoming Big Sagebrush (warm, dry)
- Mixed Sagebrush
- Mountain Big Sagebrush with conifer(cool, moist)
- Mountain Big Sagebrush without conifer (cool, moist)

Each model has different states or conditions of the vegetation, which are called classes. The classes were designed to best represent both the available vegetation data for the planning area, as well as the sage-grouse habitat requirements. The following are the classes for each Model:

Low Sagebrush

1. Early Seral: <10% sagebrush cover
2. Late Seral: >10% sagebrush cover
3. Late Seral with conifer: >10% sagebrush with >10% conifer
4. Annual Grass

Wyoming Big Sagebrush

1. Early Seral: <10% sagebrush cover
2. Mid Seral: 10-30% sagebrush cover
3. Late Seral: >30% sagebrush cover
4. Late Seral with conifer: >30% sagebrush cover with >10% conifer cover
5. Annual Grass
6. Exotic Perennial Grass

Mixed Sagebrush

1. Early Seral: <10% sagebrush cover
2. Mid Seral: 10-30% sagebrush cover
3. Late Seral: >30% sagebrush cover
4. Late Seral with conifer: >30% sagebrush cover with >10% conifer cover

Mountain Big Sagebrush with conifer

1. Early Seral: <10% sagebrush cover
2. Mid Seral: 10-30% sagebrush cover
3. Late seral: >30% sagebrush cover
4. Late Seral with conifer: >30% sagebrush cover with >10% conifer cover
5. Annual Grass

Mountain Big Sagebrush without conifer

1. Early Seral: <10% sagebrush cover
2. Mid Seral: 10-30% sagebrush cover
3. Late seral: >30% sagebrush cover
4. Annual Grass

The following natural and background disturbances were applied to the models: stand replacement wildfire, mosaic wildfire, overgrazing, insects and disease, and conifer encroachment. The rates of occurrence of these disturbances varied by model in order to reflect the variable rates for each of the vegetation types represented by these models. Several web meeting/conference calls were conducted to gain consensus among the team members on which models to develop, what disturbances/succession processes to include and determine what amount should be included in each model. The initial foundation was the Biophysical Settings for applicable sagebrush sites from LANDFIRE. Each team member had the opportunity to bring their local knowledge and experience to the discussion and changes were made to reflect that experience.

After agreement was reached on these rates, a review of the models and disturbance rates was conducted by the Science Review Team. This team made several suggestions that were incorporated into the models.

Wildfire history data (1980-2012) was used from the National Interagency Fire Center to determine the average annual acreage burned in each area, magnitude of extreme fire years, and frequency of extreme years. The size and extent of fires vary significantly from year to year, with most acres burned occurring on few years that represent extreme conditions; therefore using an average fire size would not accurately represent the influence of fire on the landscape. Due to the short time period in the fire history data (32 years) the data was reviewed and the most extreme year (most acres burned) and the smallest fire year (fewest acres burned) were dropped. The presence of only 1 extreme year in the data set does not indicate the interval between extreme events unless 2 data points are found within the fire history range. Therefore it is not accurate to make assumptions about an extreme event occurring every 32 years. Annual wildfire probability for each class in each model was estimated based on mean fire return interval (MFRI) information gained from LANDFIRE and adjusted based on team members' experience. The variability in year-to-year fire totals did not alter the long term fire probabilities derived from MFRI.

L.3 Model Outputs

Alternative A in each Sub-Regional EIS is the No-Action or Current Management Alternative. This alternative represents the existing rates of conifer treatment, sagebrush mechanical treatment, prescribed fire, herbicide treatment, grass seeding, sagebrush seeding, and firebreak utilization. In order to display current vegetation conditions, acres of each type of treatment were collected from the field and input into VDDT. Field monitoring data was used to determine the success rates for grass seeding, herbicide application, and sagebrush seeding. These treatments are all considered as one package of restoration treatments in the models to avoid double counting acres and thereby overestimating their positive benefit to vegetation. Firebreak utilization was not directly input to the model, but was assumed to be correlated to the existing rates of wildfire in areas where the firebreaks are used.

Upon completion of the Current Management Alternative, the model output reports were reviewed by the team as well as field staff from BLM and FS to ensure the results reflected existing levels of treatment, current vegetation and results of treatment. This review resulted

in re-running the models four times in order to capture changes suggested by the reviewers. Changes made included: modification of treatment success rates to reflect field monitoring, removal of double counted acres of treatment when multiple treatment occurred, and errors found within models estimating rates of vegetation change.

An interdisciplinary team conference call/meeting was held with vegetation and wildlife staff to determine the Desired Conditions that would be applied to each analysis area. We determined that 70% of an area should be in 10-30% sagebrush canopy cover. This determination was made after a discussion of the *Guidelines to Manage Sage-Grouse Populations and Their Habitats* (Connelly et al. 2000) and the National Technical Team Report (NTT 2011). Connelly et al. suggested 80% of an area should have 10-30% sagebrush cover and the National Technical Team Report suggested 50-70% of an area should have 10-30% sagebrush cover.

The modeling team then reviewed the amount of each analysis area that currently has 10-30% sagebrush cover. Vegetation treatment projects were then modeled to determine the amount of a particular treatment necessary to move the vegetation conditions to the Desired Conditions. The amount of treatment varied by the amount of departure of the area from Desired Conditions and the vegetation dynamics of the area. The team reviewed amounts of acres available for treatment when developing these treatments to avoid the error of proposing treating acres that did not exist. When analysis areas had Current Conditions at or above 70% no additional treatment projects were proposed. The model outputs for this phase of the analysis are called Proposed Action. These treatment acres may be used to develop objectives in the Sub-regional Alternative D such as:

- “In the North Snake Population area, treat 10,000 acres annually of annual grass.”
- “In the North Snake Population area, treat 1000 acres annually of phase 1 conifer encroachment.”

Alternatives will be compared by the amount of each Population Area in suitable habitat condition (10-30% sagebrush cover) projected to occur in 50 years.

L.4 Model Assumptions:

Alternative A: No Action: Natural and background disturbances equal to historical averages, vegetation treatments equal to current management rates.

Alternative B – NTT: The modeling team reviewed any actions proposed by this alternative and attempted to quantify the effect of implementation of these actions in order to model the effects of these actions on vegetation. The following are actions found within the NTT that were included in the modeling for Alternative B:

- Natural and background disturbances same as Alt A except 50% less wildfire in Wyoming sage model to estimate the effect of fuels projects.

- No Prescribed Fire in <12” precipitation areas Wyoming sagebrush.
- Desired Condition to maintain 70% of area in 10-30% shrub cover
- Conifer encroachment treatment included
- Annual grass restoration included: Herbicide treatment, grass and sagebrush seeding

Alternative C: The modeling team reviewed actions proposed and modeled the following:

- Natural and background disturbances
- No Prescribed Fire in <12” precipitation areas
- Restore all crested wheatgrass seedings to native vegetation
- Maintain 80% of area in 10-30% shrub cover
- No livestock grazing
- Wildfire increased 25% due to lack of maintenance of existing fuel breaks, and no additional constructed
- Invasive annual grass would increase due to minimal use of herbicide for treatments resulting in a 50% decline in restoration treatment success

Alternative D: The modeling team reviewed actions proposed and modeled the following:

- Maintain 70% of area in 10-30% sagebrush cover
- Natural and background disturbances same as Alt A except 50% less wildfire in Wyoming sage model to estimate the effect of fuels projects.
- Desired Condition to maintain 70% of area in 10-30% shrub cover
- Conifer encroachment treatment included
- Annual grass restoration included: Herbicide treatment, grass and sagebrush seeding

Alternative E: The modeling team reviewed actions proposed and modeled the following:

- Each Sub-regional EIS has a different Alt E. Modeling was changed by Sub-region to reflect those differences.
- In general, this alternative was modeled similar to Alternative D

Alternative F:

- Natural and background disturbances same as Alt A except 50% less wildfire in Wyoming sage model to estimate the effect of fuels projects.

- No Prescribed Fire in <12” precipitation areas Wyoming sagebrush.
- Livestock grazing reduced by 50%.
- Desired Condition to maintain 70% of area in 10-30% shrub cover
- Conifer encroachment treatment included
- Annual grass restoration included: Herbicide treatment, grass and sagebrush seeding

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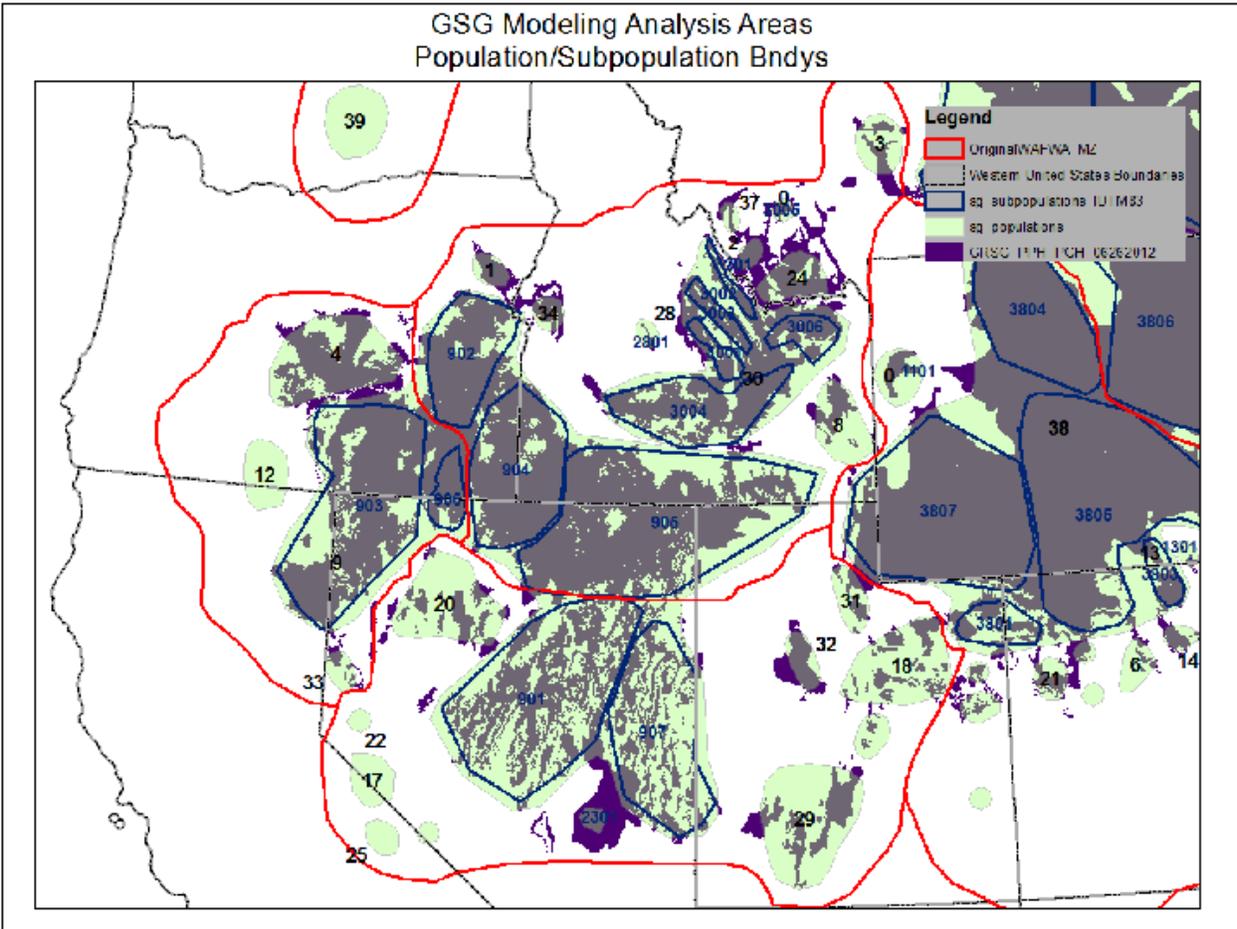
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Attachment A Population Area Map



Attachment B-Idaho/Southwest Montana

Greater Sage-grouse Habitat Characterization for Use in Non-Spatial Vegetation Modeling in the Idaho/Southwestern Montana Analysis Area

Vegetation Data

We evaluated available vegetation information to identifying the sagebrush habitat types and associated vegetation cover classes required by the modeling effort. These included Landfire (v115), ReGAP, and a site potential based evaluation of Idaho's Priority and General Sage-grouse Habitat (D. Major pers com). Upon evaluation and acknowledgment of the numerous limitations of available data, we determined the most effective approach would incorporate the following criteria: 1) dataset covers the entire sub-regional project area, 2) the vegetation data has an associated accuracy assessment, and 3) data provides appropriate resolution of sagebrush habitat types and associated cover classes for the VDDT models. The Landfire raster data sets (Existing Vegetation Type, Biophysical Site Type, and Existing Vegetation Cover) best met our criteria and the general objective of the modeling effort. The above Landfire datasets were clipped to the combined Priority and General Habitat data for Idaho and Montana to serve as our vegetation basemaps for subsequent analysis.

GSG Habitat Characterization

To facilitate characterization of sage-grouse habitat classes we developed a crosswalk from Landfire Existing Vegetation Type (EVT) to a NVCS Macro-group characterization of Tall Sagebrush and Dwarf Sagebrush (See Table 1). For the purposes of this effort, the Semi-Desert Macro-group was included and merged into the Tall Sage Group. In addition we also identified the need for a Shallow/Dry Low Sagebrush Group. We used NRCS Soils Data (SSURGO) to identify a select group of ecological site types and associated soil conditions (shallow soils, precipitation zone ≤ 12 inches, small statured native grass spp)(Table 2). The process involved reclassifying any Tall Sage/Dwarf Sage pixels contained within the Shallow/Dry Low sage polygons to Shallow/Dry Low Sage. The resulting Macrogroup raster was combined (raster calculator) with the Landfire Existing Vegetation Cover data to categorize the following cover classes within the Tall Sage, Dwarf Sage, and Shallow/Dry Low sage groups (Class A = herbaceous cover 0-100%; Class B = shrub cover 10 – 30%; Class C = shrub cover >30%).

Conifer encroachment (Class D = tree cover >10%) was determined using 2 analyses: 1) identification of any Tall Sage, Dwarf Sage, or Shallow/Dry Low Sage occurring within the GSG Priority Habitat – Conifer Encroachment Category. The process involved reclassifying any Tall Sage/Dwarf Sage pixels contained within the Conifer Encroachment Category polygon to Class D; and 2) identification of pixels classified as Juniper and/or conifer in the Landfire EVT raster (see Table 2 for select types) that were also classified as a sagebrush habitat type in the Landfire Biophysical Site Potential (BPS)raster(See Table 3 for select types). The resulting rasters were combined, reclassified and added back to the base Macrogroup raster.

Soil temperature regime was selected as the primary filter to separate the lower productivity warm/dry sagebrush characterized by soil temperature regime-mesic (WYO Model) from the higher productivity cool moist sagebrush soil temperature regime – frigid (MTN Model). Specifically, we

characterized NRCS SSURGO soil mapunits into 2 soil temperature groups, mesic and frigid/cryic and converted the resulting polygon into a raster dataset. The resulting soil temperature raster was then combined (raster calculator) with the base Macrogroup raster to provide the habitat base for our WYO and MTN and MIX VDDT models. No soil temperature regime was evaluated for the Shallow/Dry Low sagebrush (LOW) model. Soil temp regime was used as it represents a finer-scale soils-based attribute important to ecological site characterization and is less variable than available precipitation information (PRISM). Soil temp regime information was not available on most USFS lands and a few smaller areas. In these locations, we used general elevation and precipitation information to describe general proportions of the soil temperature regimes.

Annual Grass – Landfire has a designated Invasive Annual Grass vegetation type (999), however subsequent updates (“refreshes”) had resulted in incorrect classification of numerous large fires as Invasive Annual Grass (999) within our vegetation analysis extent. Therefore, we reclassified any Landfire Invasive Annual Grass as Class A <10% cover and used the Landfire BPS to determine Tall or Dwarf sagebrush group assignment. To more accurately reflect Annual Grass (Class E) for our models we opted to use the Annual Grass (R2 Category) information available in the 2011 Idaho Sage-grouse Key Habitat data. R2 Areas represented in the Key Habitat data typically represent past fires in sagebrush habitat and associated multi-year monitoring of annual grass establishment in these areas. Annual Grass polygons were identified within our Sage-grouse Population boundaries and/or adjacent (out to 2 kilometers) to the GSG Priority/General habitat polygons. The resulting polygons were used as a mask to extract areas classified as a sagebrush habitat type in the Landfire Biophysical Site Potential (BPS) raster (See Table 3 for select types). The resulting raster was reclassified to appropriate VDDT Model and exported to excel for calculation of acreages for model Class E = Annual Grass. Environmental conditions across most of the Montana portion of the sub region afford limited suitability for annual grass establishment, and were not examined.

Table 1
Landfire Existing Vegetation Types (and associated NVCS Group) identified for Greater Sage-grouse habitat characterization

Macro-Group	EVT Value	Landfire Existing Vegetation Type
Tall Sagebrush Group(169)	2079	Great Basin Xeric Mixed Sagebrush Steppe
	2080	Inter-Mountain Basins Big Sagebrush Shrubland
	2123	Columbia Plateau Scabland Shrubland
	2125	Inter-Mountain Basins Big Sagebrush Steppe
	2126	Inter-Mountain Basins Montane Sagebrush Steppe
	2220	Artemesia tridentate spp. Vaseyena Shrubland Alliance
Dwarf Sagebrush Group(170)	2124	Columbia Plateau Low Sagebrush Steppe
	2065	Colorado Plateau Mixed Low Sagebrush Shrubland
	2065	Columbia Plateau Scabland Shrubland
	2072	Wyoming Basin Dwarf Sage Shrubland and Steppe
Semi-desert (171)	2135	Semi-Desert Grassland
	2127	Semi-Desert Shrub Steppe

Table 2
Ecological Site Types associated with the
Shallow/Dry Low Sagebrush Vegetation Model

SSURGO Ecological Site Type
Cold Gravelly 8-12 ARNO4/HECOC8
Shallow Calcareous Loam 10-16 ARARN/PSSPS
Shallow Stony 8-10 ARNO4/ACTH7-SPCR
Very Shallow 12-20 ARRI2/POSE
Very Shallow Stony 8-12 ARNO4/ACTH7
Very Shallow Stony Loam 10-14 ARAR8/POSE-PSSPS
Windswept Ridge 8-11 ARFR4/POSE
Windswept Ridge 12-20 ARNO/PSSPS
Windswept Ridge 12-22 ARFR4-ARAR8/POA

Table 3
Landfire Biophysical Site Types/Groups identified for Greater Sage-grouse Invasive Annual
Grass evaluation

BPS_CODE	BPS_NAME	GROUP ID	GROUPNAME
10010	Inter-Mountain Basins Sparsely Vegetated Systems	100	Sparsely Vegetated
10620	Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland/Shrubland	164	Cur-leaf Mountain Mahogany-Mountain Big Sagebrush
10640	Colorado Plateau Mixed Low Sagebrush Shrubland	166	Bigelow Sage-Low Sage4
10650	Columbia Plateau Scabland Shrubland	167	Low Sage-Scabland Sage5
10790	Great Basin Xeric Mixed Sagebrush Shrubland	177	Black Sage-Low Sage3
10800	Inter-Mountain Basins Big Sagebrush Shrubland	178	Wyoming Big Sage-Spiny Hopsage1
10801	Inter-Mountain Basins Big Sagebrush Shrubland-Basin Big Sagebrush	179	Basin Big Sage-Greasewood4
10802	Inter-Mountain Basins Big Sagebrush Shrubland-Wyoming Big Sagebrush	179	Wyoming Big Sage-Indian Ricegrass4
10800	Inter-Mountain Basins Big Sagebrush Shrubland	180	Wyoming Big Sage-Rubber Rabbitbrush4
11230	Columbia Plateau Steppe and Grassland	218	Indian Ricegrass-Squirreltail4
11240	Columbia Plateau Low Sagebrush Steppe	219	Low Sage-Idaho Fescue3
11250	Inter-Mountain Basins Big Sagebrush Steppe	220	Wyoming Big Sage-Wheatgrass3
11250	Inter-Mountain Basins Big Sagebrush Steppe	221	Wyoming Big Sage-Wheatgrass4
11260	Inter-Mountain Basins Montane Sagebrush Steppe	222	Mountain Sagebrush-Blubunch Wheatgrass-Idaho Fescue4

Table 4
Landfire Existing Vegetation Types/Groups identified for Greater Sage-grouse Conifer Encroachment evaluation

Value	Existing Vegetation Type	System Group
2016	Colorado Plateau Pinyon-Juniper Woodland	Pinyon-Juniper Woodland
2017	Columbia Plateau Western Juniper Woodland/Savanna	Juniper Woodland/Savanna
2019	Great Basin Pinyon Juniper Woodland	Pinyon Juniper Woodland
2045	Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	Douglas-fir-Ponderosa Pine-Lodgepole Pine Forest and Woodland
2053	Northern Rocky Mountain Ponderosa Pine Woodland	Ponderosa Pine Forest, Woodland, Savanna
2054	Southern Rocky Mountain Ponderosa Pine Woodland	Ponderosa Pine Forest, Woodland, Savanna
2115	Inter-Mountain Basins Juniper Savanna	Juniper Woodland/Savanna
2165	Northern Rocky Mountain Foothill Conifer Woodland Steppe	Douglas-fir Forest/Woodland
2166	Middle Rocky Mountain Montane Douglas-fir Forest and Woodland	Douglas-fir Forest/Woodland
2203	Juniperous occidentalis Woodland Alliance	Juniper Woodland/Savanna
2227	Pseudotsuga menziesii Forest Alliance	Douglas-fir Forest/Woodland

Attachment B-Utah

Development of Data for VDDT Sage Grouse Habitat Models

LANDFIRE data were used to define the vegetation cover types that occupy sage grouse population areas in Utah. In order to do this the LANDFIRE Existing Vegetation Type (EVT), Biophysical Setting (BPS), and/or BPS Groups were used as the basis to determine which cover types would be included in which models. Especially because Wyoming and mountain big sagebrush species are mapped at all elevations in LANDFIRE, it was felt that steps needed to be taken to separate these species on an ecological basis. Goodrich and others (1999) found that annual precipitation for **Wyoming big sagebrush** populations was **between 6.8 and 12.6 inches**. The authors found that **mountain big sagebrush** occurred in zones where annual precipitation was between **11.8 and 27.7 inches**. According to these authors, **plants intermediate to Wyoming and mountain big sagebrush** occur in areas with precipitation that ranges from **8.1 to 14.6 inches**. Their data suggested that the pinyon-juniper belt in Utah was between 9 and 15 inches of annual precipitation. Payne (1980) suggested that the Intermountain pinyon-juniper zone fell between 10 and 14 inches annual precipitation. The Utah BLM State Office has a precipitation GIS layer¹ that breaks the landscape into 0-2, 2-4, 4-6, etc. inch breaks, which didn't allow us to use the 9 or 15 inch levels in our analysis. For this reason, the following rules were established.

- ✓ Below 10 inches annual precipitation, all sagebrush was considered to be Wyoming big sagebrush;
- ✓ Anything between 10 inches (about 2 inches less than the minimum amount listed for mountain big sagebrush) and 14 inches (about 2 inches more than the maximum precipitation for Wyoming big sagebrush, was considered to be a transition zone where either species could possibly occur;
- ✓ Within that 10-14 inch zone, the LANDFIRE EVT (Existing Vegetation Type), BPS (Biophysical Setting), and/or Group types were used to make the determination regarding species that occur;
- ✓ Any sagebrush that occurred in the zones above 14 inches was considered to be mountain big sagebrush; and finally
- ✓ Low sagebrush was low sagebrush, regardless of the precipitation zone if occurred in.

Following these rules, the following sagebrush zones were established:

- ✓ Zone 1 – Precipitation \leq 10 inches. Non-Seral Zone in which there is insufficient precipitation for juniper to grow. Wyoming big sagebrush is the only *big* sagebrush that can occur with this low amount of precipitation
- ✓ Zone 2 – Precipitation 10-14 inches. Seral Zone in which there is sufficient precipitation for juniper to grow. In this transition zone, both Wyoming and mountain big sagebrush species can occur.

¹ blm\dfs\ut\loc\GisData\ut\so\data\AirClimate\precip_ut250

- ✓ Zone 3 – Precipitation 14-28 inches. Non-Seral Zone in which there is too much precipitation for juniper to be considered as a universal late seral species that replaces sagebrush. Only where juniper is the existing vegetation (EVT), what is considered a seral community. This zone is above where Wyoming big sagebrush is likely to occur, so all big sagebrush communities are considered to be mountain big sagebrush.
- ✓ Zone 4 – Precipitation \geq 28 inches. Non-Seral Zone in which there is too much precipitation for juniper to be a late seral species. Only where juniper is the existing vegetation (EVT), what is considered a seral community. This is considered to be the cool, moist mountain big sagebrush zone.

Members of our GIS staff were able to combine (union) our EVT, BPS, and SClass (Cover Class) layers so that each polygon had the attributes needed to make the determinations needed for sage grouse habitat modeling. Then, the occupied habitat was selected from the layers that came out of this process, and were again unioned with a precipitation layer that broke the State into the zones listed above (\leq 10, 10-14, 14-28, \geq 28 inches). It was the combination of all this information that was used to determine which models to develop and apply for the VDDT habitat modeling process used in the sage grouse EIS.

Key to Models Used with LANDFIRE Data

1	Precipitation \leq 10 inches	2
1	Precipitation $>$ 10 inches	8
2	EVT is Juniper dominated	3
2	EVT is not Juniper dominated	5
3	BPS and/or Group Juniper dominated	Not Modeled
3	BPS low or big sagebrush dominated (non-seral communities)	4
4	BPS and/or Group dominated by any big sagebrush	Wyo-Seral
4	BPS and/or Group dominated by any low sagebrush	Low-Seral
5	EVT is one of the non-native types	6
5	EVT is not one of the non-native types	7
6	BPS and/or dominated by any big sagebrush	Wyo-Non Seral
6	BPS and/or dominated by any low sagebrush	Low-Non Seral
7	EVT dominated by any big sagebrush	Wyo-Non Seral
7	EVT dominated by any low sagebrush	Low-Non Seral
8	Precipitation 10-14 inches (seral communities)	9
8	Precipitation \geq 14 inches	17
9	EVT is Juniper dominated	10
9	EVT is not Juniper dominated	12

Key to Models Used with LANDFIRE Data

10	BPS and/or Group Juniper dominated	Not Modeled
10	BPS low or big sagebrush dominated (seral communities)	11
11	BPS and/or Group dominated by any big sagebrush	12
11	BPS and/or Group dominated by any low sagebrush	Low-Seral
12	BPS and/or Group dominated by Wyoming big sagebrush	Wyo-Seral
12	BPS and/or Group dominated by Mountain big sagebrush	Mtn-Seral
13	EVT is one of the non-native types	14
13	EVT is not one of the non-native types	17
14	BPS and/or Group dominated by any big sagebrush	15
14	BPS and/or Group dominated by any low sagebrush	Low-Seral
15	BPS and/or Group dominated by Wyoming big sagebrush	Wyo-Seral
15	BPS and/or Group dominated by Mountain big sagebrush	Mtn-Seral
16	EVT dominated by any big sagebrush	17
16	EVT dominated by any low sagebrush	Low-Seral
17	BPS and/or Group dominated by Wyoming big sagebrush	Wyo-Seral
17	BPS and/or Group dominated by Mountain big sagebrush	Mtn-Seral
18	Precipitation 14-28 inches	19
18	Precipitation \geq 28 inches	25
19	EVT is Juniper dominated (seral communities)	19
19	EVT is not Juniper dominated (non-seral communities)	22
20	BPS and/or Group Juniper dominated	Not Modeled
20	BPS low or big sagebrush dominated (non-seral communities)	21
21	BPS and/or Group dominated by any big sagebrush	Mtn-Seral
21	BPS and/or Group dominated by any low sagebrush	Low-Seral
22	EVT is one of the non-native types	23
22	EVT is not one of the non-native types	24
23	BPS and/or dominated by any big sagebrush	Mtn-Non Seral
23	BPS and/or dominated by any low sagebrush	Low-Non Seral
24	EVT dominated by any big sagebrush	Mtn-Non Seral
24	EVT dominated by any low sagebrush	Low-Non Seral
25	EVT is Juniper dominated	26
25	EVT is not Juniper dominated	28

Key to Models Used with LANDFIRE Data

26	BPS and/or Group Juniper dominated	Not Modeled
26	BPS low or big sagebrush dominated (non-seral communities)	27
27	BPS and/or Group dominated by any big sagebrush	Cool Mtn-Seral
27	BPS and/or Group dominated by any low sagebrush	Cool Low-Seral
28	EVT is one of the non-native types	29
28	EVT is not one of the non-native types	30
29	BPS and/or dominated by any big sagebrush	Cool Mtn-Non Seral
29	BPS and/or dominated by any low sagebrush	Cool Low-Non Seral
30	EVT dominated by any big sagebrush	Cool Mtn-Non Seral
30	EVT dominated by any low sagebrush	Cool Low-Non Seral

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Attachment B-Nevada-California

VDDT Modeling Procedures for Nevada

Vegetation Data

The Nevada team considered available vegetation layers to determine which would be most effective in identifying the sagebrush habitat types pertinent to the modeling effort. These included xxxxx The Nevada Heritage synthesis vegetation map (raster data) was selected as it provided the best resolution of sagebrush habitat types pertinent to the required model inputs. The plant cover report for the Humboldt Toiyabe National Forest Land Use Plan Revision (2005) served as a relevant proxy for distributing crown cover classes among the sagebrush types. Subpopulation areas were derived from the Western Association of Fish and Wildlife Agencies (Connelly et al 2004). Other BLM data included polygon data showing areas above 6,500 feet elevation, and fire history data which also included other sources.

The vegetation map was clipped using the sub population areas and the raster data converted to polygons. Vegetation types that didn't include Low Sage, Mountain Sage, Wyoming Sage, Pinyon pine, or juniper were deleted. All vegetation types that contained Mountain sage were merged into the Mountain sage classification. All vegetation types containing Wyoming sagebrush (minus any that had mountain sage) were merged into the Wyoming sagebrush classification. Low sage was handled the same (minus Wyoming and mountain sagebrush). All Pinyon and Juniper types were merged together..

All the fires since 2000 were combined. All the fires above 6,500 feet elevation were "erased" using the 6,500 foot elevation database under the assumption that habitat at these elevations would recover following fire. The remaining fires were used to "erase" any vegetation type under the fire perimeters. To define possible sage grouse habitat that had been burned, a lower elevation (1500 meters, or approx. 4,900 feet) was selected and all fire perimeters below this elevation were erased under the assumption that habitat conversion was occurring at these lower elevations. The fire perimeters were then inserted into the vegetation types as annual grasses. Total acres of all vegetation type was calculated using GIS. A dbase file type was exported for the next step.

Using the USFS crown cover report, percentages of crown cover by vegetation type were developed for each of the ranger districts. The adjacent or otherwise appropriate ranger district values were used for the subpopulation areas. In the absence of adjacent USFS crown cover information, fire histories, elevation, precipitation, and landform were considered to match similar USFS areas for the Montana Mountain and the CA/NV/OR subpopulation areas.

Low crown cover (<10%) for pinyon-juniper woodlands was considered as invasive conifer.

Total acres of low, mountain, and Wyoming sagebrush vegetation types were multiplied by the percentage of the low, medium, or high crown cover from the USFS crown cover report to develop crown class acreage starting points for the model, yielding total acres for each vegetation and crown cover classification.

Additionally, total acres of conifer invasion and annual grass conversion for each sagebrush vegetation type were calculated, based on the percent of each sagebrush type in each subpopulation area.

Point Fire data

Fire data was obtained from BLM Western Great Basin weather prediction meteorologist. Lat/long data were converted to decimal degree lat/long. Fires without spatial information were deleted. Fires with locational information outside of Nevada were removed. Locational data were spatially joined to sub population areas. The total sub population acres field was added and wildfire acres calculated for each subpopulation. The dbase file was imported into excel.



Attachment B-Oregon

Determining Acres of Each Sagebrush Group by Subpopulation

Vegetation data used came from the Integrated Landscape Assessment Project (ILAP), an American R and Recovery Act (ARRA)-funded project that, among other deliverables, provided a vegetation map of the semi-arid lands in Oregon and Washington. Louisa Evers and GIS staff Jeanne Keyes and Maria Fiorella in the Oregon State Office compared ILAP, LANDFIRE, and ReGAP vegetation layers to NAIP imagery to determine which layer best captured juniper and annual grasses. While all vegetation layers had relatively significant problems in identifying these two key vegetation types and the four layers compared at relatively low agreement between them, we determined that ILAP best captured the general extent of juniper encroachment and annual grasses.

Ideally, each sagebrush modeling group could be identified on the basis of soil moisture and temperature regime and ecological site description. However, lack of a complete soils layer and ecological site descriptions for eastern Oregon and the nature of the ILAP data table necessitated a non-spatial approach to determining which ILAP polygons belonged to which sagebrush modeling group and which successional class/community phase. The ILAP data table listed the four most common species and approximate canopy cover, although how these data were determined is not known. Certain species were used as indicators for which sagebrush group a given polygon belonged in and canopy cover was used to determine successional stage. Occasionally the indicators were ambiguous, requiring the use of professional judgment based on all four species. In a few cases, either the species or the canopy cover for that species was erroneous; either 1) it was not possible to determine which was in error or 2) it was clear that both were in error. For example, stiff sagebrush cannot reach >20% canopy cover given the type of sites it is associated with, so either the sagebrush species was misidentified or the canopy cover was.

Sagebrush Groups

Cool-Moist sagebrush group indicators – mountain big sagebrush, antelope bitterbrush, Idaho fescue, Idaho fescue-bluebunch wheatgrass, cool and moist site indicator forbs

Warm-Dry sagebrush group indicators – Wyoming big sagebrush, basin big sagebrush, Thurber's needlegrass, needle-and-thread, bluebunch wheatgrass, bluebunch wheatgrass-Idaho fescue, crested wheatgrass

Shallow-Dry sagebrush group indicators – low sagebrush, stiff sagebrush, black sagebrush, bluegrass species

Because the sagebrush groups in Oregon are tied to site productivity, the sagebrush species was used in combination with the herbaceous species to determine group membership. For example, a polygon with either low sagebrush or Wyoming big sagebrush and Idaho fescue as the first and second species were assigned to the Cool-Moist group. Mountain big sagebrush and Thurber's needlegrass as the first and second species were assigned to the Warm-Dry group. Wyoming big sagebrush and Sandberg's bluegrass as the first and second species was assigned to the Shallow-Dry group.

Polygons with western juniper as the first or second species could be assigned to any sagebrush group, but the bias was to assign it to the Cool-Moist group. Juniper would be assigned to either of the other two groups based on the herbaceous layer (lack of high productivity indicators).

Polygons with annual grass as the first or second species could be assigned to any sagebrush group, but the bias was to assign it to the Warm-Dry group unless higher or lower productivity indicators were the first, second, or third species listed.

Polygons with salt-tolerant or halophytic species, willow, cottonwood, other conifer species, and wet meadow species were excluded.

Successional Classes

Early Seral Class Indicators: sagebrush cover is <10% or sagebrush is not listed. Rabbitbrush may be the first or second species listed. Juniper and annual grasses either not listed or present only in trace amounts.

Mid-seral Class Indicators: sagebrush cover is 10-30%, juniper not listed or present only in trace amounts. Annual grasses the third or fourth species listed. This class includes at-risk community phases for annual grasses.

Late Seral Class Indicators: sagebrush cover >30% in the Cool-Moist and Warm Dry Sagebrush groups, >10% in the Shallow-Dry group. Juniper and annual grasses either not listed or the third or fourth species listed. This class includes Phase I juniper and at-risk community phases for annual grasses.

Late Seral with Conifer Class Indicators: Juniper the first or second species listed; sagebrush may or may not be present and cover is variable. Annual grasses may or may not be present. This class includes Phase II and Phase III juniper encroachment and old growth juniper.

Annual Grass Class Indicators: Annual grasses the first or second species listed.

Exotic Perennial Grass Class Indicators: Crested wheatgrass the first or second species listed. This class not used in the final models.

Appendix M

Draft Management Indicator Species Report



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Draft
Management Indicator Species Report

for the

Greater Sage-Grouse Conservation Effort to Amend the
Beaverhead-Deerlodge, Boise, Caribou, Challis, Salmon,
Sawtooth and Targhee National Forest Plans and Curlew
National Grassland Plan

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M. Draft Management Indicator Species Report

M.1 Introduction

The National Forest Management Act (NFMA) directs National Forests to identify Management Indicator Species (MIS). MIS are chosen as a representative of certain habitat conditions important to a variety of other species. MIS are generally presumed to be sensitive to habitat changes. By monitoring and assessing populations of MIS, managers can determine if management actions are affecting other species populations. MIS for the various Forest Land and Resource Management Plans in the Idaho and Montana Greater Sage-Grouse EIS analysis area (see all LRMPs for each National Forest and Grassland listed in Table 1). There are no plant MIS in the analysis area.

Table 1
Management Indicator Species (MIS) on National Forest-administered lands within the Idaho-Montana Greater Sage Grouse Analysis

Common Name	Scientific Name	Forest/Grassland (Region)
Canada lynx	<i>Lynx canadensis</i>	Targhee (4)
Grizzly bear	<i>Ursus arctos horribilis</i>	Targhee (4)
North American wolverine	<i>Gulo gulo luscus</i>	BDNF* (1), Targhee (4)
Fisher	<i>Martes pennanti</i>	Targhee (4)
Gray wolf	<i>Canis lupus</i>	Targhee (4)
American marten	<i>Martes americana</i>	Targhee (4)
Mountain Goat	<i>Oreamnos americanus</i>	BDNF (1)
Red Squirrel	<i>Sciurus vulgaris</i>	Targhee (4)
Rocky Mountain elk	<i>Cervus canadensis</i>	BDNF (1)
Bald eagle	<i>Haliaeetus leucocephalus</i>	Targhee (4)
Black-backed woodpecker	<i>Picoides arcticus</i>	Targhee (4), Boise (4)
Boreal owl	<i>Aegolius funereus</i>	Targhee (4)
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	Caribou (4), Curlew (4)
Common loon	<i>Gavia immer</i>	Targhee (4)
Flammulated owl	<i>Otus flammeolus</i>	Targhee (4)
Great gray owl	<i>Strix nebulosa</i>	Targhee (4)
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	Curlew (4), Caribou (4), Salmon-Challis (4), Sawtooth (4)
Harlequin duck	<i>Histrionicus histrionicus</i>	Targhee (4)
Northern goshawk	<i>Accipiter gentilis</i>	Caribou (4), Sawtooth (4), Targhee (4)
Peregrine falcon	<i>Falco peregrinus anatum</i>	Targhee (4)
Three-toed woodpecker	<i>Picoides tridactylus</i>	Targhee (4)
Trumpeter swan	<i>Picoides tridactylus</i>	Targhee (4)
White-headed woodpecker	<i>Picoides albolarvatus</i>	Boise (4)
Lewis's woodpecker	<i>Oncorhynchus clarki pleuriticus</i>	Targhee (4)
Downy woodpecker	<i>Salvelinus fontinalis</i>	Targhee (4)
Hairy Woodpecker	<i>Picoides villosus</i>	Targhee (4)

Table 1
Management Indicator Species (MIS) on National Forest-administered lands within the Idaho-Montana Greater Sage Grouse Analysis

Common Name	Scientific Name	Forest/Grassland (Region)
Northern flicker	<i>Colaptes auratus</i>	Targhee (4)
Pileated woodpecker	<i>Dryocopus pileatus</i>	Salmon-Challis (4), Sawtooth (4), Boise (4)
Red-napped sapsucker	<i>Sphyrapicus nuchalis</i>	Targhee (4)
Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>	Targhee (4)
Columbia spotted frog	<i>Rana luteiventris</i>	Salmon-Challis (4), Targhee (4)
Bull trout	<i>Salvelinus confluentus</i>	Salmon-Challis (4), Sawtooth (4), Boise (4)
Yellowstone cutthroat trout	<i>Oncorhynchus clarkii bouveri</i>	Sawtooth (4)
Mayfly	<i>Drunella doddsi</i>	BDNF (1)
Elk Vulnerability, Habitat Effectiveness and elk and deer winter range	<i>n/a</i>	Targhee (4)
Riparian Breeding Birds	<i>n/a</i>	Curlew (4)

*BDNF = Beaverhead-Deerlodge National Forest Service

The 1982 (36 CFR 219.19) regulations state that the Forest Service has the responsibility to provide sufficient habitat that can support viable populations of native and desired nonnative vertebrates across the planning area at a level that populations are likely to persist on National Forest System (NFS) lands.

On December 18, 2009 the Department of Agriculture issued a final rule reinstating the National Forest System Land and Resource Management Planning rule of November 9, 2000, as amended (2000 rule) (74 FR 242 [67059-67075]). This rescinded the 1982 planning rule. The 2000 rule states: Projects implementing land management plans must comply with the transition provisions of 36 CFR §219.35, but not any other provisions of the planning rule. Projects implementing land management plans and plan amendments, as appropriate, must be developed considering the best available science in accordance with §219.35(a). Projects implementing land management plans must be consistent with the provisions of the governing plans.

In order to address the MIS species, the issues surrounding the change in planning rules, and to assure the best available science was used our approach was as follows:

1. Identify habitat and population characteristics/trends by Forest
2. Identify the role of the habitat on each Forest in the overall viability of the population
3. Analyze effects of each alternative based on relevant threats, as well as current and past management
4. Make a determination whether the effects of the alternatives will affect the ability of the species to persist on the planning unit.

M.2 Project History

Greater Sage-Grouse have emerged as a significant conservation concern over the last 10 years. The species is currently a candidate species for listing under the Endangered Species Act inferring that listing is “warranted, but precluded due to higher priorities” because of two primary factors: 1) the large-scale loss and fragmentation of habitats across the species range, and 2) a lack of regulatory mechanisms in place to ensure the conservation of the species. The primary threats to sage-grouse habitat are summarized in the listing decision. The two dominant threats are related to infrastructure associated with energy development in the eastern portion of the species range, and the conversion of sagebrush communities to annual grasslands associated resulting in large uncharacteristic wildfires in the western portion of the species range (U.S. Fish and Wildlife Service 2010).

The Bureau of Land Management (BLM) manages approximately half of the Greater Sage-Grouse habitats, whereas the Forest Service (FS) manages approximately 8 percent of species habitat, with most of that occurring on national forests in the Intermountain Region. The Forest Service manages approximately 9 million acres of sagebrush habitats, of which about 7.5 million acres occurring in the Intermountain Region. Most habitats on FS administered lands contribute to summer brood-rearing habitats, although some forests and grasslands do contribute important breeding nesting and winter habitat.

In 2011 and 2012, the United States Fish and Wildlife Service (FWS) submitted letters to the BLM and FS recommending that the agencies amend Land Use Plans to provide adequate regulatory mechanisms to conserve the species. Originally, this recommendation identified 10 National Forests viewed as “high priority” to ensure appropriate regulatory mechanisms. Following scoping and discussion the FS added an additional 10 Forest Plans that would be considered for amendment. The FS is participating in several joint Environmental Impact Statements (EISs) with the BLM to develop Records of Decision that will be used as a basis for amending Land Use Plans, including Forest Plans.

Since half of all Greater Sage-Grouse habitat occurs on BLM lands, the BLM is leading the effort to amend or revise land use plans, with the Forest Service as a cooperating agency. The purpose is to provide direction in land management plans that conserve and protect sage-grouse habitat and to provide assurances to the FWS that adequate regulatory mechanisms are in place to ensure the conservation of the species. EISs will be completed for seven sage-grouse planning sub-regions: 1) eastern Montana and portions of North and South Dakota, 2) Idaho and southwest Montana, 3) Oregon, 4) Wyoming, 5) northwest Colorado, 6) Utah, and 7) Nevada and northern California. The FS is participating in six of these EISs (excluding Eastern Montana/Dakotas and some of the areas in Wyoming). The EISs will include joint agency signatures, but separate Records of Decision.

This Management Indicator Species report is being prepared in support of the Idaho and Montana EIS for those National Forests planning to amend their respective Land and Resource Management or Forest Plans for the Greater Sage-Grouse. Table 2 outlines Idaho and southwestern Montana National Forests MII, their presence in the analysis area, and anticipated effects due to implementation of an action alternative.

Table 2
Rationale for inclusion or dismissal of MIS within the Idaho-Montana Greater Sage-Grouse analysis area

Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
Canada lynx		N	N	Uses montane and subalpine coniferous forests. No habitat within mapped Preliminary Priority Habitat (PPH) or Preliminary General Habitat (PGH) habitat. Implementation of the alternatives will cause no changes to populations of Canada lynx or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Grizzly bear		N	N	Require a very large home range, encompassing diverse forests interspersed with moist meadows and grasslands in or near mountains. In the spring, bears usually range at lower elevations and go to higher altitudes for winter hibernation. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of grizzly bear or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
North American wolverine	Effects of disturbance on high elevation winter range and denning habitat	N	N	Uses remote habitats within subalpine and montane forests. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of North American wolverine or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Fisher		N	N	Utilizes forested stands with high canopy cover and riparian corridors. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of fisher or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Gray wolf		Y	Y	Habitat generalist occurring in parts of ID characterized by a mosaic of dry and mesic conifer and subalpine forest, as well as grassland and shrubland that support big-game (elk, moose, and deer) populations. Although this species may occasionally utilize PPH or PGH habitat, no affiliation or dependence upon these habitat(s) has been shown. It would not be affected by any of the actions in a measurable amount. Implementation of the alternatives will cause no changes to populations of gray wolf or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.

Table 2
Rationale for inclusion or dismissal of MIS within the Idaho-Montana Greater Sage-Grouse analysis area

Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
American marten		N	N	Utilizes mature and old-growth spruce-fir and lodgepole forests. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of American marten or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Mountain Goat	Effects of disturbance on high elevation winter range and denning habitat	N	N	Utilizes cliffy terrain, south-facing canyon walls, windblown ridgetops, ravines, forest and subalpine forest. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of mountain goat or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Red Squirrel		N	N	Requires conifer forests of cone-bearing age. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of red squirrel or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Rocky Mountain elk	Important commonly-hunted species	Y	Y	Habitat generalist, but mainly utilizes coniferous forests interspersed with natural or man-made openings; sagebrush-grasslands provide winter range forage. The alternatives propose some changes to management of sagebrush habitats, so populations could respond to proposed changes according to each of the alternatives. Therefore, this species <u>will be evaluated</u> in additional detail.
Bald eagle		Y	N	Nests in large trees (conifers or cottonwoods) near large rivers or water bodies and prefer fish for prey. Although this species may occasionally utilize PPH or PGH habitat, no affiliation or dependence upon these habitat(s) has been shown. It would not be affected by any of the actions in a measurable amount. Implementation of the alternatives will cause no changes to populations of bald eagle or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Black-backed wood-pecker	High numbers of snags in disturbed forests, use of late-	N	N	Uses forested areas with abundant wood-boring insects resulting from fires or high-density; and unburned, old forest with high levels of snags and logs. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause

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Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
	seral old forest conditions, and relationship with beetle outbreaks in the years immediately following fire or insect or disease outbreaks (Boise)			no changes to populations of black-backed woodpecker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Boreal Owl		N	N	In ID, uses high-elevation spruce-fir, mixed conifer and aspen forests. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of boreal owl or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Columbian sharp-tailed grouse	Grasslands and open canopy sagebrush habitats	Y	Y	The alternatives propose some changes to management of sagebrush habitats, so populations could respond to proposed changes according to each of the alternatives. Therefore, this species <u>will be evaluated</u> in additional detail.
Common loon		N	N	Nest in extreme eastern ID in shallow-watered natural lakes (5,000 – 9,000 feet). No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of common loon or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Flammulated owl		N	N	In ID, uses Mid-elevation, old growth, or mature stands of open ponderosa pine, Douglas-fir, or stands dominated by both species. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of flammulated owl or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.

Table 2
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Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
Great gray owl		N	N	Uses mature forest and large-diameter trees or snags. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of great gray owl or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Greater Sage-Grouse	Sagebrush habitats (Curlew, Caribou & Salmon-Challis); habitat reduction, connectivity, and degradation in sagebrush/grassland habitats (Sawtooth)	Y	Y	The alternatives propose some changes to management of sagebrush habitats, so populations could respond to proposed changes according to each of the alternatives. Therefore, this species <u>will be evaluated</u> in additional detail.
Harlequin duck		N	N	Breeds near swiftly flowing, clear, forested or well vegetated, undisturbed mountain streams. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of Harlequin duck or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Northern goshawk	Mature and old forest habitat (Caribou); broad-elevation old-forest habitats (Sawtooth)	N	N	Use a variety of forest ages, structural conditions, and successional stages. No primary habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of northern goshawk or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Peregrine falcon		Y	Y	Nest sites on cliffs with a wide view, low disturbance, and abundance of prey; all forest vegetation types located within 10 miles of suitable cliffs. Although this species may occasionally utilize PPH or PGH habitat, no affiliation or dependence upon these habitat(s) has been shown. It would not be affected by any of the actions in a measurable amount. Implementation of the alternatives will cause no

Table 2
Rationale for inclusion or dismissal of MIS within the Idaho-Montana Greater Sage-Grouse analysis area

Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
				changes to populations of Peregrine falcon or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Three-toed wood-pecker		N	N	Uses mature forested stands. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of three-toed woodpecker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Trumpeter swan		N	N	Utilizes lakes and ponds and adjacent marshes. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of trumpeter swan or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
White-headed wood-pecker	Source habitats tied to large trees, open canopy conditions, large snags, and old-forest habitat in low-elevation forests dominated by ponderosa pine that developed under nonlethal and mixed1 fire regimes	N	N	In ID, uses open and mature ponderosa pine and mixed ponderosa pine/Douglas-fir forests with large-diameter snags. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of white-headed woodpecker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Lewis's wood-pecker		N	N	Uses open ponderosa pine forest; open riparian woodlands dominated by cottonwood, and burned pine forests. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of Lewis's woodpecker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.

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Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
Downy wood-pecker		N	N	Utilizes forested environment with suitable snags or live trees for nesting habitat. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of downy woodpeckers or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Hairy Wood-pecker		N	N	Utilizes forested environment with suitable snags or live trees for nesting habitat. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of hairy woodpeckers or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Northern flicker		Y	N	Although this species may occasionally utilize PPH or PGH habitat, its primary limiting factor, suitable tree cavities for nesting, would not be affected by any of the actions in a measurable amount. Implementation of the alternatives will cause no changes to populations of northern flicker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Pileated wood-pecker	Coniferous habitat/community type (Salmon-Challis); sufficient large trees, snags, and coarse woody debris in old conifer forests (Sawtooth); snag and old forest habitats (Boise)	N	N	Utilizes multilayer, late-seral stages of broad-elevation old forest. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of pileated woodpecker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Red-naped sapsucker		N	N	Utilizes forested environment with suitable snags or live trees for nesting habitat. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of red-naped sapsucker or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.

Table 2
Rationale for inclusion or dismissal of MIS within the Idaho-Montana Greater Sage-Grouse analysis area

Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
Williamson's sapsucker		N	N	Utilizes forested environment with suitable snags or live trees for nesting habitat. No habitat within mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to populations of Williamson's sapsuckers or their habitat. Therefore, this species <u>will not be evaluated</u> in more detail.
Columbia spotted frog	Riparian habitat/community type (Salmon-Challis)	Y	Y	Uses permanent water (marshy edges of ponds or lakes, in algae-grown overflow pools of streams), or in wet areas with emergent vegetation; may move considerable distances (mixed conifer and subalpine forests, grasslands, and shrubland) from permanent water during rainy periods after breeding. There are records of the species within PPH and PGH habitat. Subsequent review of the alternatives indicates that this species will experience no effects to its habitat or populations. None of the alternatives is expected to impact any of the identified limiting factors for Columbia spotted frog or its life requirements. Based on these factors, this species <u>will not be analyzed</u> in additional detail.
Bull Trout	Aquatic habitat/community type (Salmon-Challis & Sawtooth)			Cold-water fish of relatively pristine stream and lake habitats in western North America. The Salmon-Challis National Forest is within two bull trout recovery units; the Salmon River, in which most of the SCNF occurs, and the Little Lost, which includes the Lost River Ranger District. May overlap PPH or PGH habitat in a few migration corridors on the SF Boise within the Boise National Forest (NF). Only slightly overlaps PPH or PGH habitat in the Upper Salmon sub-basin of the Sawtooth NF. Subsequent review of the alternatives indicates that this species will experience no effects to its habitat or populations. None of the alternatives is expected to impact any of the identified limiting factors for bull trout or its life requirements. Based on these factors, this species <u>will not be analyzed</u> in additional detail.
Yellow-stone cutthroat trout	The effects of authorized and unauthorized	Y	Y	Uses clear, cold streams, rivers, and lakes. There are records of the species within PPH/PGH habitat. Subsequent review of the alternatives indicates that this species will experience no effects to its habitat or populations. None of the

Table 2
Rationale for inclusion or dismissal of MIS within the Idaho-Montana Greater Sage-Grouse analysis area

Common name of MIS	Management issue	Species present in analysis area?	Habitat present in analysis area?	Rationale for inclusion or dismissal regarding analysis of anticipated effects from implementation of an action alternative to MIS
	activities on watershed, riparian and stream habitat conditions			alternatives is expected to impact any of the identified limiting factors for Yellowstone cutthroat trout or its life requirements. Based on these factors, the Yellowstone cutthroat trout <u>will not be analyzed</u> in additional detail.
Mayfly	Aquatic species; changes in the aquatic environment from management activities	Y	Y	Fairly common in the fast flowing riffle areas of small, cobble streams to larger trout rivers throughout Montana. Although streams and rivers within PPH and PGH habitat may contain this species, subsequent review of the alternatives indicates that this species will experience no effects to its habitat or populations. None of the alternatives is expected to impact any of the identified limiting factors for mayfly or its life requirements. Based on these factors, this species <u>will not be analyzed</u> in additional detail.
Elk Vulnerability, Habitat Effectiveness and deer and elk winter range		N	N	Applies to areas of the Targhee NF with suitable elk hiding cover. Does not include open, vast sagebrush plain and, therefore, does not apply to mapped PPH or PGH habitat. Implementation of the alternatives will cause no changes to elk vulnerability and habitat effectiveness. Therefore, elk vulnerability and habitat effectiveness <u>will not be evaluated</u> in additional detail.
Riparian Breeding Birds	Riparian habitats	Y	Y	The alternatives propose some changes to management of sagebrush habitats that contain riparian habitats, so populations could respond to proposed changes according to each of the alternatives. Therefore, this species group <u>will be evaluated</u> in additional detail.

M.3 Purpose and Need

The purpose of the Land and Resource Management Plan amendments for the Greater Sage-Grouse is to identify and incorporate appropriate conservation measures to conserve, enhance, and/or restore sage-grouse habitat by reducing, eliminating, or minimizing threats to their habitat. The need to create this amendment arose when the inadequacy of regulatory mechanisms was identified as a significant threat in the FWS finding on the petition to list the Greater Sage-Grouse. The FWS identified conservation measures within Forest Service Land and Resource Management Plans (as well as BLM Land Use Plans) as the principal regulatory mechanisms for habitat conservation. Therefore, the Land and Resource Management Plan amendments will focus on areas affected by threats to sage-grouse habitat identified by the FWS in the March 2010 listing decision (USFWS 2010).

M.4 Description of the Alternatives

M.4.1 Alternative A – No Action Alternative

The No Action Alternative (Alternative A) represents the continuation of current management direction in the 21 BLM Field Office Land Use Plans (LUP) and 8 Forest Service Land and Resource Management Plans (LRMP or Forest Plan), and proposes no new plan or management actions. This alternative is required by Council on Environmental Quality (CEQ) regulations and provides a baseline for comparison of the other alternatives (CEQ 1981).

M.4.2 Alternative B

BLM and USFS management actions, in concert with other state and federal agencies and private landowners, play a critical role in the future trends of Greater Sage-Grouse (GRSG) populations. To ensure BLM and USFS management actions are effective and based on the best available science, the BLM National Policy Team, as part of the National Greater Sage-Grouse Planning Strategy, established the National Technical Team (NTT) in August 2011. The objective for chartering this team was to develop and describe conservation measures to be considered while new or revised regulatory mechanisms as assessed, through Land Use Plan or Forest Plan Amendments, to conserve, enhance and restore the GRSG and its habitat on BLM & USFS-administered lands range-wide and over the long term. The BLM used Greater Sage-Grouse conservation measures in “A Report on National Greater Sage-Grouse Conservation Measures” (Sage-Grouse National Technical Team 2011) to form management direction under Alternative B. Conservation measures under Alternative B are focused on Priority Habitat (PH) (areas that have the highest conservation value to maintaining or increasing sage-grouse populations) and on Great Basin-wide concerns for sage-grouse. General Greater Sage-Grouse habitat is also identified, encompassing occupied (seasonal or year-round) habitat outside of priority habitat.

M.4.3 Alternative C

During scoping for this LUPA/EIS, individuals and conservation groups submitted management direction recommendations for protecting and conserving Greater Sage-Grouse and habitat range-wide. The recommendations, in conjunction with resource



allocation opportunities and internal sub-regional BLM and Forest Service input, were reviewed in order to develop BLM and Forest Service management direction for Greater Sage-Grouse under Alternative C. Management actions in Alternative C are applied to all occupied habitat and focus on the removal of livestock grazing from the landscape to alleviate threats to sage-grouse.

M.4.4 Alternative D

This is the Idaho/southwest Montana sub-regional alternative, which emphasizes balancing resources and resource use among competing human interests, land uses, and the conservation of natural and cultural resource values, while sustaining and enhancing ecological integrity across the landscape, including plant, wildlife, and fish habitat. This alternative incorporates local adjustments to “A Report on National Greater Sage-Grouse Conservation Measures” (NTT 2011) and habitat boundaries to provide a balanced level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. Conservation measures under Alternative D apply to three designations of sage-grouse habitat – priority, medial and general. Priority areas contain the most important and relatively intact habitats for conserving sage-grouse, medial areas have some level of development or disturbance that reduces the effective character for sage-grouse but still provides better quality habitat than general areas. General areas represent the remaining occupied habitat outside of priority or medial areas.

M.4.5 Alternative E1

The “Idaho Governor’s Sage-Grouse Task Force Recommendations” (Idaho Governor’s Task Force 2012) were adopted as Alternative E and provides recommendations and policies to aid the State of Idaho in developing a conservation plan specifically adapted to Idaho sage-grouse populations with the objective of precluding the need to list the species under the Endangered Species Act (ESA). Most of the Task Force recommendations are intended to form the basis for “adequate regulatory mechanisms” that can be incorporated into federal LUPs and considered by the FWS in any future listing decision. Since the sub regional planning boundary extends into southwestern Montana and the Sawtooth National Forest portion of Utah, management for these areas in this alternative reflect the approaches described through coordination with Montana Fish, Wildlife and Parks and the State of Utah.

M.4.6 Alternative E2

Alternative E2 applies to the portion of the Sawtooth National Forest in Utah and is based on the State of Utah’s Conservation Plan for Greater Sage-Grouse in Utah. The alternative is designed to address the threats facing the sage-grouse while balancing the economic and social needs of the residents of Utah. The State of Utah’s Conservation Plan for Greater Sage-Grouse in Utah does not use the terms PH or GH. However, to allow for consistency within this document, GRSG habitat within the Sage-Grouse Management Areas are referred to as PH. GRSG habitat outside of Sage-Grouse Management Areas are referred to as GH. Under Alternative E2, management of activities within Sage-Grouse Management Areas would be based on a hierarchical protocol that includes:

- Avoidance of disturbance to habitat or birds by an activity as the preferred option.
- Minimization of disturbance if the disturbance cannot be avoided in GRSG habitat, with mitigation for the effects of the minimization decisions.
- Mitigation of the disturbance from an activity within GRSG habitat is required if a disturbance cannot be avoided.

In addition to avoidance of disturbance, emphasis would be placed on expanding GRSG habitat by aggressively treating areas where there are encroaching conifers or invasive species. This alternative includes a general limit on new permanent disturbance of 5 percent of habitat on state or federally managed lands. Fire would count toward the disturbance threshold, but vegetation treatments would not. Under Alternative E2, occupied habitat outside of the state-identified Sage-Grouse Management Areas would not receive any management protection.

M.4.7 Alternative F

Similar to Alternative C, Alternative F was derived from individual and conservation group scoping comments. This alternative contains a mixture of management actions from “A Report on National Greater Sage-Grouse Conservation Measures” (NTT 2011) as well as additional restrictions on resource uses and increased resource protection. As such, Alternative F provides greater restrictions on allowable uses and less resource management flexibility than Alternative B. Conservation measures in Alternative F are focused on priority, general, and restoration Greater Sage-Grouse habitat areas.

M.5 Analysis Area

The ID/swMT Sub-region includes lands managed by the BLM and USFS in Southwestern Montana and portions of Idaho, excluding the northern panhandle (Figure 1). The specific National Forests included in the planning area are: Boise NF, Caribou-Targhee NF, Curlew National Grassland, Salmon-Challis NF, and Sawtooth NF in Idaho; and Beaverhead-Deerlodge NF in southwest Montana. The ID/swMT sub-regional boundary also includes the portion of the Sawtooth NF located within Box Elder County in Utah.

Preliminary Priority Habitat and PGH have been delineated for both Idaho and Montana. In Idaho, PPH & PGH were identified based on a model incorporating sage-grouse breeding bird density and lek connectivity models, informed with additional ancillary broad scale habitat data, seasonal habitat maps, connectivity information, expert opinion, population persistence model, local priority areas and agriculture and conifer (refer to the Draft EIS for additional information). In Montana, PPH was delineated based on Montana Fish, Wildlife and Park’s (MFWP) modeling of GRSG Core areas using a model based on male lek attendance and refined with seasonal habitat, telemetry, connectivity information and field review. Through this land use planning process, the BLM and USFS continue to refine Preliminary Priority Habitat and Preliminary General Habitat data to: (1) identify Priority





Idaho/Montana Greater Sage-Grouse EIS

EIS Boundaries and Associated National Forests

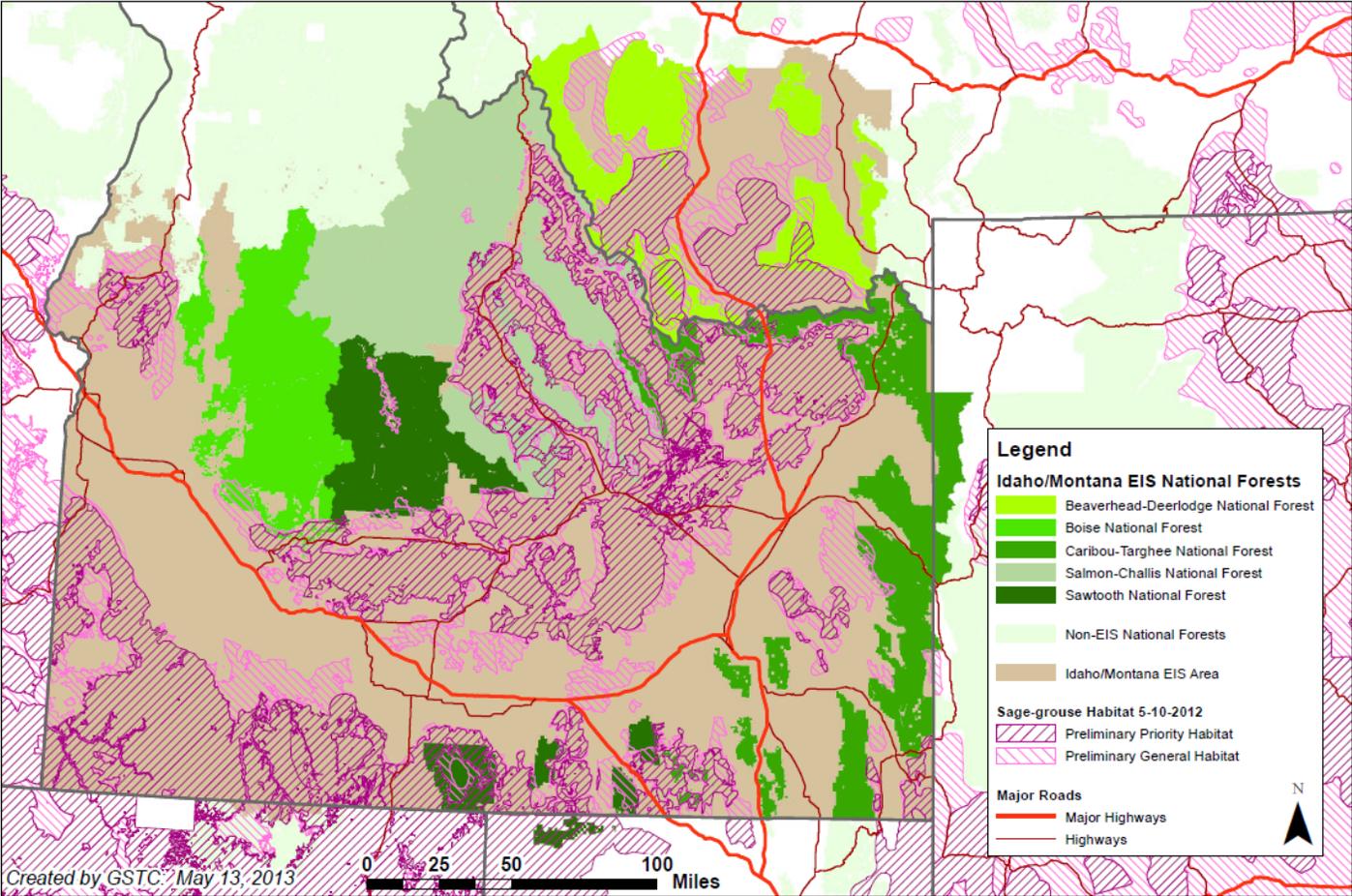


Figure 1. Idaho and southwestern Montana EIS analysis area showing National Forest-administered lands.

Habitat and analyze actions within Priority Habitat to conserve GRSG habitat functionality, and/or where appropriate, improve habitat functionality, and (2) identify General Habitat and analyze actions within General Habitat that provide for major life history function in order to maintain genetic diversity needed for sustainable GRSG populations. While PPH and PGH is not a designation of habitat, the delineation of these areas provides a common descriptor for GRSG habitat in the sub region, both for baseline conditions and for alternative comparison. For the remainder of this document PPH and PGH refer to the areas identified in the April 2012 map of GRSG habitat (refer to the Draft EIS).

Many areas of GRSG habitat in the ID/swMT sub-region are contiguous with habitats in the neighboring states of Utah, Nevada, Oregon, and Montana. The vast majority of the ID/swMT sub-region lies within Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone (MZ) IV; a small portion of southeastern Idaho, occurs within Management Zone II and is associated with the Wyoming Basin population. Within the sub-region, GRSG occupy all or portions of ten populations described in Connelly et al (2004). Two populations (Great Basin Core, Wyoming Basin) encompass portions of adjacent states.

M.6 Species Information and Effects Analysis (Direct, Indirect and Cumulative)

M.6.1 Greater Sage-grouse (*Centrocercus urophasianus*)

Life History

Sage-grouse depend on a variety of semiarid shrub-grassland (shrub steppe) habitats throughout their life cycle, and are considered obligate users 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. 2000; Connelly et al. 2004; Miller et al. 2011). Sage-grouse also use other sagebrush species (which can be locally important) 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). Sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats (Schroeder et al. 2004; Connelly et al. 2011b). Sage-grouse exhibit strong site fidelity (loyalty to a particular area) to seasonal habitats (i.e., breeding, nesting, brood rearing, and wintering areas) (Connelly et al. 2004; Connelly et al. 2011a). Adult sage-grouse rarely switch from these habitats once they have been selected, limiting their ability to respond to changes in their local environments (Schroeder et al. 1999). (Life history section was copied from the USFWS FINAL COT report – Feb. 2013)

Based on GIS analysis of the EIS planning area, the following table describes the number of acres on each Forest, the number of acres of GRSG PPH and PGH on each Forest, and the percentage of the Forest considered occupied habitat.

FORESTNAME	Forest Acres	PPH	PGH	Total Occupied	% of Forest
Beaverhead-Deerlodge National Forest	2,070,286	170,130	54,692	224,822	11%
Boise National Forest	2,204,572	21,287	57,252	78,539	4%
Caribou-Targhee National Forest	2,849,127	108,857	179,774	288,631	10%

FORESTNAME	Forest Acres	PPH	PGH	Total Occupied	% of Forest
Curlew National Grassland	47,479	39,820	7,083	46,904	99%
Salmon-Challis National Forest	4,353,530	348,158	208,487	556,645	13%
Sawtooth National Forest	2,110,657	282,062	212,498	494,560	23%
Total EIS Area	13,635,651	962,669	859,675	1,822,344	13%

Habitat conditions and population information were largely taken from the USFWS FINAL COT report – Feb. 2013 and from the BLM Draft EIS chapter 3.

Habitat and Population Condition by Forest

Beaverhead-Deerlodge NF

The Beaverhead-Deerlodge National Forest falls within the Southwest Montana Sage-Grouse population (COT report 2013). Garton et al. (2011) analyzed this population as 4 separate smaller populations (i.e., Bannack, Wisdom, Red Rock, and Bridges), but did not provide an analysis of the overall population. Telemetry data, however, has demonstrated considerable intermingling between each of these lek complexes, clarifying that these birds represent a single population. Based on current management strategies and threats and known population numbers in this area, Garton et al. (2011), suggested that there was between 55-70% chance of the population dropping below 500 birds/200 males by 2037.

There are a total of 162,485 acres of PPH and 195,581 acres of PGH on the Beaverhead-Deerlodge National Forest.

Boise NF

The Boise National Forest is contained within the Northside Snake River population. This area contains a large amount of publicly managed land (largely BLM and USFS). Within the southern portion of this population, wildfires and invasive species have continued to reduce the quality of habitat. The mountain valley portions of this population appear to have relatively stable habitats. Thus far, energy development is very limited and there are few wild horses. A recent rate of change analysis indicates this population has been stable to increasing from 2007 to 2010. Garton et al. (2011) indicated that this population had virtually no chance of declining below 500 in the next 100 years. Population analysis indicates that Sage-Grouse have fluctuated around 5,000 males since 1992. Because of relatively large numbers of birds and stable to increasing populations, this population is considered low risk.

Habitat trends are relatively static during the last decade based on some changes to livestock grazing on adjacent lands. Higher elevation areas are generally in-tact, though may be at risk to encroachment by Douglas-fir. There are a total of 21,287 acres of PPH and 57,252 acres of PGH on the Boise National Forest.

Caribou-Targhee NF

The Caribou and Targhee National Forests can be found in portions of four different Sage-Grouse populations as described in the COT report (2013): Bear Lake, Southside Snake

River, Mountain Valleys, and East Central Idaho populations. Each of these populations differs in its security (very secure to at-risk), population numbers and trends, and quantity and quality of habitats. Most of the habitat contained on the Forest is generally intact and provides brood rearing habitat during the summer and early fall.

On the Caribou and Targhee National Forests, there are a total of 108,857 acres of PPH and 179,774 acres of PGH. Based on current management strategies and threats and known population numbers in this area, Garton et al. (2011), suggested that depending upon which population (mentioned above) you refer to, that in part can be found on the Forest, there was between 0-100% chance of the population dropping below 500 birds/200 males by 2037.

Curlew NG

The Curlew National Grasslands is found in the Southside Snake River population as described in the COT report (2013). This area contains a large amount of publicly managed land (largely BLM). The area also includes among the least fragmented and largest sagebrush dominated landscapes within the extant range of Sage-Grouse (Knick and Hanser 2011). However, the northeastern portion of the population is more environmentally similar to areas where sage-grouse have been extirpated (Wisdom et al. 2011).

On the Curlew National Grasslands, there are a total of 39,820 acres of PPH and 7,083 acres of PGH. Based on current management strategies and threats and known population numbers in this area, in the Northern Great Basin, Garton et al. (2011) suggested that there was a 2% chance of the population dropping below 500 birds/200 males by 2037.

Salmon-Challis NF

The Salmon-Challis National Forest is found in the Mountain Valleys Sage-Grouse population. The mountain valley portions of this population found on the Forest are generally used by birds for mid- and late-season brood rearing habitat. On the Salmon-Challis National Forest, there are a total of 348,158 acres of PPH and 208,487 acres of PGH.

A recent rate of change analysis indicates this population has been stable to increasing from 2007 to 2010. Garton et al. (2011) indicated that this population had virtually no chance of declining below 500 in the next 100 years. The birds that pertain to this population are part of a larger population that has fluctuated around 5,000 males since 1992. Because of relatively large numbers of birds and stable to increasing populations, this population is considered low risk.

Sawtooth NF

As the Sawtooth National Forest is divided over a large landscape, some of the habitat falls within one of the following 3 different populations: Sawtooth, Southside Snake River, and the Northside Snake River population as described in the COT report (2013).

The Sawtooth population in central Idaho did not have sufficient data to allow analysis by Garton et al. (2011). No occupied leks are known to exist at this time. This area is largely encompassed by the Sawtooth National Recreation Area and includes a high proportion of



public land. This population declined to one male on one lek in 1986 and was subsequently increased by translocation during the mid-1980s. Overall this population is at high risk.

Habitat on the Sawtooth NF found within the Snake River population is generally made up of mountain valleys that provide birds with mid- and late-season brood rearing habitat. A recent rate of change analysis indicates this population has been stable to increasing from 2007 to 2010. Garton et al. (2011) indicated that this population had virtually no chance of declining below 500 in the next 100 years.

Lastly there is a portion of the Forest within the boundaries of the Northern Great Basin population. This area contains a large amount of publicly managed land (largely BLM). The area also includes among the least fragmented and largest sagebrush dominated landscapes within the extant range of Sage-Grouse (Knick and Hanser 2011). However, the northern and eastern portions of the population are more environmentally similar to areas where Sage-Grouse have been extirpated (Wisdom et al. 2011).

There are a total of 282,062 acres of PPH and 212,498 acres of PGH on the Sawtooth National Forest.

Threats by Forest

Beaverhead-Deerlodge NF

Key threats are generally limited to improper grazing management, isolated sagebrush control efforts, and expansion of conifers into Sage-Grouse habitat in localized instances. Habitat conversion on the Idaho side of this Management Zone may also affect this population to some extent. Given this population's size, limited habitat threats, and ties to Idaho's birds, the Southwest Montana population is characterized as being at a low level of risk.

Boise NF

Key wide-scale threats to this Sage-Grouse population that contains habitat on and adjacent to the Boise National Forest include: wildland fire, weeds/invasive annual grasses, potential wind energy development, and grazing. Those threats characterized as localized include: sagebrush elimination, agricultural conversion, encroachment of conifers (pinyon-juniper), land development for human habitation, and recreation.

Caribou-Targhee NF

Key Sage-Grouse threats on and around the Caribou-Targhee NF include: wildfire and subsequent invasion of exotic and/or annual grasses or weeds. Other lesser threats include locatable minerals and grazing.

Curlew NG

Key Sage-Grouse threats on and around the Curlew NG include: wildfire and invasion of exotic and/or annual grasses or weeds. Other lesser threats include grazing and a limited spatial area of public ownership with interspersed private lands largely under cultivated agricultural.

Salmon-Challis NF

Threats to sage-grouse and their habitats on and around the Salmon-Challis NF include: grazing and disturbances from recreation and travel management due to the linear configuration of the mountain valley and ranges. At a localized scale conifer encroachment, infrastructure, and recreation might also threaten persistence of Sage-Grouse in the area.

Sawtooth NF

Key threats to Sage-Grouse on and around the Sawtooth NF include: wildfire, invasive species (cheatgrass and other weeds), pinyon/juniper and other conifer encroachment, grazing, and infrastructure. In addition, on local scales threats may include: conversion of sagebrush to agricultural fields, wind energy development, mining, and recreational activities that are ongoing on the Forest.

Alternative A

Infrastructure – Direct and Indirect Effects

Existing land use plans direction would apply under Alternative A. There would be no changes to the current National Forest System infrastructure including power lines, wind turbines, communications towers, fences, or roads. Permitted right-of-ways (ROWs) or special use authorities (SUAs) would continue to allow construction, maintenance, and operation activities that could result in habitat loss, fragmentation, or degradation of Greater Sage-Grouse (GRSG) habitat or result in barriers to migration corridors or seasonal habitats. Construction and maintenance of infrastructure would continue to lead to higher short-term concentrations of human noise and disturbance that could cause disruption of nesting activities, abandonment of young or temporary displacement; these could also lead to new infestations of noxious or invasive weeds and an increase in edge habitat. Existing and new power lines, wind turbines, communications towers, fences, and vehicles traveling on associated roads would continue to pose a collision hazard to GRSG or to provide potential perching and/or nesting habitat for avian predators that could result in declines in lek attendance or nest success. Though most projects would be forced to mitigate or minimize impacts, this alternative would likely have the greatest impact on the GRSG and its habitat.

Cumulative Effects

The baseline date for the cumulative impacts analysis for Greater Sage-Grouse is 2012. The temporal scope of this analysis is a 20-year planning horizon; land use planning documents are generally evaluated on a 5-year cycle. The temporal boundary for cumulative effects analysis for Greater Sage-Grouse is the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone IV (Snake River Plain) for Greater Sage-Grouse because all of the Idaho/Montana planning area, with the exception of a small portion of privately-held lands located within Management Zone II within the southeastern corner of Idaho, is located within Management Zone IV (MZ IV).

Current infrastructure management activities would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, E1, E2 or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable



future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to GRSG in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Fire and Fuels – Direct and Indirect Effects

Alternative A would continue to manage wildfire and prescribed burns under current direction which would have the fewest restrictions for fire and fuels management actions and a high potential for vegetation disturbance. Prescribed burns could be used within sagebrush habitat where needed to control fuel loading. Policies would not prioritize protection or restoration of mature sagebrush habitat. Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by sage-grouse could disrupt nesting, breeding, or foraging behavior. Important habitats could be removed or degraded because of the use of heavy equipment or hand tools. Other potential impacts may include injuring or killing eggs/chicks, causing changes in species movement patterns due to areas devoid of vegetation, or reducing population viability and increasing the contribution to the need to list the species.

In addition, suppression may initially result in higher rates of juniper encroachment in some areas. In the initial stages of encroachment (phase 1), fuel loadings remain consistent with the sagebrush understory. As juniper encroachment advances (phases 2 and 3) and the understory begins to thin, the depleted understory causes the stands to become resistant to wildfire and further alter fire return intervals. During years of high fire danger, the resulting heavy fuel loadings in these stands can contribute to larger-scale wildfire events and confound control efforts due to extreme fire behavior.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E1, E2 and F. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from wildfire in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative A would continue the management of invasive weeds under current direction. To reduce the likelihood of invasive weed spread and the extent of current infestations, integrated weed management techniques, including mechanical, manual, chemical, and biological control are utilized. Existing Coordinated Weed Management Areas would remain in effect, and firefighting vehicles would be washed prior to deployment. These policies would limit impacts from spread of weeds as effectively as possible under current resource constraints. The spread of weeds would continue to pose a substantial threat to the planning area by altering plant community structure and composition, productivity, nutrient cycling, and hydrology that could result in fragmentation or degradation of existing sage-grouse habitat. Weeds may cause declines in native plant populations, including sagebrush habitat,

through competition or displacement and, in cases where monocultures occur, eliminate vegetation that sage-grouse use for food and cover. Invasive plants do not provide suitable sage-grouse habitat, since the species depends on a variety of native forbs and the insects associated with them for chick survival. Sage-grouse also depend on sagebrush, which is eaten year-round and used exclusively throughout the winter for food and cover. Along with competitively excluding vegetation essential to sage-grouse, invasive plants fragment existing sage-grouse habitat or reduce habitat quality. Invasive plants can also create long-term changes in ecosystem processes, such as fire-cycles (see discussion under Fire and Fuels above).

Current treatments and active vegetation management typically focus on vegetation composition and structure for fuels management, habitat management and/or productivity manipulation for improving the habitat and forage conditions for ungulates and other grazers, using surface soil stabilization to increase productivity, or by removing invasive plants. Management of vegetation resources to protect GRSG would alter vegetative communities by promoting increases in sagebrush height and herbaceous cover and vegetation productivity. Treatments designed to prevent encroachment of shrubs, non-native species or woody vegetation would alter the condition of native vegetation communities by changing the density, composition, and frequency of species within plant communities. The intent of these management programs is to improve rangeland condition and enhance sagebrush ecosystems. Vegetation treatments could negatively impact GRSG and GRSG habitat in the short term from vegetation removal and disturbance, but would result in long-term improvements.

Cumulative Effects

Under Alternative A, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative A, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment – Direct and Indirect Effects

Expansion of conifer woodlands, especially juniper, displaces shrubs, grasses and forbs through direct competition for resources; juniper expansion is also associated with increased bare ground and increased potential for erosion. Mature trees may offer perch sites for avian predators. Alternative A does not directly address conifer encroachment. However, habitat restoration and vegetation management policies described above under Invasive Plants and fuels treatments described under Fire and Fuels would likely also reduce juniper encroachment.



Cumulative Effects

Current conifer encroachment management would continue under Alternative A and the measures addressing conifer encroachment would not be instituted as they would be in several of the action alternatives. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from conifer encroachment in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Livestock Grazing – Direct and Indirect Effects

Under this alternative, livestock grazing would continue to be managed under current direction. There would be no change in the locations, numbers, timing, or method of livestock grazing within these national forests. Depending upon site-specific management, beneficial or adverse impacts of grazing on GRSG or their habitat would continue. Grazing practices can be used as a tool that benefits sage grouse by reducing fuel load, protecting intact sagebrush habitat and increasing habitat extent and continuity. However, grazing at inappropriate intensity, season, or location may alter or degrade sagebrush ecosystems, or reduce cover and structure that could negatively impact lek sites or reduce the suitability of nesting and brood-rearing habitat that could negatively impact sage-grouse nesting success. Other potential effects on GRSG could include: degradation of meadow/wetland/spring/stream habitat crucial for brood rearing habitat; competition with sage-grouse for forbs; occasional trampling of birds or nests or disturbance and temporarily displacement of lekking or nesting sage-grouse during movement or trailing operations.

Under current direction, the Forest Service may utilize a number of mechanisms to reduce impacts from grazing on sage-grouse, if necessary. The only planning-level decision available is to decide where areas would be open and closed to livestock grazing. Future impacts would be eliminated in areas closed to grazing, but past impacts would likely persist for some time, and closing grazing may result in other harmful impacts. Other changes in management would occur at the implementation level during the permit renewal process which occurs every ten years and for which subsequent NEPA analysis would be conducted. At the implementation level, changes in grazing practices or systems can be considered, which could reduce grazing intensity or change the season of use, for example. In addition, changes in grazing management within riparian and wet meadows can reduce impacts in these important seasonal habitats.

Cumulative Effects

Under Alternative A, within Management Zone IV, livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health. Therefore, the direct and indirect effects of livestock grazing on Greater Sage-Grouse in Management Zone IV from the management actions under Alternative A, which would be largely neutral for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development – Direct and Indirect Effects

Under Alternative A, all mineral leasing and development and wind energy development would continue to be managed under current direction. As such, this alternative would be expected to cause the greatest amount of direct and indirect impacts on GRSG and their habitat including habitat loss, degradation, and fragmentation by roads, pipelines and power lines, higher levels of noise, increased presence of roads/humans, and a larger number of anthropogenic structures in an otherwise open landscape that could result in abandonment of leks, decreased attendance at the leks that do persist, lower nest initiation, poor nest success, decreased yearling survival, and avoidance of energy infrastructure in important wintering habitat.

Cumulative Effects

Management under Alternative A would maintain the current acreage open to energy development. Current energy development activities would continue under Alternative A. The closure of areas to energy development would not be instituted as they would be under most of the action alternatives. Therefore, under Alternative A, the direct and indirect effects of energy development, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from energy development in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Under this alternative there would be no changes to the current National Forest System Roads, transportation plan, or recreation management on these forests. Under current management, travel on Forest Service-administered lands is limited to existing/designated roads. There would be minimal seasonal restrictions. In general, the more acres and miles of routes that are designated in an area, the greater the likelihood of habitat fragmentation and disturbance on GRSG. In addition, less restrictive travel conditions usually mean higher concentrations of human use adjacent to motorized routes. This can cause disruption of nesting activities, abandonment of young and temporary displacement. In addition, impacts from roads may include habitat loss from road construction, noise disturbance from vehicles, and direct mortality from collisions with vehicles. Roads may also present barriers to migration corridors or seasonal habitats. This alternative has the highest potential to impact GRSG due to the lack of restrictions on activities that cause these effects. Therefore all direct and indirect effects on the species and its habitat would likely cause current trends to continue.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on recreational disturbances to GRSG would not be instituted as they would be under the action alternatives. Under Alternative A, the direct and indirect effects from recreation management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to Greater Sage-Grouse in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).



Alternative B

Infrastructure – Direct and Indirect Effects

Under this alternative, all PPH would be managed as exclusion areas and PGH would be managed as an avoidance area for new ROW and SUA projects. It would also include the following within PPH: co-location of new ROWs or SUAs with existing infrastructure; removal, burying, or modification of existing power lines; co-location of new facilities with existing facilities, where possible; use of existing roads, or realignments to access valid existing rights that are not yet developed or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads; and a 3% threshold on anthropogenic disturbance (including, but not limited to, highways, roads, geothermal wells, wind turbines, and associated facilities) within PPH. This alternative would benefit the GRSG by maximizing connectivity and minimizing loss, fragmentation, degradation and disturbance of sagebrush habitats within PPH by power lines, communication towers and roads. GRSG and GRSG habitat outside PPH would likely experience little change in direct or indirect effects. However, if the 3% development threshold ended up concentrating new infrastructure development outside PPH rather than just reducing it within PPH, the extent of impacts on GRSG and GRSG habitat outside PPH could increase under Alternative B relative to Alternative A. Alternative B would reduce the likelihood of collisions addressed in Alternative A. These conservation measures make this alternative more protective than Alternatives A, although the general effects would be the same.

Cumulative Effects

Management actions associated with infrastructure management under Alternative B would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels – Direct and Indirect Effects

Under Alternative B, suppression would be prioritized in PPH to protect mature sagebrush habitat. Suppression would be prioritized in PGH only where fires threaten PPH. Alternative B does not include any other specific management for wildland fire management in PGH. Fuels treatments would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, implementing fuel breaks, applying seasonal restrictions, protections for winter range, and requiring use of native seeds. Post-fuels treatments in PPH would be designed to ensure long-term persistence of seeded areas and native plants and maintain 15 percent canopy cover. Fuels treatments in PPH would also monitor and control for invasive

species, and fuels management BMPs would incorporate invasive plant prevention measures. Overall, these conservation measures would reduce the threat of wildfire to sagebrush compared to Alternative A though, in general, the effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

Management actions under Alternative B, with respect to fire and fuels management, would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities and pre-suppression planning and staging for maximum protection of Greater Sage-Grouse habitat would be included. Fuels treatment activities would focus on protecting Greater Sage-Grouse habitat, primarily within PPH. Therefore, the direct and indirect effects of fire to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Under Alternative B, weed control efforts would continue to be managed under current direction (see Alternative A). However, GRSG vegetation management conservation measures included in Alternative B would benefit weed control efforts by prioritizing restoration efforts, including reducing invasive plants in PPH, in order to benefit GRSG habitats. BLM and Forest Service would require the use of native seeds and would design post-restoration management to ensure the long-term persistence of the restoration efforts, and would consider changes in climate when determining species for restoration. Invasive species would also be monitored and controlled after fuels treatments and at existing and new range improvements in PPH. Alternative B incorporates fewer invasive plant management measures in PGH compared to PPH. However, many of the same habitat restoration and vegetation management actions would be applied, including prioritizing the use of native seeds. Together, these measures would reduce impacts from invasive plants described under Alternative A although the effects of the treatments would be the same.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat, under Alternative B would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past,



present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment – Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment but the vegetation management conservation measures described above in Invasive Plants and the fuels treatments described above in Fire and Fuels would also likely reduce juniper encroachment and its general effects on GRSG and GRSG habitat as described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing – Direct and Indirect Effects

Alternative B would implement a number of beneficial management actions in PPH to incorporate sage-grouse habitat objectives and management considerations into livestock grazing management. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Several management actions to reduce impacts from livestock grazing on sage-grouse general habitat would be incorporated, including the potential to modify grazing systems to meet seasonal sage-grouse habitat requirements and management to improve the conditions of riparian areas and wet meadows. Together these efforts would reduce the potential for negative impacts from grazing on GRSG described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative B would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development – Direct and Indirect Effects

Under this Alternative, PPH would be closed to new fluid mineral leasing, non-energy leasable mineral leasing, and mineral material sales, and it would be proposed for withdrawal from mineral entry. In addition, mandatory BMPs would be applied as conditions of approval on fluid mineral leases. No surface occupancy (NSO) would be stipulated for leased fluid minerals within PPH. A 3% disturbance cap to activities in PPH would be applied and numerous conservation measures would be implemented to reduce impacts from mineral exploration and development activities in PPH. These measures would reduce the impacts of energy development on GRSG and GRSG habitat, as described under Alternative A, in PPH.

Alternative B does not include specific management for fluid, saleable, locatable, and non-energy leasable minerals in PGH or wind energy in PPH or PGH. As a result, current trends would continue and impacts would be similar to those under Alternative A. Although Alternative B does not directly address wind energy development or industrial solar development, its 3% threshold for anthropogenic disturbances (see Infrastructure) would apply to energy development and would limit the extent of all types of energy development in PPH.

Cumulative Effects

Management actions associated with energy development under Alternative B would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation – Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative B conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative B, only recreational SUAs which are neutral or beneficial to sage-grouse would be permitted in PPH and there would be limited opportunities for road construction in PPH, with minimum standards applied and no upgrading of current roads. Although general impacts would be the same as Alternative A, Alternative B is more restrictive than Alternative A. It would likely reduce loss, fragmentation and disturbance to GRSG leks and nesting habitat by minimizing human use and road construction or upgrades and reduce automotive collisions with individual birds.



Cumulative Effects

Management actions associated with recreation management under Alternative B would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to Greater Sage-Grouse would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative C

Infrastructure – Direct and Indirect Effects

Alternative C would have the most protective measures for GRSG. Alternative C would extend many of the Alternative B conservation measures to all occupied habitat and all occupied habitat would be managed as an exclusion area for new ROW projects. As a result, management under Alternative C would encourage consolidation of sage-grouse habitats, facilitating habitat conservation and management and reduce the impacts of infrastructure on GRSG described under Alternatives A and B in a wider area than Alternative B. Unlike Alternative B, that would permit wind energy siting in PPH provided a development disturbance threshold of 3% were not exceeded, Alternative C would not permit wind energy development siting in all occupied GRSG habitat. This would reduce the effects of wind energy on GRSG as discussed under Alternative A more so than Alternative B.

Like alternative B, Alternative C would aim to remove, bury, or modify existing power lines, but would apply to all occupied GRSG habitat, having the potential to disturb more GRSG and habitat in the short term but, perhaps, having a greater likelihood of reducing the potential for collisions and electrocution in the long term. This alternative would be expected to have the least negative impacts and most positive impacts to GRSG and GRSG habitat.

Cumulative Effects

Management actions associated with infrastructure management under Alternative C would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels – Direct and Indirect Effects

Alternative C is similar to Alternative B except that it is more protective of GRSG and GRSG habitat because prioritization of suppression would apply to PGH in addition to PPH (i.e., All Occupied Habitat), it includes measures to manage vegetation for good or better ecological condition, and it focuses fuel breaks on areas of human habitation or significant disturbance. The general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

The cumulative effect of management actions related to fire and fuels under Alternative C, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative C would maintain the direction described under Alternative A along with additional provisions that would limit invasive weed spread in all occupied GRSG habitat. Vegetation management would benefit weed control efforts, by prioritizing restoration, including reducing invasive plants, in order to benefit sage-grouse habitats. In all cases, local native plant ecotype seeds and seedlings would be used. These policies would reduce impacts from invasive plants described under Alternative A and have similar impacts associated with treatment, but would include additional conservation measures specific to limiting the spread of invasive plants. In addition, grazing would be eliminated within all occupied sage-grouse habitat, eliminating the potential for invasive plant spread by livestock. This would make Alternative C more protective of GRSG and GRSG habitat than Alternatives A or B.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative C would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment but the weed control policies described above in Invasive Plants and the fuels treatments described above in Fire and Fuels would also likely reduce juniper encroachment and the general effects of it on GRSG and GRSG habitat as described under Alternative A.



Cumulative Effects

Under Alternative C, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing – Direct and Indirect Effects

Under Alternative C, grazing would be eliminated within all occupied sage-grouse habitat (PPH and PGH) reducing the potential for both negative and positive grazing-related impacts on GRSG and GRSG habitat discussed under Alternative A more so than any of the other alternatives. No new water developments or range improvements would be constructed in occupied habitat and only habitat treatments that benefit GRSG would be allowed. Retirement of grazing would be allowed and fast tracked.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), livestock grazing would be eliminated within all occupied GRSG habitat, providing a net benefit to GRSG habitat. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from management under Alternative C, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development – Direct and Indirect Effects

Alternative C would expand several of the protections under Alternative B, including exclusion of new ROWs, to all occupied habitat as well as prohibit new exploration permits for unleased fluid minerals (also see Infrastructure section above). Like Alternative B, the conservation measures proposed under Alternative C would reduce many of the impacts of energy development on GRSG described under Alternative A, but to a larger degree than any of the other alternatives.

Cumulative Effects

Management actions under Alternative C with respect to energy development would increase protection of all occupied habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all occupied habitat to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Alternative C is similar to Alternative B except that it would apply to all occupied habitat and, therefore, protect a larger area of GRSG habitat than Alternative B from the same types of general recreational impacts described in Alternative A.

Cumulative Effects

Recreation management actions under Alternative C would increase protection of all occupied Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to Greater Sage-Grouse would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative D

Infrastructure – Direct and Indirect Effects

Under Alternative D, Priority, Medial, and General Habitat would be designated ROW avoidance areas, as opposed to ROW exclusion areas for PPH under Alternative B or all occupied habitat under Alternative C, and new authorizations would be co-located, when possible, within or adjacent to existing disturbance/footprint to avoid disturbance to GRSG or GRSG habitat. In Priority areas, a subset of PPH, new authorizations for the following would not be allowed: larger transmission facilities greater than 50 kV, wind and solar developments, commercial geothermal development, nuclear, gas or oil developments, airports, ancillary facilities associated with any of the aforementioned development, paved or gravel roads or landfills. In Medial Habitat, wind and solar development would be restricted where adverse effects could not be mitigated; General Habitat would be an avoidance area for wind or solar reauthorization.

New ROWs and SUAs allowed in Priority or Medial Habitat would not result in a net loss of GRSG habitat in the respective Priority or Medial area. New authorizations or facilities would be sited outside of the 3 km (1.86 mile) lek avoidance buffer areas unless NEPA analysis suggested a greater or lesser required distance. New power and communications lines in Priority, Medial or General Habitat outside of existing ROWS would be required to be buried; existing lines would be evaluated for burying, modification or relocation to at least 3km (1.86 miles) from occupied leks or winter habitat. These conservation measures would reduce the amount of impacts from infrastructure relative to existing management under Alternative A and may provide some additional reduction in impacts over Alternative B, but would not be as protective of GRSG as the measures proposed in Alternative C.

Cumulative Effects

Management actions associated with infrastructure under Alternative D would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather



than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels – Direct and Indirect Effects

Alternative D would prioritize fire suppression in Priority and Medial Habitats, which together equal PPH. Unlike Alternative B, it would also include the following conservation measures in Priority, Medial and General Habitat to strategically reduce fire effects: pre-planning and firefighter training in sagebrush management as related to suppression activities; designing and implementing fuels treatments with an emphasis on maintaining, protecting and expanding sage grouse habitats; and considering conifer encroachment areas as areas to manage wildfire for resource benefit. Overall, Alternative D would limit damage to sagebrush habitat areas from wildfire. Although Alternative D is similar to Alternatives B and C in prioritizing fire suppression, it would prioritize it in more GRSG habitat than Alternative B (only PPH) and less than Alternative C (all occupied habitat). The general effects of fire suppression and fuels treatments would be similar to those described in Alternative A. Delineating conifer encroachment areas in Priority, Medial and General Habitat as areas to manage wildfire for resource benefit could protect GRSG habitat by reducing the amount of suppression-related juniper encroachment, and reducing fuel loadings that can contribute to larger-scale wildfire events that confound control efforts due to extreme fire behavior.

Cumulative Effects

The cumulative effect of management actions under Alternative D, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Under Alternative D, the direction described under Alternative A would be maintained making it the same in terms of impacts from invasive plants and associated treatments. Similar to those of Alternative B, vegetation management conservation measures included in this alternative would benefit weed control efforts in the long term by prioritizing restoration efforts, including reducing invasive plants, and monitoring and controlling invasive species after construction, fuels treatments and at new range improvements. Unlike Alternative B, monitoring and controlling invasive species after fuels treatments and at new range improvements would apply to Priority, Medial, and General Habitat rather than only PPH.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to GRSG. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment – Direct and Indirect Effects

Under Alternative D, implementation of vegetation rehabilitation projects designed to achieve the greatest improvement in sage-grouse abundance and distribution, including those that address conifer encroachment, in Priority, Medial and General habitat would be prioritized. Factors contributing to higher emphasis would include the likelihood of conifer encroachment into sage-grouse habitat. In addition, vegetation management tools described above for Invasive Plants and Fire and Fuels would help to reduce conifer encroachment in Priority, Medial and General Habitat, and to reduce the impacts of conifer encroachment on GRSG and GRSG habitat that were described under Alternative A. Impacts from treatments associated with this alternative would also be the same as those described for vegetation treatments under Invasive Plants and Fire and Fuels under Alternative A. Alternative D would address conifer encroachment more so than Alternatives A, B or C and, therefore, is more protective of GRSG and GRSG habitat than those alternatives.

Cumulative Effects

Under Alternative D, within Management Zone IV, conifer encroachment measures for invasive plants having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing – Direct and Indirect Effects

Management under Alternative D would include the same measures as Alternative B, but expands many of those measures to Priority, Medial habitat and General Habitat. It would also manage for vegetation composition (including riparian and lentic areas) and structure consistent with appropriate sage-grouse seasonal habitat objectives relative to site potential. Both Alternatives D and F apply the same conservation measures as Alternative B, but Alternative B largely applies only to PPH whereas Alternative D applies to Priority, General, and Medial habitat and Alternative F applies to all occupied habitat. Together, these efforts would reduce the potential for negative grazing-related impacts on GRSG and GRSG



habitat described under Alternative A more so than Alternatives B, or E, but less than Alternative C. It would be similar to Alternative F.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to GRSG. Therefore, the direct and indirect effects of livestock grazing on Greater Sage-Grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to Greater Sage-Grouse.

Energy Development – Direct and Indirect Effects

Alternative D would close most Priority Habitat to future fluid mineral leasing and non-energy minerals leasing and development. It would place additional stipulations and seasonal restrictions on existing and future fluid mineral leases in certain Medial Habitat areas: leasing would be allowed subject to standard seasonal and daily stipulations in breeding and winter habitat and well density would not be allowed to exceed 1/640 acres; NSO of 3 km (1.86 miles) would be allowed around leks. In addition, Medial Habitat would be closed to non-energy minerals leasing. In General Habitat, NSO would be allowed for non-energy minerals leasing, or within 3 km (1.86 miles of Priority or Medial Habitat), or for future fluid mineral leasing within 3 km of occupied leks. Otherwise, General Habitat would be available for fluid or non-energy minerals leasing subject to applicable seasonal and daily timing restrictions. Geophysical exploration would be allowed in Priority, Medial and General Habitat, subject to seasonal timing restrictions and/or other restrictions that may apply. These actions would probably reduce the impacts of mineral development on GRSG discussed under Alternative A to a level similar to that of Alternative B.

Unlike Alternative B, Alternative D directly addresses solar and wind energy development. Solar and wind energy development would not be allowed within Priority Habitat. In Medial Habitat, wind and solar energy development would be restricted where adverse effects could not be mitigated. Ancillary facilities such as roads, electric lines, etc. could potentially be authorized provided mitigation prevents any net loss of sage-grouse habitat. General Habitat would be considered avoidance areas for wind and solar development. These actions could reduce negative impacts associated with energy development on GRSG that occur in Medial Habitat relative to Alternatives A and B.

Cumulative Effects

Under Alternative D, within Management Zone IV, some of the current management direction associated with energy development would continue, however, additional emphasis on protecting existing sagebrush would be included. Therefore, the direct and indirect effects of energy development to Greater Sage-Grouse in Management Zone IV from the added management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future

actions would not substantially increase impacts to Greater Sage-Grouse (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Alternative D would apply the following conservation measures to reduce the potential negative impacts of recreation on GRSG in Priority, Medial and General Habitat: Special Recreation Permits would be analyzed on a case-by-case basis and use would be directed away from sensitive seasons and/or areas; certain developed recreation sites and associated facilities would be designed or designated to direct use away from sensitive areas; and seasonal restrictions for authorized activities would be incorporated. Alternative D would probably be more protective of GRSG and GRSG habitat than Alternatives A, B or C because it includes additional measures.

Cumulative Effects

Alternative D would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to Greater Sage-Grouse would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative E1

Infrastructure – Direct and Indirect Effects

Alternative E1 is similar to Alternative B but not as restrictive. Core and Important habitat areas would generally be identified as new ROW avoidance areas. Within habitat, new infrastructure ROWs or SUAs would be co-located with existing infrastructure. In Important areas, new infrastructure could be built if habitat protection criteria are met. General impacts on GRSG and GRSG habitat under Alternative E1 would be the same as those for Alternative A. Because Alternative E1 includes fewer limitations on infrastructure within sage-grouse habitat than Alternative B, the potential for some infrastructure related impacts on GRSG may be higher under Alternative E1. However, unlike Alternative B, Alternative E1 does not promote the undergrounding of utilities and, therefore, it would not reduce the potential for collisions with GRSG.

While Alternative E1 would reduce the likelihood of impacts from infrastructure compared to existing management under Alternative A, it would not be as protective as Alternative D, which would designate Priority, Medial and General Habitat as new ROW avoidance areas, or Alternatives C or F, which would generally manage all occupied habitat as a new ROW exclusion area.



Cumulative Effects

Management actions associated with infrastructure under Alternative E1 would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to Greater Sage-Grouse

Fire and Fuels – Direct and Indirect Effects

Alternative E1 would focus resources to reduce wildfire in sagebrush areas, prioritizing fire suppression and maintaining fuel breaks in Core and Important habitats. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to Core and Important habitat areas would be reduced to limit fire damage. This alternative is unique compared with the others in that adaptive management would be used to account for acres of habitat lost to fire in Core and Important habitat. These measures would reduce the threat of wildfire to sagebrush and reduce damage to GRSG habitat, but the general effects of fire suppression and fuels treatments would be similar to those of Alternative A. Alternative E1 would be the most protective in terms of GRSG and GRSG habitat due to the combination of suppression prioritization and adaptive management measures, but it would have similar short-term negative impacts on GRSG and GRSG habitat as Alternatives B, C and D from fuel break construction and maintenance.

Cumulative Effects

Management actions under Alternative E1, with respect to fire and fuels management, would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative E1 would maintain the policies described under Alternative A along with additional measures to protect Core, Important and General habitat areas. Core, Important and General habitat would be actively managed to prevent invasion. Eradication and control of invasive plants threatening sage-grouse habitat would be actively pursued in Core and Important habitat and invasive plants would be monitored for three years following a fire in these habitat areas. The policies under Alternative E1 would significantly reduce the impacts

from invasive plants described in Alternative A and would be the most protective in terms of controlling invasive plants in GRSG habitat, but the short-term impacts on GRSG habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to GRSG. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment – Direct and Indirect Effects

Under Alternative E1, the Forest Service would prioritize the removal of conifers using methods that would minimize disturbance to GRSG and GRSG habitat, to the extent possible, in Core and Important habitat. Conifer encroachment projects would focus on areas with highest restoration potential, as evidenced by low canopy cover, existing sagebrush understory, and adjacent sage-grouse populations, and would not be conducted in juniper stands older than 100 years. In addition, as described above Invasive Plants, Core, Important and General habitat would be actively managed to prevent invasion. Unlike Alternative D, Alternative E1 contains a specific restoration measure addressing conifer encroachment. However, Alternative D addresses conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area. Although treatments associated with these measures have the potential to negatively impact GRSG and GRSG habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would benefit GRSG and GRSG habitat in the long term by reducing the impacts from conifer encroachment described in Conifer Encroachment under Alternative A. Negative impacts would be expected to be negligible due to the prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E1, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.



Livestock Grazing – Direct and Indirect Effects

Alternative E1 takes a very different approach to livestock grazing than the other alternatives. Management under Alternative E1 would add sage-grouse guidelines to grazing management plans in Core and Important habitat. Rangeland health assessments and permit renewal assessments would be conducted in Core and Important habitat; allotments within Core habitat that have declining sage-grouse populations would be prioritized, followed by allotments within Important habitat that contain breeding habitats with decreasing lek counts. If assessments determined that livestock grazing were limiting the achievement of desired habitat characteristics, grazing permits would be adjusted during the renewal process to include measures to achieve desired conditions. These measures would reduce the potential for negative impacts of livestock grazing on GRSG and GRSG habitat (see Livestock Grazing under Alternative A) more so than Alternative A, but less than Alternative C, that would eliminate grazing in all occupied habitat. However, the measures under Alternative E1 would have more potential to retain the positive benefits of livestock grazing (see Livestock Grazing under Alternative A) than Alternative C.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development – Direct and Indirect Effects

Alternative E1 would follow much of the current guidance on leasing and development of mineral resources (Alternative A) but would add measures to minimize impacts to sage-grouse: (1) in Core and Important habitat, exploration activities associated with oil and gas development that used temporary roads would be permissible if site disturbance were minimized; (2) in Core and Important habitat, surface occupancy associated with oil and gas development would not be allowed unless the surface development would not accelerate and/or cause declines in sage-grouse populations; (3) surface disturbance from roads associated with fluid mineral development would be limited to three percent and five percent of suitable habitat per an average of 640 acres in Core and Important habitat, respectively; and (4) wind energy development projects would comply with all infrastructure development best management practices and the 2012 U.S. Fish and Wildlife Service Wind Energy Guidelines. Impacts on GRSG from energy development activities would essentially continue as described in Alternative A, although their magnitude and spatial distribution would differ. The effects of wind energy on GRSG, as described in Infrastructure and Energy Development under Alternative A, would be expected to be reduced as the result on compliance with FWS Wind Energy Guidelines.

Cumulative Effects

Management actions associated with energy development under Alternative E1 would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation – Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative E1 conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative E1, timing and seasonal restrictions would be applied to activities known to disturb nesting sage-grouse. Although this approach would reduce the impacts of recreation on sage-grouse described in Alternative A compared to current management under Alternative A, Alternative E1 would probably be less protective of GRSG than the other action alternatives.

Cumulative Effects

Management actions associated with recreation management under Alternative E1 would increase protection of Greater Sage-Grouse, thereby benefitting Greater Sage-Grouse. Under Alternative E1, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to Greater Sage-Grouse would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative E2

Infrastructure

For all ROWs/SUAs in Priority Habitat, management stipulations and conditions would focus on mitigating direct disturbance to GRSG during construction. Priority Habitat would be designated as an avoidance area for new ROWs/SUAs, which is less protective of GRSG habitat than Alternatives B, C or F but similar to Alternatives D and E1. Similar to Alternatives B, C, and F, Alternative E2 would include a disturbance cap. However, Alternative E2 would apply a 5% disturbance cap as opposed to a 3% disturbance cap and the areas over which the caps would apply and the types of disturbances that contribute toward the caps would differ. Similar to Alternative D, Alternative E2 directly addresses siting of wind energy facilities, however, Alternative E2 would be less restrictive than

Alternative D by avoiding rather than excluding siting of wind energy developments in Priority Habitat, and applying BMPs and industry, state and federal stipulations in cases where siting in Priority Habitat could not be avoided. Similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities. Electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, new linear transmission features would be sited in existing corridors, or at a minimum, in concert with existing linear features in GRSG habitat. Therefore, in this respect, Alternative E2 would not be as likely to prevent collisions with GRSG as Alternatives B, C, D or F and, therefore, would not be as protective of GRSG. GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat.

Cumulative Effects

Management actions associated with infrastructure under Alternative E2 would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels

Alternative E2 would implement the following unique strategies to address response to fire and reduce the general effects of fire on GRSG as discussed under Alternative A: create and implement a statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority habitat; allow the use of fire-retardant vegetation that would buffer areas of high quality GRSG habitat from catastrophic fire; use prescriptive fire with caution in sagebrush habitat and only at higher elevations and in a manner designed prescriptively to benefit GRSG; conduct effective research into controlling fire size and protect remaining GRSG areas that are adjacent to high-risk cheatgrass areas; focus research efforts on effective reclamation and restoration of landscapes altered by wildfire; manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush (80%), which would be available to GRSG above snow during a severe winter; and coordinate the needs and efforts related to GRSG with the State of Utah committee that was formed to develop a collaborative process to protect the health and welfare by reducing the size and frequency of catastrophic fires. Similar to Alternative B, Alternative E2 would consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. Overall, the protective benefits of Alternative E2 on GRSG and GRSG habitat would likely be most similar to that of Alternative B, but it would have similar short-term negative impacts on GRSG and GRSG habitats as those described under Alternative A for suppression and prescribed fire.

Cumulative Effects

Management actions under Alternative E2, with respect to fire and fuels management, would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Invasive Plants

Alternative E2 directs land managers to aggressively respond to new infestations to keep invasive species from spreading. Every effort would be made to identify and treat new infestations before they become larger problems. Additionally, containment of known infestations in or near sagebrush habitats would be a high priority for all land management, and vegetation management tools described above for Fire and Fuels and below for Livestock Grazing would help to reduce the general impacts of invasive plants on GRSG as described under Alternative A. Alternative E2, like Alternative E1, probably would be more protective in terms of controlling invasive plants in GRSG habitat than any of the other alternatives, but the short-term negative impacts on GRSG habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to GRSG. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively remove encroaching conifers and other plant species to expand GRSG habitat where possible. Although treatments associated with the measures in Alternative E2 have the potential to negatively impact GRSG and GRSG habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would provide a long-term benefit to GRSG and GRSG habitat by reducing the negative impacts of conifer encroachment described in Conifer Encroachment under Alternative A. In comparison, Alternative D would address



conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area which would provide a greater benefit to GRSG and GRSG habitat. Alternative E2 is probably most similar to Alternative E1, except unlike Alternative E1, Alternative E2 does not include a stipulation for prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E2, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing

Alternative E2 would continue to make GRSG priority and general habitat available for livestock grazing. Should site-specific concerns be raised about the effect of grazing upon GRSG habitat, and such effects are documented over a sufficiently long time-frame, corrective management actions would be addressed through the application of BMPs. Incompatible grazing strategies would be addressed through established rangeland management practices consistent with the maintenance or enhancement of habitat. GRSG seasonal habitat (leks, nesting/early brood rearing, late brood rearing and winter) requirements would be considered when managing sagebrush rangelands. Water developments would be designed to enhance mesic habitat for use by GRSG and maintain adequate vegetation in wet meadows. Within priority habitat, GRSG stipulations would take precedence over stipulations for other species if conflicts occur, if otherwise allowable by law. Livestock fences would be located away from leks and employ the NRCS fence standards to reduce bird strikes. New infestations of invasive exotic plants would be responded to aggressively to prevent spreading. Overall, measures associated with livestock grazing under Alternative E2 would probably be less protective of GRSG and GRSG habitat than those under Alternatives B, C, D or F.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to GRSG. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Under Alternative E2, Priority Habitat would be considered to be suitable for further coal leasing and coal that would be extracted through underground mining. Priority and general

habitat that is not already withdrawn or proposed for withdrawal would be available for locatable mineral entry. Priority habitat would be open to mineral materials and oil and gas leasing and would be an avoidance area for wind energy development, although it would not be precluded. All of the aforementioned forms of energy development, as well as non-energy leasable mineral lands, solid mineral exploration and geophysical exploration activities, would be subject to the following stipulations, as well as BMPs accepted by industry and state and federal agencies: new permanent disturbance, including structures, fences, and buildings should not be located within the occupied lek itself; permanent disturbance should not be allowed within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek; disturbance outside the lek should not produce noise which rises more than 10 db above the ambient (background) level at the edge of the lek during breeding season; time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist; disturbance in Priority Habitat would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance in Priority Habitat is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided.

All existing fluid mineral uses are explicitly recognized by this alternative and would not be affected by the implementation of this alternative. The GRSG conservation measures identified in the associated NEPA documents for each of these projects would continue to be implemented to protect GRSG and its habitat. Provisions of this alternative would not be added to the measures identified each specific project.

GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat. Similar to Alternative E1, impacts on GRSG from energy development activities under Alternative E2 would essentially continue as described in Alternative A, although somewhat reduced by the application of BMPs.

Cumulative Effects

Management actions associated with energy development under Alternative E2 would increase protection of Greater Sage-Grouse and GRSG habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation

Alternative E2 would limit or reduce impacts from recreational activities by preventing new permanent disturbance, including structures, fences, and buildings, within occupied leks or



within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek. It would limit disturbance outside of leks to no more than 10 db above the ambient (background) level at the edge of the lek during breeding season. Time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist.

Within priority habitat (nesting and brood-rearing areas, winter habitat, other habitat): disturbance would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided. Alternative E2 has the potential to be more protective of GRSG and GRSG habitat than any of the other alternatives because measures to reduce impacts would apply to all recreational activities as opposed to only SUAs or camping.

Cumulative Effects

Management actions associated with recreation management under Alternative E2 would increase protection of Greater Sage-Grouse, thereby benefitting Greater Sage-Grouse. Under Alternative E2, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to Greater Sage-Grouse would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative F

Infrastructure – Direct and Indirect Effects

Land uses and realty management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The effects on GRSG and GRSG habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of infrastructure management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Fire and Fuels – Direct and Indirect Effects

Fire and fuels management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The impacts on GRSG would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of fire and fuels management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Invasive plants management under Alternative F would essentially be the same as that under Alternative B. Together, these measures would reduce impacts from invasive plants on GRSG habitat, as described under Alternative A, but the effects of the treatments would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of invasive plants management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative F does not directly address conifer encroachment and would maintain the invasive plant direction described under Alternative A. Although the types of impacts would be the same, the conservation measures described above in Invasive Plants and the fuels treatments described above in Fire and Fuels would likely reduce the magnitude of the impacts on GRSG habitat associated with conifer encroachment relative to Alternative A. Because those measures generally would apply throughout occupied GRSG under Alternative F whereas they would be limited to PPH under Alternative B, Alternative F could provide an additional reduction in the magnitude of impacts on GRSG habitat from conifer encroachment relative to Alternative B.

Cumulative Effects

Refer to Alternative B. The cumulative effects of conifer encroachment management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Livestock Grazing – Direct and Indirect Effects

Alternative F would include beneficial management actions similar to those of Alternative B except they would apply in all GRSG habitats. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce the potential for negative impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Together these efforts would reduce the impacts from grazing on GRSG described under Alternative A.

Cumulative Effects

Under Alternative F, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative F would provide an added benefit to GRSG. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative F, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.



Energy Development – Direct and Indirect Effects

Under Alternative F siting of wind energy development would be prevented in PPH; PPH would be closed to new fluid mineral leasing, non-energy leasable mineral leasing, and mineral material sales; it would be proposed for withdrawal from mineral entry; no new surface occupancy (NSO) would be stipulated for leased fluid minerals and a 3% disturbance cap would be applied. Numerous conservation measures would be implemented to reduce impacts from mineral exploration and development activities in PPH. Like Alternative B, Alternative F does not include specific management for locatable, or saleable or non-energy minerals in PGH. Unlike Alternative B, Alternative F directly addresses wind energy and fluid minerals development outside of PPH: wind energy would be sited at least five miles from active sage-grouse leks and at least four miles from the perimeter of sage-grouse winter habitat and areas within 4 miles of active sage-grouse leks would be closed to new fluid minerals leasing. Alternative F, although similar to Alternative B, would reduce the impacts of energy development on GRSG and GRSG habitat, as described under Alternative A, more so than Alternative B because it addresses siting of wind energy and fluid minerals leasing outside of PPH more thoroughly than alternative B.

Cumulative Effects

Management actions associated with energy development under Alternative F would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative F, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation – Direct and Indirect Effects

Alternative F would follow the same general approach as Alternative A, however, like Alternative B, only recreational SUAs that are neutral or beneficial to GRSG would be permitted in PPH. In addition, within all occupied habitat, camping areas within 4 miles of active leks would seasonally be closed. The general recreational effects of Alternative F would be the same as those for Alternatives A and B although Alternative F would be somewhat more protective of GRSG than Alternative B due to the seasonal closures.

Cumulative Effects

Management actions associated with recreation management under Alternative F would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to Greater Sage-Grouse would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative

F, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

M.6.2 Columbian sharp-tailed grouse (*Tympanuchus phasianellus*)

Distribution [R4 Sensitive – Boise NF, Caribou NF, Sawtooth NF, Targhee NF]

The Columbian sharp tailed grouse occurs in southwestern Canada, Washington, Oregon, Idaho, Montana and Wyoming. It is not known if this bird nests on the Boise NF, but it is assumed that some do. Idaho Department of Fish and Game records show one sharp-tailed grouse record for the Forest (ICDC 2002 in Nutt et al. 2010).

Most of the Caribou-Targhee National Forest is located at a higher elevation than this species is typically found. While there are numerous leks documented adjacent to the Caribou National Forest, none are located on Caribou NF lands. Sagebrush and grassland habitats on the Forest may provide nesting, brood-rearing and winter habitat. Survey data for lek attendance on leks adjacent to the Caribou NF is very patchy. Within the Targhee National Forest, there appears to be habitat for sharp-tailed grouse in the Shotgun Valley, along the western boundary of the Ashton-Island Park District (similar to sage-grouse) and on the southern portions of the Dubois District east of I-15. Habitat on the forest is likely brood-rearing habitat, as opposed to nesting or wintering habitat.

Columbian sharp-tailed grouse populations occur in three sub-basins within the Sawtooth National Forest; Curlew Valley, Raft River, and Salmon Falls Creek. Sharp-tailed grouse populations are small and isolated, and it is anticipated that this species uses adjacent Bureau of Land Management (BLM) and private lands. Forest Service administered lands are believed to provide important fall and wintering requirements, and these habitats are generally within the mountain shrub communities. It is not known definitively if this species nest on Forest Service administered lands, but it is assumed that some do.

Habitat Associations and Threats

Sharp-tailed grouse are found in low-elevation native shrub-grassland year-round. Abundant grass composition appears to be important within shrub/grassland communities during all life stages. Through the summer, the shrubs are used for cover, and the grass and forbs are used as food, including insects that are available in these habitats. During the winter, tall shrubs other than sagebrush (serviceberry, chokecherry, bitter brush, bitter cherry, hawthorn, and aspen) increase in importance for food supply because they are above snow cover and riparian cover types become a critical habitat component. These habitats are referred to as mountain shrub communities and shrub-dominated riparian areas, and include areas with the moderate to high canopy cover.

Much of the sharp-tailed grouse's low-elevation historical habitat has been converted to agriculture production. Another concern has been the extensive modification of some of these communities due to wildfire.



Population, Status, Abundance and Trend

The Columbian sharp-tailed grouse has a global status ranking of G4 (vulnerable - at moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors and a state (ID) ranking of S1 (critically impaired - At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors) (NatureServe 2010).

Caribou National Forest and Curlew National Grassland MIS Monitoring

The Columbian sharp-tailed grouse is a Caribou National Forest MIS species representing grasslands and open canopy sagebrush habitats. In 1995, the sharp-tailed grouse was petitioned for listing under the Endangered Species Act. In October 2000, the US Fish and Wildlife Service found that they were not warranted for listing. The review showed that while smaller, isolated populations may currently be at risk, there are numerous larger populations that are relatively secure and possibly increasing. They have undergone significant range-wide declines; the species now occupies less than 10% of its former range. However, Idaho has the best remaining populations, with 75% of the remaining birds (Paige and Ritter 1999). In southeastern Idaho, the largest concentrations of sharp-tailed grouse are in Fremont, Bonneville and Oneida counties. Birds from the area around the Curlew Grasslands have been used to transplant into other areas of Idaho and out-of-state.

Survey data for lek attendance on leks adjacent to the Caribou NF is very patchy. For example, in 1986, 2 leks were surveyed; in 1992 there were 17 leks surveyed; and in 1998 there were 7 leks monitored. There are or have been 49 leks known within 2 miles of the Forest, but none have long-term data. Because of the lack of data, it is not known how many of these are currently active. Because of the very limited data, no attempt will be made to talk about population trends in the vicinity of the Caribou. However, as mentioned previously, populations in southeastern Idaho are being used to transplant into other areas of Idaho and other states. Survey data for lek attendance on leks on the Curlew NG is more consistent. Leks have generally been monitored for activity over the past 15+ years. Two PhD research projects and one Master's research project have taken place in the Curlew Valley over the past 15 years, and extensive lek surveys have been conducted on the National Grassland over the last three years (Colt 2011). There are currently 31 sharp-tailed grouse leks known on the CNG and trends have been stable to increasing.

Alternative A

Infrastructure – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Infrastructure under Alternative A. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

The baseline date for the cumulative impacts analysis for Columbian sharp-tailed grouse is 2012. The temporal scope of this analysis is a 20-year planning horizon; land use planning documents are generally evaluated on a 5-year cycle. The temporal boundary for cumulative effects analysis for sharp-tailed grouse is the Western Association of Fish and Wildlife

Agencies (WAFWA) Management Zone IV (Snake River Plain) for Greater Sage-Grouse because all of the Idaho/Montana planning area, with the exception of a small portion of privately-held lands located within Management Zone II within the southeastern corner of Idaho, is located within Management Zone IV (MZ IV) and the sharp-tailed grouse, like the Greater Sage-Grouse is a sagebrush-dependent species.

Current infrastructure management activities would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, E1, E2 or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to sharp-tailed grouse in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Fire and Fuels – Direct and Indirect Effects

Alternative A would continue to manage wildfire and prescribed burns under current direction which would have the fewest restrictions for fire and fuels management actions and a high potential for vegetation disturbance. Artificial fire regimes created by fire suppression and resulting conifer encroachment are major threats to Columbian sharp-tailed grouse. Under Alternative A, Columbian sharp-tailed grouse habitat would continue to be constrained in areas where suppression results in higher rates of juniper and forest encroachment. Prescribed burns could be used within sagebrush habitat where needed to control fuel loading. Policies would not prioritize protection or restoration of mature sagebrush habitat. Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by Columbian-sharp-tailed grouse could disrupt nesting, breeding, or foraging behavior. Important habitats could be removed or degraded because of the use of heavy equipment or hand tools. Other potential impacts may include injuring or killing eggs/chicks, causing changes in species movement patterns due to areas devoid of vegetation, or reducing population viability and increasing the contribution to the need to list the species.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E1, E2 and F. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from wildfire in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative A. The effects would generally be the same for the Columbian sharp-tailed grouse.



Cumulative Effects

Under Alternative A, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on sharp-tailed grouse and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. Therefore, the direct and indirect effects of invasive plants management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative A, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Conifer Encroachment – Direct and Indirect Effects

As discussed under Fire and Fuels above, Columbian sharp-tailed grouse habitat can be constrained in areas where suppression results in higher rates of juniper and forest encroachment and encroachment can result in catastrophic wildfire, a key threat to this species. Expansion of conifer woodlands, especially juniper, displaces shrubs, grasses and forbs through direct competition for resources; juniper expansion is also associated with increased bare ground and increased potential for erosion. Mature trees may offer perch sites for avian predators. Alternative A does not directly address conifer encroachment. However, habitat restoration and vegetation management policies described above under Invasive Plants and fuels treatments described under Fire and Fuels would likely also reduce juniper encroachment.

Cumulative Effects

Current conifer encroachment management would continue under Alternative A and the measures addressing conifer encroachment would not be instituted as they would be in several of the action alternatives. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from conifer encroachment in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Livestock Grazing – Direct and Indirect Effects

Under this alternative, livestock grazing would continue to be managed under current direction. There would be no change in the locations, numbers, timing, or method of livestock grazing within these national forests. Depending upon site-specific management, beneficial or adverse impacts of grazing on GRSG or their habitat would continue. Grazing practices can benefit Columbian sharp-tailed grouse by reducing fuel load, protecting intact sagebrush habitat and increasing habitat extent and continuity. However, grazing at inappropriate intensity, season, or location may alter or degrade sagebrush ecosystems, or reduce cover and structure that could negatively impact lek sites or reduce the suitability of nesting and brood-rearing habitat that could negatively impact nesting success. Grazing can degrade critical winter riparian habitat. Cattle can compete with Columbia sharp-tailed grouse for forbs, occasionally trample individual birds or nests, disturb or temporarily displace of lekking or nesting birds during movement or trailing operations.

Under current direction, the Forest Service may utilize a number of mechanisms to reduce the potential for negative impacts from grazing on GRSG, if necessary. The only planning-level decision available is to decide where areas would be open and closed to livestock grazing. Future impacts would be eliminated in areas closed to grazing, but past impacts would likely persist for some time, and closing grazing may result in other harmful impacts. Other changes in management would occur at the implementation level during the permit renewal process which occurs every ten years and for which subsequent NEPA analysis would be conducted. At the implementation level, changes in grazing practices or systems can be considered, which could reduce grazing intensity or change the season of use, for example. In addition, changes in grazing management within riparian and wet meadows can reduce impacts in these important seasonal habitats.

Cumulative Effects

Under Alternative A, within Management Zone IV, livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from the management actions under Alternative A, which would be largely neutral for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative A. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management under Alternative A would maintain the current acreage open to energy development. Current energy development activities would continue under Alternative A. The closure of areas to energy development would not be instituted as they would be under most of the action alternatives. Therefore, under Alternative A, the direct and indirect effects of energy development, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from energy development in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Recreation under Alternative A. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on recreational disturbances to GRSG would not be instituted as they would be under the action alternatives. Under Alternative A, the direct and indirect effects from recreation management, in conjunction with the past, present and reasonably foreseeable future actions,



may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to sharp-tailed grouse in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Alternative B

Infrastructure – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Infrastructure under Alternative B. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with infrastructure management under Alternative B would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSB would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to sharp-tailed grouse in Management Zone IV under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Under Alternative B, suppression would be prioritized in PPH to protect mature sagebrush habitat. Suppression would be prioritized in PGH only where fires threaten PPH. Fire suppression protecting sagebrush habitats would generally benefit Columbian sharp-tailed grouse habitat. The unintended consequence of promotion of juniper/conifer succession would be expected to be minor to nonexistent. In the event that Alternative B does not include any other specific management for wildland fire management in PGH. Fuels treatments would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, implementing fuel breaks, applying seasonal restrictions, and requiring use of native seeds. Post-fuels treatments in PPH would be designed to ensure long-term persistence of seeded areas and native plants and maintain 15 percent canopy cover. Fuels treatments in PPH would also monitor and control for invasive species, and fuels management BMPs would incorporate invasive plant prevention measures. Overall, these conservation measures would reduce the threat of wildfire to sagebrush compared to Alternative A though, in general, the effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

Management actions under Alternative B, with respect to fire and fuels management, would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current

wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities and pre-suppression planning and staging for maximum protection of sagebrush habitat would be included. Fuels treatment activities would focus on protecting sagebrush habitat, primarily within PPH. Therefore, the direct and indirect effects of fire to sharp-tailed grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative B. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on sharp-tailed grouse and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat, under Alternative B would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of invasive plants management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Conifer Encroachment – Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment but the vegetation management conservation measures described for Invasive Plants under Alternative B for the Greater Sage-Grouse and the fuels treatments previously described in Fire and Fuels would also likely reduce juniper encroachment and its general effects on Columbian sharp-tailed grouse and its habitat as described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Livestock Grazing – Direct and Indirect Effects

Alternative B would incorporate sage-grouse habitat objectives and management considerations into livestock grazing management in PPH that would be expected to benefit



the Columbian sharp-tailed grouse and sharp-tailed grouse habitat overlapping PPH in similar ways. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Several management actions to reduce impacts from livestock grazing on sage-grouse general habitat would be incorporated, including the potential to modify grazing systems to meet seasonal sage-grouse habitat requirements and management to improve the conditions of riparian areas and wet meadows. Together these efforts would reduce the potential for negative impacts from grazing on Columbian sharp-tailed grouse described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative B would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative B. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with energy development under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects on sharp-tailed grouse in Management Zone IV from the management actions associated with energy development under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Recreation – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Recreation under Alternative B. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with recreation management under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to sharp-tailed grouse in Management Zone IV under Alternative B, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Alternative C

Infrastructure – Direct and Indirect Effects

Alternative C would have the most protective measures for GRSG and, therefore, would be expected to be the most protective of sharp-tailed grouse as well. Alternative C would extend many of the Alternative B conservation measures to all occupied GRSG habitat and all occupied habitat would be managed as an exclusion area for new ROW projects. As a result, management under Alternative C would encourage consolidation of sage-grouse habitats, facilitating habitat conservation and management and reduce the impacts of infrastructure on sharp-tailed grouse similar to that described for Greater Sage-Grouse in the Infrastructure sections under Alternatives A and B in a wider area than Alternative B.

Unlike Alternative B, which would permit wind energy siting in PPH provided a development disturbance threshold of 3% were not exceeded, Alternative C would not permit wind energy development siting in all occupied GRSG habitat. This would reduce the effects of wind energy on sharp-tailed grouse, which are similar to those discussed under Alternative A for GRSG, more so than Alternative B.

Cumulative Effects

Management actions associated with infrastructure management under Alternative C would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to sharp-tailed grouse in Management Zone IV under Alternative C, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Alternative C is similar to Alternative B except that it is more protective of sharp-tailed grouse and sharp-tailed grouse habitat because prioritization of suppression would apply to



All Occupied GRSG Habitat. Although this could expand the size of the area in which unintended consequence of promotion of juniper/conifer succession could occur, the amount of suitable sharp-tailed grouse habitat lost to forest succession would still be expected to be negligible and would be outweighed by the beneficial effect of protecting sagebrush habitat from wildfire. In addition, measures to manage vegetation for good or better ecological condition, and focusing fuel breaks on areas of human habitation or significant disturbance would benefit sharp-tailed grouse habitat as well. The general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

The cumulative effect of management actions related to fire and fuels under Alternative C, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative C. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments would continue and the short-term negative impacts of these activities on sharp-tailed grouse and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative C would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of invasive plants management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment but the weed measures described for Invasive Plants under Alternative C for the Greater Sage-Grouse and the fuels treatments described above in Fire and Fuels would also likely reduce juniper encroachment and the general effects of it on sharp-tailed grouse and sharp-tailed grouse habitat as described under Alternative A.

Cumulative Effects

Under Alternative C, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to sharp-tailed grouse in Management Zone IV from the

management actions under Alternative C, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Livestock Grazing – Direct and Indirect Effects

Under Alternative C, grazing would be eliminated within all occupied sage-grouse habitat reducing the potential for potential for both negative and positive grazing-related impacts on Columbia sharp-tailed grouse and Columbia sharp-tailed grouse habitat discussed under Alternative A more so than any of the other alternatives. No new water developments or range improvements would be constructed in occupied habitat and only habitat treatments that benefit GRSG would be allowed. Retirement of grazing would be allowed and fast tracked.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), livestock grazing would be eliminated within all occupied GRSG habitat, providing a net benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from management under Alternative C, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative C. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions under Alternative C with respect to energy development would increase protection of all occupied habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all occupied habitat to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development to sharp-tailed grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Recreation under Alternative C. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Recreation management actions under Alternative C would increase protection of all occupied Greater Sage-Grouse habitat, thereby benefitting sharp-tailed grouse rather than

removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to sharp-tailed grouse in Management Zone IV under Alternative C, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Alternative D

Infrastructure – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Infrastructure under Alternative D. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with infrastructure under Alternative D would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to sharp-tailed grouse in Management Zone IV under Alternative D, which would be largely beneficial for sharp-tailed grouse when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Fire and Fuels under Alternative D. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

The cumulative effect of fire and fuels management actions under Alternative D, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative D. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on sharp-tailed grouse and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of invasive plants management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Conifer Encroachment – Direct and Indirect Effects

Prioritizing implementation of vegetation rehabilitation projects designed to achieve the greatest improvement in sage-grouse abundance and distribution, including those that address conifer encroachment, in Priority, Medial and General habitat would also benefit the sharp-tailed grouse and its habitat. In addition, Alternative D vegetation management tools described in the Greater Sage-Grouse discussions for Invasive Plants and Fire and Fuels would help to reduce conifer encroachment in Priority, Medial and General GRSG habitats, and to reduce the types of impacts of conifer encroachment on the sharp-tailed grouse and its habitat that were described under Alternative A. Impacts from treatments associated with this alternative would also be the same as those described for vegetation treatments under Invasive Plants and Fire and Fuels under Alternative A. Alternative D would address conifer encroachment more so than Alternatives A, B or C and, therefore, is more protective of sharp-tailed grouse and sharp-tailed grouse habitat than those alternatives.

Cumulative Effects

Under Alternative D, within Management Zone I, conifer encroachment projects having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Livestock Grazing – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Livestock Grazing under Alternative D. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for sharp-



tailed grouse, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative D. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative D, within Management Zone IV, some of the current management direction associated with energy development would continue, however, additional emphasis on protecting existing sagebrush would be included. Therefore, the direct and indirect effects of energy development to sharp-tailed grouse in Management Zone IV from the added management actions under Alternative D, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Recreation under Alternative D. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Alternative D would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to sharp-tailed grouse in Management Zone under Alternative D, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Alternative E1

Infrastructure – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Infrastructure under Alternative E1. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with infrastructure under Alternative E1 would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing

sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to sharp-tailed grouse in Management Zone IV under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Fire and Fuels under Alternative E1. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions under Alternative E1, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative E1. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on sharp-tailed grouse and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of invasive plants management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Conifer Encroachment – Direct and Indirect Effects

Under Alternative E1, the Forest Service would prioritize the removal of conifers using methods that would minimize disturbance to GRSG and GRSG habitat, to the extent possible, in Priority and Important habitat. In addition, as described above Invasive Plants, Priority, Important and General habitat would be actively managed to prevent invasion. Unlike Alternative D, Alternative E1 contains a specific restoration measure addressing conifer encroachment. However, Alternative D addresses conifer encroachment as part of



several restoration and fire suppression conservation measures and over a larger area. Although treatments associated with these measures have the potential to negatively impact sharp-tailed grouse and their habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would benefit GRSG and GRSG habitat in the long term by reducing the impacts from conifer encroachment described in Conifer Encroachment under Alternative A. Negative impacts would be expected to be negligible due to the prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E1, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Livestock Grazing – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Livestock Grazing under Alternative E1. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative E1. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with energy development under Alternative E1 would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of energy development on sharp-tailed grouse in Management Zone IV from the management actions associated with energy development under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined

with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat.

Recreation – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Recreation under Alternative E1. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with recreation management under Alternative E1 would include timing and seasonal restrictions for the Greater Sage-Grouse breeding season, thereby benefitting sharp-tailed grouse. Under Alternative E1, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to sharp-tailed grouse in Management Zone IV under Alternative E1, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitat

Alternative E2

Infrastructure – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Infrastructure under Alternative E2. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with infrastructure under Alternative E2 would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to sharp-tailed grouse in Management Zone IV under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Fire and Fuels – Direct and Indirect Effects

Alternative E2 would implement the following unique strategies to address response to fire and reduce the general effects of fire on GRSG as discussed under Alternative A: create and implement a statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority habitat; allow the use of fire-retardant vegetation that would buffer areas of high quality GRSG habitat from catastrophic fire; use prescriptive fire with caution in sagebrush habitat and only at higher elevations and in a manner designed prescriptively to benefit GRSG; conduct effective



research into controlling fire size and protect remaining GRSG areas that are adjacent to high-risk cheatgrass areas; focus research efforts on effective reclamation and restoration of landscapes altered by wildfire; manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush (80%), which would be available to GRSG above snow during a severe winter; and coordinate the needs and efforts related to GRSG with the State of Utah committee that was formed to develop a collaborative process to protect the health and welfare by reducing the size and frequency of catastrophic fires. Similar to Alternative B, Alternative E2 would consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. Overall, the protective benefits of Alternative E2 on Columbia sharp-tailed grouse and sagebrush habitat would likely be most similar to that of Alternative B, but it would have similar short-term negative impacts on this species and its habitat as those described under Alternative A for suppression and prescribed fire.

Cumulative Effects

Management actions under Alternative E2, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative E2. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on sharp-tailed grouse and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of invasive plants management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Conifer Encroachment – Direct and Indirect Effects

Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively remove encroaching conifers and other plant species to expand GRSG habitat where possible. Although

treatments associated with the measures in Alternative E2 have the potential to negatively impact sharp-tailed grouse and sagebrush habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would provide a long-term benefit to the species and its habitat by reducing the negative impacts of conifer encroachment described in Conifer Encroachment under Alternative A. In comparison, Alternative D would address conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area which would provide a greater benefit to sharp-tailed grouse and sagebrush habitat. Alternative E2 is probably most similar to Alternative E1, except unlike Alternative E1, Alternative E2 does not include a stipulation for prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E2, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Livestock Grazing – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Livestock Grazing under Alternative E2. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative E2. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with energy development under Alternative E2 would increase protection of Greater Sage-Grouse and sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects on sharp-tailed grouse in



Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Recreation – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative E2. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with recreation management under Alternative E2 would reduce disturbance to Greater Sage-Grouse, thereby benefitting sharp-tailed grouse. Under Alternative E2, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to sharp-tailed grouse in Management Zone IV under Alternative E2, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Alternative F

Infrastructure – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Infrastructure under Alternative F. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Refer to Alternative B. The cumulative effects of infrastructure management on sharp-tailed grouse and sagebrush habitat within Management Zone IV would be the same.

Fire and Fuels – Direct and Indirect Effects

Fire and fuels management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The impacts on Columbian sharp-tailed grouse would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of fire and fuels management on sharp-tailed grouse and sagebrush habitat within Management Zone IV would be the same.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Invasive Plants under Alternative F. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Refer to Alternative B. The cumulative effects of invasive plants management on sharp-tailed grouse and sagebrush habitat within Management Zone IV would be the same.

Conifer Encroachment – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Conifer Encroachment under Alternative F. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Refer to Alternative B. The cumulative effects of conifer encroachment management on sharp-tailed grouse and sagebrush habitat within Management Zone IV would be the same.

Livestock Grazing – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Livestock Grazing under Alternative F. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Under Alternative F, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative F would provide an added benefit to sharp-tailed grouse. Therefore, the direct and indirect effects of livestock grazing to sharp-tailed grouse in Management Zone IV from the management actions under Alternative F, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Refer to the Greater Sage-Grouse effects discussion for Energy Development under Alternative F. The effects would generally be the same for the Columbian sharp-tailed grouse.

Cumulative Effects

Management actions associated with energy development under Alternative F would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of livestock grazing on sharp-tailed grouse in Management Zone IV from the management actions associated with energy development under Alternative F, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

Recreation – Direct and Indirect Effects

Alternative F would follow the same general approach as Alternative A, however, like Alternative B, only recreational SUAs that are neutral or beneficial to GRSB would be permitted in PPH. In addition, within all occupied habitat, camping areas within 4 miles of active leks would seasonally be closed. These conservation measures would also benefit



Columbia sharp-tailed grouse from the general recreational effects described for sharp-tailed grouse under Alternative A. Closing camping areas within 4 miles of active GRSG leks has the potential to benefit sharp-tailed grouse leks in sagebrush areas closest to the sagebrush/mountain shrub or sagebrush/grassland interface or in areas higher in composition of grasses.

Cumulative Effects

Management actions associated with recreation management under Alternative F would increase protection of sagebrush habitat, thereby benefitting sharp-tailed grouse rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to sharp-tailed grouse in Management Zone IV under Alternative F, which would be largely beneficial for sharp-tailed grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to sharp-tailed grouse or sagebrush habitats.

M.6.3 Rocky Mountain elk (*Cervus canadensis* - Beaverhead-Deerlodge National Forest)

Distribution

Range includes all of Idaho, western and eastern Oregon and Washington, the northwestern tip of California and portions of Arizona, New Mexico, Utah, Colorado, Montana and Manitoba. The distribution of the Rocky Mountain elk closely follows BDNF lands year-round.

Habitat Associations and Threats

Elk are habitat generalists that primarily use coniferous forests interspersed with natural or man-made openings (mountain meadows, grasslands, burns, and logged areas), but habitat varies between populations and areas. Basic habitat components include: security, shelter (may use to maintain thermal equilibrium) and forage production. Moist sites are preferred in the summer. High open road densities reduce habitat effectiveness. Good winter range is critical. Rocky Mountain elk are migratory in some areas moving between seasonal ranges, and non-migratory in others. Sagebrush-grasslands provide winter range forage.

Population, Status, Abundance and Trend

This species is ranked as (secure - at very low risk of extirpation, extinction, or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats), both globally (G5) and in the state of Montana (S5) (Montana Field Guide 2013).

Beaverhead-Deerlodge National Forest MIS Monitoring

Rocky Mountain elk are a Beaverhead-Deerlodge National Forest MIS for important commonly-hunted species. Rocky Mountain elk population demographics are monitored by the Montana Fish, Wildlife and Parks Department. Figure 2 shows deer and elk hunting units overlapping the Beaverhead-Deerlodge National Forest.



Figure 2. State deer/elk hunting units/districts within the Beaverhead-Deerlodge National Forest

Figure 3 shows 2005 Montana Fish, Wildlife and Parks State Elk Plan population objectives for Beaverhead-Deerlodge National Forest hunting units/districts and annual estimates for each unit between 1992 and 2011. Deerlodge National Forest units are highlighted in yellow. As of the 2011 estimates, elk numbers for those hunting units encompassing BDNF lands have reached 139% of the 2005 Montana Elk Plan total objectives for those units.

FWP SW MT Elk Mngt Units (EMU)	1992 Elk Plan SW MT EMU Estimates *	2004 Elk Plan SW MT EMU Estimate s*	BDNF Hunting Districts within SW MT EMUs	2005 FWP State Elk Plan Objective ±20%	FWP 2003 Estimates ± 10%	FWP 2006 Estimates ± 10%	FWP 2007 Estimates ± 10%	FWP 2008 Estimates	FWP 2010 Estimates	FWP 2011 Estimates	
Deerlodge	2350	1879		210	2500	1043	952	1020	1391	1644	2683
Flint Cr	1400	1500		211	600	679	485	262	135	1125	334
Rock Cr	2200	3165		212	850	1100	1074	1494	1825	2504	2693
Sapphire	3500	3500		213	650	401	689	484	660	1325	1243
Highland	1600	1500		214	200	309	270	284	331	400	193
Fleecer	1500	2000		215	1000	736	1144	1234	1502	2145	2569
Gravelly	7000- 7500	9000		216	325	457	288	473	140	314	279
Madison	6500- 7000	7200		300	700-900	615	1137	1450	1883	806	2129
T-Root	800- 900	1350		302	550-700	399	736	956	1195	783	1239
Tendoy	2000	2200		311	2700	2096	3100	3000	2620	2620	2620
Pioneer	3000	1900		318	500	366	383	535	656	519	519
				319	1100 Max	1515	936	819	911	854	1023
				320 333	1000 for both	1130 549	942 470	745 477	954 859	1433 atobjectiv e	1573 for both
				321	None	No winter elk	No winter elk	No winter elk	No estimate	No estimate at objective	No estimate. No wintering elk
				323 324	Gravelly EMU Total	3119 3114	2682 2500	2265 1928	2268 2608	No separate estimates - At	No separate estimates Gravelly

			327	=	No winter elk	No winter elk	No winter elk	No estimate	objective	over objectives at 12066
			330	7000	1830	1132	1116	1328		
			Total		(8063)	(6314)	(5309)	(6204)		
			328	550-700	574	650	635	620	643	1008
			329	900 Max	582	683	727	766	(273 partial survey)at objective	1190
			331	1400 Max	1250	896	1085	773	869	930
			332	900 Max	506	600	376	588	568	494
			340	1600	219	557	839	423	1915 for all at objective	340=1164
			350	combined	602	268	500	529		350=713
			370	for all	330	192		529		370=see 340
			370		(1151)	(1017)	(1339)	(1481)		
			341	600 Max	669	494	272	166	416	370
			360	2200	4555	1914	1661	2494	1090	1396
			362	2500	1159	3629	3845	3524	4203	4029
Total SW MT EMU Estimate*	31,850-32,950	35,194	TOTAL	30,575	28,074	28,803 stable	28,482 stable	31,925 increasing	31,305 stable-increase	42,467

Figure 3. Southwest Montana elk population trends 1992 – 2011. Note that Sapphire and Rock Cr. EMU boundaries overlap hunting units on the Bitterroot and Lolo National Forests and 1992 Elk Plan estimates don't differentiate hunting unit estimates.

Alternative A

Infrastructure – Direct and Indirect Effects

Existing land use plans direction would apply under Alternative A. There would be no changes to the current National Forest System infrastructure including power lines, wind turbines, communications towers, fences, or roads. Permitted ROWs would continue to allow construction, maintenance, and operation activities that could result in habitat loss, fragmentation, or degradation of sagebrush winter range habitat or result in barriers to migration corridors. Construction and maintenance of infrastructure would continue to lead to higher short-term concentrations of human noise and disturbance that could cause disruption of foraging, or other behaviors, or temporary displacement of individuals. These activities could also lead to new infestations of noxious or invasive weeds and an increase in edge habitat. Though most projects would be forced to mitigate or minimize impacts, this

alternative would likely have the greatest impact on sagebrush habitat used by Rocky Mountain elk as winter range and seasonal migration routes.

Cumulative Effects

The baseline date for the cumulative impacts analysis for Rocky Mountain elk is 2012. The temporal scope of this analysis is a 20-year planning horizon; land use planning documents are generally evaluated on a 5-year cycle. The temporal boundary for cumulative effects analysis for Rocky Mountain elk is the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone IV (Snake River Plain) for Greater Sage-Grouse because all of the Idaho/Montana planning area, with the exception of a small portion of privately-held lands located within Management Zone II within the southeastern corner of Idaho, is located within Management Zone IV (MZ IV) and it is large enough to encompass larger-ranging species such as elk.

Current infrastructure management activities would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, E1, E2 or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to elk in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Fire and Fuels – Direct and Indirect Effects

Alternative A would continue to manage wildfire and prescribed burns under current direction which would have the fewest restrictions for fire and fuels management actions and a high potential for vegetation disturbance. Prescribed burns could be used within sagebrush habitat where needed to control fuel loading. This action could benefit sagebrush habitat utilized by elk as winter range by creating grass forage but could also negatively impact elk through the short-term elimination of browse species. Policies would not prioritize protection or restoration of mature sagebrush habitat. Winter range could be removed or degraded because of the use of heavy equipment or hand tools. Other potential impacts may include changes in movement patterns due to areas devoid of vegetation.

In addition, suppression may initially result in higher rates of juniper encroachment in some areas, eliminating forage for Rocky Mountain elk and culminate in heavy fuel loadings that can contribute to larger-scale wildfire events that eliminate browse species in adjacent areas.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E1, E2 and F. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from wildfire in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative A would continue the management of invasive weeds under current direction. To reduce the likelihood of invasive weed spread and the extent of current infestations, integrated weed management techniques, including mechanical, manual, chemical, and biological control are utilized. Existing Coordinated Weed Management Areas would remain in effect, and firefighting vehicles would be washed prior to deployment. These policies would limit impacts from spread of weeds as effectively as possible under current resource constraints. The spread of weeds would continue to pose a substantial threat to the planning area by altering plant community structure and composition, productivity, nutrient cycling, and hydrology that could result in fragmentation or degradation of existing Rocky Mountain elk winter range. Weeds may cause declines in native plant populations, including sagebrush habitat, through competition or displacement and, in cases where monocultures occur, eliminate vegetation that elk use for food. In addition, invasive plants can fragment existing sagebrush habitat or reduce habitat quality or create long-term changes in ecosystem processes, such as fire-cycles.

Current treatments and active vegetation management typically focus on vegetation composition and structure for fuels management, habitat management and/or productivity manipulation for improving the habitat and forage conditions for ungulates and other grazers, using surface soil stabilization to increase productivity, or by removing invasive plants. Management of vegetation resources to protect GRSG would alter vegetative communities by promoting increases in sagebrush height and herbaceous cover and vegetation productivity. Treatments designed to prevent encroachment of shrubs, non-native species or woody vegetation would alter the condition of native vegetation communities by changing the density, composition, and frequency of species within plant communities. The intent of these management programs is to improve rangeland condition and enhance sagebrush ecosystems. Vegetation treatments could negatively impact sagebrush habitat in the short term from vegetation removal, but would result in long-term improvements.

Cumulative Effects

Under Alternative A, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on elk and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. Therefore, the direct and indirect effects of invasive plants management to elk in Management Zone IV from the management actions under Alternative A, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Conifer Encroachment – Direct and Indirect Effects

Expansion of conifer woodlands, especially juniper, displaces the shrubs, grasses and forbs utilized as winter range forage by elk through direct competition for resources. On the other hand, conifers can provide additional thermal and security cover. Alternative A does not directly address conifer encroachment. However, habitat restoration and vegetation

management policies described above under Invasive Plants and fuels treatments described under Fire and Fuels would likely also reduce juniper encroachment.

Cumulative Effects

Current conifer encroachment management would continue under Alternative A and the measures addressing conifer encroachment would not be instituted as they would be in several of the action alternatives. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from conifer encroachment in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Livestock Grazing – Direct and Indirect Effects

Under this alternative, livestock grazing would continue to be managed under current direction. There would be no change in the locations, numbers, timing, or method of livestock grazing within these national forests. Depending upon site-specific management, beneficial or adverse impacts of grazing on elk or their habitat would continue. Grazing practices can benefit sagebrush habitat by reducing fuel load, protecting intact sagebrush habitat and increasing habitat extent and continuity. However, grazing at inappropriate intensity, season, or location may result in elk winter range deterioration. In addition, grazing can degrade meadow/wetland/spring/stream habitat.

Under current direction, the Forest Service may utilize a number of mechanisms to reduce the potential for negative impacts from grazing, if necessary. The only planning-level decision available is to decide where areas would be open and closed to livestock grazing. Future impacts would be eliminated in areas closed to grazing, but past impacts would likely persist for some time, and closing grazing may result in other harmful impacts. Other changes in management would occur at the implementation level during the permit renewal process which occurs every ten years and for which subsequent NEPA analysis would be conducted. At the implementation level, changes in grazing practices or systems can be considered, which could reduce grazing intensity or change the season of use, for example. In addition, changes in grazing management within riparian and wet meadows can reduce impacts in these important habitats.

Cumulative Effects

Under Alternative A, within Management Zone IV, livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from the management actions under Alternative A, which would be largely neutral for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Under Alternative A, all mineral leasing and development and wind energy development would continue to be managed under current direction. As such, this alternative would be

expected to cause the greatest amount of direct and indirect impacts on Rocky Mountain elk and their habitat including loss, degradation, and fragmentation of winter range by roads, pipelines and power lines, higher levels of noise, increased presence of roads/humans, and a larger number of anthropogenic structures in an otherwise open landscape that could result in disturbance or displacement.

Cumulative Effects

Management under Alternative A would maintain the current acreage open to energy development. Current energy development activities would continue under Alternative A. The closure of areas to energy development would not be instituted as they would be under most of the action alternatives. Therefore, under Alternative A, the direct and indirect effects of energy development, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from energy development in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Under this alternative there would be no changes to the current National Forest System Roads, transportation plan, or recreation management on these forests. Under current management, travel on Forest Service-administered lands is limited to existing/designated roads. There would be minimal seasonal restrictions. In general, the more acres and miles of routes that are designated in an area, the greater the likelihood of disturbance to wildlife and fragmentation of habitat. In addition, less restrictive travel conditions usually mean higher concentrations of human use adjacent to motorized routes. This can cause disruption or temporary displacement of wildlife. In addition, impacts from roads may include habitat loss from road construction, noise disturbance from vehicles, and direct mortality from collisions with vehicles. Roads may also present barriers to migration corridors or seasonal habitats. This alternative has the highest potential to impact elk due to the lack of restrictions on activities that cause these effects. Therefore, all direct and indirect effects on the species and its habitat would likely cause current trends to continue.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on recreational disturbances to GRSG would not be instituted as they would be under the action alternatives. Under Alternative A, the direct and indirect effects from recreation management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to elk in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Alternative B

Infrastructure – Direct and Indirect Effects

Alternative B places a 3% disturbance threshold on new ROWs or SUAs within PPH. Under this alternative, all PPH would be managed as exclusion areas and PGH would be managed as an avoidance area for new ROW and SUA projects, and it would require co-

location of new ROWs or SUAs with existing infrastructure. It would aim to remove, bury, or modify existing power lines in PPH. Although this activity or ongoing maintenance has the potential to disturb elk the likelihood is small because elk use overlapping PPH would be primarily during the winter. In PPH, new facilities would be co-located with existing facilities where possible and use of existing roads, or realignments to access valid existing rights that are not yet developed or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads

This alternative would maximize connectivity and minimize loss, fragmentation, degradation and disturbance of sagebrush habitats for species whose ranges overlap PPH, such as Rocky Mountain elk, by power lines, communication towers, and roads. Elk utilizing winter range outside PPH would likely experience little change in direct or indirect effects. However, if this measure ended up concentrating new infrastructure development in winter range outside PPH rather than just reducing it within PPH, the extent of impacts on elk utilizing sagebrush winter range outside PPH could increase under Alternative B relative to Alternative A. Impacts for infrastructure would be similar to those described for Alternative A.

Cumulative Effects

Management actions associated with infrastructure management under Alternative B would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to elk in Management Zone IV under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Under Alternative B, suppression would be prioritized in PPH to protect mature sagebrush habitat. Suppression would be prioritized in PGH only where fires threaten PPH. Suppression-related juniper encroachment discussed in Alternative A could increase in some areas under Alternative B, eliminating forage for elk whose winter range overlap with PPH and eventually resulting in heavy fuel loadings that could contribute to larger-scale wildfire events that eliminate browse species in adjacent areas.

Alternative B does not include any other specific management for wildland fire management in PGH. Fuels treatments would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, implementing fuel breaks, applying seasonal restrictions, protections for GRSG winter range, and requiring use of native seeds. Post-fuels treatments would be designed to ensure long-term persistence of seeded areas and native plants and maintain 15 percent canopy cover. Fuels treatments would also monitor and control for invasive species, and fuels management BMPs would incorporate invasive plant prevention measures. These measures would benefit elk winter range overlapping PPH by eliminating

competition with or exclusion of forage species. Overall, these conservation measures would reduce the threat of wildfire to sagebrush compared to Alternative A although the general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

Management actions under Alternative B, with respect to fire and fuels management, would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities and pre-suppression planning and staging for maximum protection of sagebrush habitat would be included. Fuels treatment activities would focus on protecting sagebrush habitat, primarily within PPH. Therefore, the direct and indirect effects of fire to elk in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Under Alternative B, weed control efforts would continue to be managed under current direction (see Alternative A). However, vegetation management conservation measures would benefit weed control efforts by prioritizing restoration efforts, including reducing invasive plants and, in turn, benefit elk by eliminating competition with or exclusion of forage species. BLM and Forest Service would require the use of native seeds and would design post-restoration management to ensure the long-term persistence of the restoration efforts, and would consider changes in climate when determining species for restoration. Invasive species would also be monitored and controlled after fuels treatments and at existing range improvements. Alternative B incorporates fewer invasive plant management measures in PGH compared to PPH. However, many of the same habitat restoration and vegetation management actions would be applied, including prioritizing the use of native seeds. Together, these measures would reduce impacts to elk winter range overlapping PPH from invasive plants as described under Alternative A although the effects of the treatments would be the same.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on elk and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat, under Alternative B would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of invasive plants management to elk in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.



Conifer Encroachment – Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment, but the vegetation management conservation measures described above in Invasive Plants and the fuels treatments described above in Fire and Fuels would likely reduce the negative impacts of conifer encroachment on Rocky Mountain elk winter range as discussed under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to elk in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Livestock Grazing – Direct and Indirect Effects

Alternative B would implement a number of beneficial management actions in PPH to incorporate sage-grouse habitat objectives and management considerations into livestock grazing management. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Several management actions to reduce impacts from livestock grazing on sage-grouse general habitat would be incorporated, including the potential to modify grazing systems to meet seasonal sage-grouse habitat requirements and management to improve the conditions of riparian areas and wet meadows. Together these efforts would reduce the potential for negative grazing-related impacts on elk winter range overlapping PPH as described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative B would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Energy Development – Direct and Indirect Effects

Under this Alternative, PPH would be closed to new fluid mineral leasing, non-energy leasable mineral leasing, and mineral material sales, and it would be proposed for withdrawal from mineral entry. In addition, mandatory BMPs would be applied as conditions of

approval on fluid mineral leases. Existing leases entirely within PPH would require application of 4-mile, no surface occupancy (NSO) buffers around leks, limiting disturbances within sections to the 3% threshold and application of numerous conservation measures reduce impacts from mineral exploration and development activities in PPH.

Alternative B does not include specific management for fluid, saleable, locatable, and non-energy leasable minerals in PGH or wind energy in PPH or PGH. As a result, current trends would continue and impacts would be similar to those under Alternative A. Although Alternative B does not directly address wind energy development or industrial solar development, its 3% threshold for anthropogenic disturbances (including, but not limited to, highways, roads, geothermal wells, wind turbines, and associated facilities) would apply to energy development and would limit the extent of all types of energy development in PPH. These measures would reduce the impacts of energy development on Rocky Mountain elk winter range overlapping PPH as described under Alternative A.

Cumulative Effects

Management actions associated with energy development under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects on elk in Management Zone IV from the management actions associated with energy development under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Recreation – Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative B conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative B, only recreational SUAs that are neutral or beneficial to sage-grouse would be permitted in PPH and there would be limited opportunities for road construction in PPH, with minimum standards applied and no upgrading of current roads. Although general impacts would be the same as Alternative A, Alternative B is more restrictive than Alternative A. It would likely reduce loss and fragmentation of elk winter range overlapping PPH by minimizing road construction or upgrades. This alternative has the potential to reduce human disturbance to elk utilizing sagebrush winter range overlapping with PPH if it includes restrictions on snowmobile use in these areas. Otherwise, elk would not receive much benefit from restrictions on recreational SUPs meant to curb human disturbance in PPH. If these measures were to apply to snowmobile use and ended up concentrating recreational use and additional roads outside PPH rather than just reducing it within PPH, the extent of impacts on elk winter range outside of PPH could increase under Alternative B relative to Alternative A.



Cumulative Effects

Management actions associated with recreation management under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to elk in Management Zone IV under Alternative B, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Alternative C

Infrastructure – Direct and Indirect Effects

Alternative C would have the most protective measures for Rocky Mountain elk in terms of infrastructure. Alternative C would extend many of the Alternative B conservation measures to all occupied GRSG habitat and all occupied GRSG habitat would be managed as an exclusion area for new ROW projects. As a result, management under Alternative C would encourage consolidation of sagebrush habitats, facilitate habitat conservation and management and reduce the impacts of infrastructure on Rocky Mountain elk and winter range described under Alternatives A and B in a wider area than Alternative B. Unlike Alternative B, that would permit wind energy siting in PPH provided a development disturbance threshold of 3% were not exceeded, Alternative C would not permit wind energy development siting in all occupied GRSG habitat. This measure would protect larger areas of sagebrush habitat from degradation, fragmentation and has the potential to prevent or reduce disturbance to or displacement of elk over a larger area than Alternative B.

Like alternative B, Alternative C would aim to remove, bury, or modify existing power lines but would apply to all occupied GRSG habitat, having the potential to degrade more elk winter range during implementation and maintenance.

Cumulative Effects

Management actions associated with infrastructure management under Alternative C would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to elk in Management Zone IV under Alternative C, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Alternative C is similar to Alternative B except that it is more protective of elk habitat because prioritization of suppression would apply All Occupied GRSG Habitat, it includes measures to manage vegetation for good or better ecological condition, and it focuses fuel breaks on areas of human habitation or significant disturbance. The negative impacts of fire suppression on conifer encroachment and fire suppression and fuels treatments on elk winter range discussed under Alternative A would be offset by the prioritization of restoration treatments described below for invasive plants. The general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

The cumulative effect of management actions related to fire and fuels under Alternative C, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative C would maintain the direction described under Alternative A along with additional provisions that would limit invasive weed spread in all occupied GRSG habitat. Vegetation management would benefit weed control efforts, by prioritizing restoration, including reducing invasive plants, in all occupied GRSG habitat in order to benefit sage-grouse habitats. In all cases, local native plant ecotype seeds and seedlings would be used. These policies would reduce impacts from invasive plants on elk winter range overlapping occupied GRSG habitat as described under Alternative A, and have similar impacts associated with treatment, but would include additional conservation measures specific to limiting the spread of invasive plants. In addition, grazing would be eliminated within all occupied sage-grouse habitat, eliminating the potential for invasive plant spread by livestock in elk winter range overlapping GRSG occupied habitat. This would make Alternative C more protective of elk habitat than Alternatives A or B.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments would continue and the short-term negative impacts of these activities on elk and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative C would provide an added benefit to elk. Therefore, the direct and indirect effects of invasive plants management to elk in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for elk when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment but the weed control policies described above in Invasive Plants and the fuels treatments



described above in Fire and Fuels would also likely reduce juniper encroachment . Therefore, the negative and beneficial effects of conifer encroachment elk habitat as described under Alternative A would both be reduced.

Cumulative Effects

Under Alternative C, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to elk in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Livestock Grazing – Direct and Indirect Effects

Under Alternative C, grazing would be eliminated within all occupied sage-grouse habitat reducing the potential for both negative and positive grazing-related impacts on sagebrush habitat and elk winter range discussed under Alternative A more so than any of the other alternatives. No new water developments or range improvements would be constructed in occupied habitat and only habitat treatments that benefit GRSG would be allowed; most habitat treatments would be expected to benefit Rocky Mountain elk as well. Retirement of grazing would be allowed and fast tracked.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), livestock grazing would be eliminated within all occupied GRSG habitat, providing a net benefit to elk. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from management under Alternative C, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Energy Development – Direct and Indirect Effects

Alternative C would expand the protections under Alternative B to all occupied GRSG habitat as well as prohibit new exploration permits for unleased fluid minerals. Like Alternative B, the conservation measures would reduce the general impacts of energy development on elk winter range described under Alternatives A and B, but possibly to a larger degree than any of the other alternatives because of the greater potential for overlap with elk winter range. Unlike Alternative B, Alternative C would prohibit wind energy development in occupied GRSG habitat. This measure would protect larger areas of sagebrush habitat from degradation, fragmentation and has the potential to prevent or reduce disturbance to or displacement of elk over a larger area.

Cumulative Effects

Management actions under Alternative C with respect to energy development would increase protection of all occupied habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV, some of the current

energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all occupied habitat to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development to elk in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Alternative C is similar to Alternative B but applies to all occupied GRSG habitat as opposed to PPH. Therefore, it has the potential to protect a larger amount of Rocky Mountain elk winter and migration habitat from the general recreational impacts described in Alternatives A and Alternative B.

Cumulative Effects

Recreation management actions under Alternative C would increase protection of all occupied Greater Sage-Grouse habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to elk in Management Zone IV under Alternative C, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Alternative D

Infrastructure – Direct and Indirect Effects

Under Alternative D, Priority, Medial, and General Habitat would be designated ROW avoidance areas, as opposed to ROW exclusion areas for PPH under Alternative B or all occupied habitat under Alternative C, and new authorizations would be co-located, when possible, within or adjacent to existing disturbance/footprint to avoid disturbance to GRSG or GRSG habitat. In Priority areas, a subset of PPH, new authorizations for the following would not be allowed: larger transmission facilities greater than 50 kV, wind and solar developments, commercial geothermal development, nuclear, gas or oil developments, airports, ancillary facilities associated with any of the aforementioned development, paved or gravel roads or landfills. In Medial Habitat, wind and solar development would be restricted where adverse effects could not be mitigated; General Habitat would be an avoidance area for wind or solar reauthorization.

New ROWs and SUAs allowed in Priority or Medial Habitat would not result in a net loss of GRSG habitat in the respective Priority or Medial area. New authorizations or facilities would be sited outside of the 3 km (1.86 mile) elk avoidance buffer areas unless NEPA analysis suggested a greater or lesser required distance. New power and communications lines in Priority, Medial or General Habitat outside of existing ROWS would be required to



be buried; existing lines would be evaluated for burying, modification or relocation to at least 3km (1.86 miles) from occupied leks or winter habitat. These conservation measures would reduce the impacts on elk and elk habitat from infrastructure relative to existing management under Alternative A and may provide some additional reduction in impacts over Alternative B, but would probably not be as protective of elk and elk habitat as the measures proposed in Alternative C.

Cumulative Effects

Management actions associated with infrastructure under Alternative D would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to elk in Management Zone IV under Alternative D, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Alternative D would prioritize fire suppression in Priority and Medial Habitats, which together equal PPH. Unlike Alternative B, it would also include the following conservation measures in Priority, Medial and General Habitat to strategically reduce fire effects: pre-planning and firefighter training in sagebrush management as related to suppression activities; designing and implementing fuels treatments with an emphasis on maintaining, protecting and expanding sage grouse habitats; and considering conifer encroachment areas as areas to manage wildfire for resource benefit. Overall, Alternative D would limit damage to sagebrush habitat areas from wildfire. Although Alternative D is similar to Alternatives B and C in prioritizing fire suppression, it would prioritize it in more GRSG habitat than Alternative B (only PPH) and less than Alternative C (all occupied habitat). The general effects of fire suppression and fuels treatments would be similar to those described in Alternative A. Delineating conifer encroachment areas in Priority, Medial and General GRSG habitats as areas to manage wildfire for resource benefit could reduce the amount of suppression-related juniper encroachment discussed in Alternative B, protecting elk forage and reducing fuel loadings that can contribute to larger-scale wildfires in adjacent sagebrush habitats.

Cumulative Effects

The cumulative effect of fire and fuels management actions under Alternative D, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Under Alternative D, the direction described under Alternative A would be maintained making it the same in terms of impacts from invasive plants and associated treatments. Similar to those of Alternative B, vegetation management conservation measures included in this alternative would benefit weed control efforts in the long term by prioritizing restoration efforts, including reducing invasive plants, and monitoring and controlling invasive species after construction, fuels treatments and at new range improvements. Unlike Alternative B, monitoring and controlling invasive species after fuels treatments and at new range improvements would apply to Priority, Medial, and General Habitat rather than only PPH. These policies would reduce the impacts of invasive plants described under Alternative A on elk winter range overlapping these areas.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on elk and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to elk. Therefore, the direct and indirect effects of invasive plants management to elk in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Conifer Encroachment – Direct and Indirect Effects

Under Alternative D, implementation of vegetation rehabilitation projects designed to achieve the greatest improvement in sage-grouse abundance and distribution, including those that address conifer encroachment, in Priority, General and Medial habitat would be prioritized. Factors contributing to higher emphasis would include the likelihood of conifer encroachment into sage-grouse habitat. In addition, vegetation management tools described above for Invasive Plants and Fire and Fuels would help to reduce encroachment in Priority, Medial and General habitat, and to reduce the negative impacts of conifer encroachment on elk habitat as described under Alternative A. Impacts from treatments associated with this alternative would be the same as those described for vegetation treatments under Invasive Plants and Fire and Fuels under Alternative A. Alternative D would address conifer encroachment more so than Alternatives A, B or C and, therefore, is more protective of elk winter range overlapping GRSG Medial Habitat than any of those alternatives.

Cumulative Effects

Under Alternative D, within Management Zone I, conifer encroachment projects having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to elk in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.



Livestock Grazing – Direct and Indirect Effects

Management under Alternative D would include the same conservation measures as Alternative B, but expands many of those measures to Priority, Medial habitat and General Habitat. It would also manage for vegetation composition (including riparian and lentic areas) and structure consistent with appropriate sage-grouse seasonal habitat objectives relative to site potential. Both Alternatives D and F apply the same conservation measures as Alternative B, but Alternative B largely applies only to PPH, whereas Alternative D applies to Priority, General, and Medial habitat, and Alternative F applies to all occupied habitat. Together, these efforts would reduce the potential for negative grazing-related impacts on elk winter range described under Alternative A more so than Alternatives B, or E, but less than Alternative C. It would be similar to Alternative F.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to elk. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for elk when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to elk or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Alternative D would close most Priority Habitat to future fluid mineral leasing and non-energy minerals leasing and development. It would place additional stipulations and seasonal restrictions on existing and future fluid mineral leases in certain Medial Habitat areas: leasing would be allowed subject to standard seasonal and daily stipulations in breeding and winter habitat and well density would not be allowed to exceed 1/640 acres; NSO of 3 km (1.86 miles) would be allowed around leks. In addition, Medial Habitat would be closed to non-energy minerals leasing. In General Habitat, NSO would be allowed for non-energy minerals leasing, or within 3 km (1.86 miles of Priority or Medial Habitat), or for future fluid mineral leasing within 3 km of occupied leks. Otherwise, General Habitat would be available for fluid or non-energy minerals leasing subject to applicable seasonal and daily timing restrictions. Geophysical exploration would be allowed in Priority, Medial and General Habitat, subject to seasonal timing restrictions and/or other restrictions that may apply. These actions would probably reduce the impacts of mineral development on elk discussed under Alternative A to a level similar to that of Alternative B.

Unlike Alternative B, Alternative D directly addresses solar and wind energy development. Solar and wind energy development would not be allowed within Priority Habitat. In Medial Habitat, wind and solar energy development would be restricted where adverse effects could not be mitigated. Ancillary facilities such as roads, electric lines, etc. could potentially be authorized provided mitigation prevents any net loss of sage-grouse habitat. General Habitat would be considered avoidance areas for wind and solar development. These actions could reduce the negative impacts of energy development on elk and elk winter range overlapping with Medial Habitat relative to Alternatives A and B.

Cumulative Effects

Under Alternative D, within Management Zone IV, some of the current management direction associated with energy development would continue, however, additional emphasis on protecting existing sagebrush would be included. Therefore, the direct and indirect effects of energy development to elk in Management Zone IV from the added management actions under Alternative D, which would be largely beneficial for elk when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Alternative D would apply the following conservation measures to reduce the potential negative impacts of recreation on GRSG in Priority, Medial and General Habitat: Special Recreation Permits would be analyzed on a case-by-case basis and use would be directed away from sensitive seasons and/or areas; certain developed recreation sites and associated facilities would be designed or designated to direct use away from sensitive areas; and seasonal restrictions for authorized activities would be incorporated. Under Alternative D, these measures would reduce the general impacts of recreation on elk in winter range overlapping Priority, Medial and General Habitat that were described under Alternatives A and B more so than Alternatives A, B or C because it includes additional measures.

Cumulative Effects

Alternative D would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to elk in Management Zone under Alternative D, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Alternative E1

Infrastructure – Direct and Indirect Effects

Alternative E1 is similar to Alternative B but not as restrictive. Core and Important habitat areas would generally be identified as new ROW avoidance areas. Within Core habitat, new infrastructure ROWs or SUAs would be co-located with existing infrastructure. In Important areas, new infrastructure could be built if habitat protection criteria are met. General impacts on elk and elk habitat under Alternative E1 would be the same as those for Alternative A. Because Alternative E1 includes fewer limitations on infrastructure within sage-grouse habitat than Alternative B, the potential for some infrastructure-related impacts on elk may be higher under Alternative E1. While Alternative E1 would reduce the likelihood of impacts from infrastructure on elk compared to existing management under Alternative A, it would not be as protective as sagebrush habitat as Alternative D, which would designate Priority,

Medial and General Habitat as new ROW avoidance areas, or Alternatives C or F, which would generally manage all occupied GRSG habitat as a new ROW exclusion area.

Cumulative Effects

Management actions associated with infrastructure under Alternative E1 would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to elk in Management Zone IV under Alternative E1, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Fire and Fuels – Direct and Indirect Effects

Alternative E1 would focus resources to reduce wildfire in sagebrush areas, prioritizing fire suppression and maintaining fuel breaks in Core and Important habitats. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to Core and Important habitat areas would be reduced to limit fire damage. This alternative is unique compared with the others in that adaptive management would be used to account for acres of habitat lost to fire in Core and Important habitat. Although these measures would reduce the threat of wildfire to sagebrush and reduce damage to elk winter range overlapping with Core, Important, and, in some cases, General habitat, suppression-related juniper encroachment discussed in Alternative A could increase in some areas under Alternative E1, eliminating winter forage for elk and eventually resulting in heavy fuel loadings that could contribute to larger-scale wildfire events. This would be offset to a certain degree, however, by restoration and vegetation management measures that prioritize the removal of conifers, through appropriate methods, in Core and Important habitat.

The general effects of fire suppression and fuels treatments under Alternative E1 would be similar to those of Alternative A. Alternative E1 would be the most protective in terms of elk winter range overlapping sage-grouse habitat due to the combination of suppression prioritization and adaptive management measures, but it would have similar short-term negative impacts on elk habitat as Alternatives B, C and D from fuel break construction and maintenance.

Cumulative Effects

Management actions under Alternative E1, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to elk in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for

elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative E1 would maintain the policies described under Alternative A and include additional measures to protect Core, Important and General habitat areas. Core, Important and General habitat would be actively managed to prevent invasion. Eradication and control of invasive plants threatening sage-grouse habitat would be actively pursued in Core and Important habitat and invasive plants would be monitored for three years following a fire in these habitat areas. The measures under Alternative E1 would significantly reduce the impacts of invasive plants described under Alternative A on elk winter range overlapping Core, Important and General habitat, and would be the most protective in terms of controlling invasive plants in elk winter range in these areas. However, the short-term impacts on elk habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on elk and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to elk. Therefore, the direct and indirect effects of invasive plants management to elk in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Conifer Encroachment – Direct and Indirect Effects

Alternative E1 would prioritize conifer removal in Core and Important habitat using methods that would minimize disturbance to GRSG. Conifer encroachment projects would focus on areas with highest restoration potential (low canopy cover, existing sagebrush understory, and adjacent sage-grouse populations, and would not be conducted in juniper stands older than 100 years). In addition, as described above Invasive Plants, Core, Important and General habitat would be actively managed to prevent invasion. Unlike Alternative D, Alternatives E1 and E2 contain a specific restoration measure addressing conifer encroachment. However, Alternative D addresses conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area. Although treatments associated with these measures have the potential to negatively impact sagebrush habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would benefit elk winter range in the long term by reducing the negative impacts from conifer encroachment described in Conifer Encroachment under Alternative A.

Cumulative Effects

Under Alternative E1, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative



A. Therefore, the direct and indirect effects of conifer encroachment management to elk in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Livestock Grazing – Direct and Indirect Effects

Alternative E1 takes a very different approach to livestock grazing than the other alternatives. Management under Alternative E1 would add sage-grouse guidelines to grazing management plans in Core and Important habitat. Rangeland health assessments and permit renewal assessments would be conducted in Core and Important habitat; allotments within Core habitat that have declining sage-grouse populations would be prioritized, followed by allotments within Important habitat that contain breeding habitats with decreasing lek counts. If assessments determined that livestock grazing were limiting the achievement of desired habitat characteristics, grazing permits would be adjusted during the renewal process to include measures to achieve desired conditions. These measures would reduce the potential for elk winter range deterioration in areas where it overlaps GRSG Core and Important habitat. Relative to Alternative B, Alternative E1 focuses less management on riparian areas, meadows, and other wetlands.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Alternative E1 would follow much of the current guidance on leasing and development of mineral resources (Alternative A) but would add measures to minimize impacts to sage-grouse that could also minimize impacts on elk winter range: (1) in Core and Important habitat, exploration activities associated with oil and gas development that used temporary roads would be permissible if site disturbance were minimized; (2) in Core and Important habitat, surface occupancy associated with oil and gas development would not be allowed unless the surface development would not accelerate and/or cause declines in sage-grouse populations; (3) surface disturbance from roads associated with fluid mineral development would be limited to three percent and five percent of suitable habitat per an average of 640 acres in Core and Important habitats, respectively; and (4) wind energy development projects would comply with all infrastructure development best management practices and the 2012 U.S. Fish and Wildlife Service Wind Energy Guidelines. Impacts on elk from energy development activities would essentially continue as described in Alternative A although their magnitude and spatial distribution would differ. The effects of wind energy on elk, as described in Infrastructure and Energy Development under Alternative A, would be expected to be reduced as the result on compliance with FWS Wind Energy Guidelines.

Cumulative Effects

Management actions associated with energy development under Alternative E1 would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of energy development on elk in Management Zone IV from the management actions associated with energy development under Alternative E1, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Recreation – Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative E1 conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative E1, timing and seasonal restrictions would be applied to activities known to disturb nesting sage-grouse. This approach would likely have little beneficial effect on Rocky Mountain elk relative to the other alternatives because elk generally utilize sagebrush habitats as part of their winter range.

Cumulative Effects

Management actions associated with recreation management under Alternative E1 would include timing and seasonal restrictions for the Greater Sage-Grouse breeding season, which would be neutral to elk. Under Alternative E1, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to elk in Management Zone IV under Alternative E1, which would be largely neutral for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitat.

Alternative E2

Infrastructure

For all ROWs/SUAs in Priority Habitat, management stipulations and conditions would focus on mitigating direct disturbance to GRSG during construction. Priority Habitat would be designated as an avoidance area for new ROWs/SUAs, which is less protective of GRSG habitat than Alternatives B, C or F but similar to Alternatives D and E1. Similar to Alternatives B, C, and F, Alternative E2 would include a disturbance cap. However, Alternative E2 would apply a 5% disturbance cap as opposed to a 3% disturbance cap and the areas over which the caps would apply and the types of disturbances that contribute toward the caps would differ. Similar to Alternative D, Alternative E2 directly addresses siting of wind energy facilities, however, Alternative E2 would be less restrictive than Alternative D by avoiding rather than excluding siting of wind energy developments in



Priority Habitat, and applying BMPs and industry, state and federal stipulations in cases where siting in Priority Habitat could not be avoided. Similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities. Electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, new linear transmission features would be sited in existing corridors, or at a minimum, in concert with existing linear features in GRSG habitat. The effects of infrastructure on elk and sagebrush habitat described under Alternative A would be reduced for elk utilizing winter habitat overlapping priority GRSG habitat. GRSG habitat outside priority habitat would not be managed for the conservation of the species and no specific management actions are provided for this habitat. Therefore, current trends for elk would likely continue outside of priority habitat.

Cumulative Effects

Management actions associated with infrastructure under Alternative E2 would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to elk in Management Zone IV under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Fire and Fuels

Alternative E2 would implement the following unique measures to address response to fire and reduce the general effects of fire on sagebrush habitat as discussed under Alternative A: create and implement a statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority GRSG habitat; use prescriptive fire with caution in sagebrush habitat and only at higher elevations; conduct effective research into controlling fire size and protecting remaining GRSG areas that are adjacent to high-risk cheatgrass areas; focus research efforts on effective reclamation and restoration of landscapes altered by wildfire; manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush (80%), which would be available to GRSG above snow during a severe winter; and coordinate the needs and efforts related to GRSG with the State of Utah committee that was formed to develop a collaborative process to protect the health and welfare by reducing the size and frequency of catastrophic fires. These measures would generally be expected to benefit sagebrush habitat and Rocky Mountain elk. However, the following measures, have the potential to negatively impact Rocky Mountain elk winter range depending on types of species used for fire retardant vegetation and specific prescriptions: allow the use of fire-retardant vegetation that would buffer areas of high quality GRSG habitat from catastrophic fire; use prescribed fire in a manner designed prescriptively to benefit GRSG; consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. Overall, the protective benefits of Alternative E2 on elk and sagebrush habitat would likely be most

similar to that of Alternative B, but it would have similar short-term negative impacts on elk and sagebrush habitats as those described under Alternative A for suppression and prescribed fire.

Cumulative Effects

Management actions under Alternative E2, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to elk in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Invasive Plants

Alternative E2 directs land managers to aggressively respond to new infestations to keep invasive species from spreading. Every effort would be made to identify and treat new infestations before they become larger problems. Additionally, containment of known infestations in or near sagebrush habitats would be a high priority for all land management, and vegetation management tools described above for Fire and Fuels and below for Livestock Grazing would help to reduce the general impacts of invasive plants on GRSG as described under Alternative A. Alternative E2, like Alternative E1, probably would be more protective with respect to controlling invasive plants in sagebrush habitat and reducing the impacts of invasive plants on sagebrush habitat described under Alternative A than any of the other alternatives.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on elk and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to elk. Therefore, the direct and indirect effects of invasive plants management to elk in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Conifer Encroachment

Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively remove encroaching conifers and other plant species to expand GRSG habitat where possible. Although treatments associated with the measures in Alternative E2 would generally benefit elk and sagebrush habitat in the long term by reducing the negative impacts associated with conifer encroachment as described in Conifer Encroachment under Alternative A, thermal cover could be reduced, in some instances. In comparison, Alternative D would address conifer



encroachment as part of several restoration and fire suppression conservation measures and over a larger area which would likely provide a greater benefit to elk and sagebrush habitat. Alternative E2 is probably most similar to Alternative E1, except unlike Alternative E1, Alternative E2 does not include a stipulation for prioritization of removal methods minimizing disturbance. This difference would probably have little bearing on elk utilizing these habitats as winter range.

Cumulative Effects

Under Alternative E2, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to elk in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Livestock Grazing

Alternative E2 would continue to make GRSG priority and general habitat available for livestock grazing. Should site-specific concerns be raised about the effects of grazing upon GRSG habitat, and such effects are documented over a sufficiently long time-frame, corrective management actions would be addressed through the application of BMPs. Incompatible grazing strategies would be addressed through established rangeland management practices consistent with the maintenance or enhancement of habitat. GRSG seasonal habitat (leks, nesting/early brood rearing, late brood rearing and winter) requirements would be considered when managing sagebrush rangelands. Water developments would be designed to enhance mesic habitat for use by GRSG and maintain adequate vegetation in wet meadows. Within priority habitat, GRSG stipulations would take precedence over stipulations for other species if conflicts occur, if otherwise allowable by law. New infestations of invasive exotic plants would be responded to aggressively to prevent spreading. Overall, measures associated with livestock grazing under Alternative E2 would probably reduce the potential for the negative effects of grazing on elk as described under Alternative A and benefit elk and sagebrush habitat. The only exception might be if/where GRSG stipulations were to conflict with any for elk. In general, Alternative E2 would probably be less protective of elk and sagebrush habitat than Alternatives B, C, D or F.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to elk. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Energy Development

Under Alternative E2, Priority Habitat would be considered to be suitable for further coal leasing and coal that would be extracted through underground mining. Priority and general habitat that is not already withdrawn or proposed for withdrawal would be available for locatable mineral entry. Priority habitat would be open to mineral materials and oil and gas leasing and would be an avoidance area for wind energy development, although it would not be precluded. All of the aforementioned forms of energy development, as well as non-energy leasable mineral lands, solid mineral exploration and geophysical exploration activities, would be subject to the following: disturbance in Priority Habitat would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance in Priority Habitat is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided.

All existing fluid mineral uses are explicitly recognized by this alternative and would not be affected by the implementation of this alternative. The GRSG conservation measures identified in the associated NEPA documents for each of these projects would continue to be implemented to protect GRSG and its habitat. Provisions of this alternative would not be added to the measures identified each specific project.

GRSG habitat outside priority habitat would not be managed for the conservation of the species and no specific management actions are provided for this habitat. Similar to Alternative E1, impacts on elk and sagebrush habitat from energy development activities under Alternative E2 would essentially continue as described in Alternative A, although somewhat reduced by the application of BMPs.

Cumulative Effects

Conservation management actions associated with energy development under Alternative E2 would increase protection of Greater Sage-Grouse and sagebrush habitat, thereby sagebrush habitat. Under Alternative E2, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects on elk in Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Recreation

Alternative E2 conservation measures with the greatest potential to affect elk or elk winter range include the following: within priority habitat, disturbance would be avoided, if possible, or minimized by locating development in habitat of the least importance to GRSG if avoidance is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided. Alternative E2 has the potential to be more protective of elk and elk winter range, provided developments do not end up being concentrated in important elk winter range,



than any of the other alternatives because measures to reduce impacts would apply to all recreational activities as opposed to only SUAs or camping.

Cumulative Effects

Management actions associated with recreation management under Alternative E2 would reduce disturbance to Greater Sage-Grouse, thereby benefitting elk. Under Alternative E2, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to elk in Management Zone IV under Alternative E2, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Alternative F

Infrastructure – Direct and Indirect Effects

Land uses and realty management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The effects on elk and elk winter range overlapping GRSG habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of infrastructure management on Rocky Mountain elk and sagebrush habitat within Management Zone IV would be the same.

Fire and Fuels – Direct and Indirect Effects

Fire and fuels management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The impacts on elk and elk winter range overlapping GRSG habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of fire and fuels management on Rocky Mountain elk and sagebrush habitat within Management Zone IV would be the same.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Invasive plants management under Alternative F would essentially be the same as that under Alternative B. Together, these measures would reduce impacts from invasive plants on sagebrush habitat, as described under Alternative A, but the effects of the treatments would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of invasive plants management on Rocky Mountain elk and sagebrush habitat within Management Zone IV would be the same.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative F does not directly address conifer encroachment and would maintain the invasive plant direction described under Alternative A. Although the types of impacts would be the same, the conservation measures described above in Invasive Plants and the fuels treatments described above in Fire and Fuels would likely reduce the magnitude of the impacts on elk winter range associated with conifer encroachment relative to Alternative A. Because those measures generally would apply throughout occupied GRSG under Alternative F whereas they would be limited to PPH under Alternative B, Alternative F could provide an additional reduction in the magnitude of impacts on elk winter range from conifer encroachment relative to Alternative B.

Cumulative Effects

Refer to Alternative B. The cumulative effects of conifer encroachment management on Rocky Mountain elk and sagebrush habitat within Management Zone IV would be the same.

Livestock Grazing – Direct and Indirect Effects

Alternative F would include beneficial management actions similar to those of Alternative B except they would apply in all GRSG habitats. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Together these efforts would reduce the potential for negative impacts from grazing on elk and elk winter range described under Alternative A.

Cumulative Effects

Under Alternative F, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative F would provide an added benefit to elk. Therefore, the direct and indirect effects of livestock grazing to elk in Management Zone IV from the management actions under Alternative F, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Energy Development – Direct and Indirect Effects

Under Alternative F siting of wind energy development would be prevented in PPH; PPH would be closed to new fluid mineral leasing, non-energy leasable mineral leasing, and mineral material sales; it would be proposed for withdrawal from mineral entry; no new surface occupancy (NSO) would be stipulated for leased fluid minerals and a 3% disturbance cap would be applied. Numerous conservation measures would be implemented to reduce impacts from mineral exploration and development activities in PPH. Like Alternative B, Alternative F does not include specific management for locatable, or saleable or non-energy minerals in PGH. Unlike Alternative B, Alternative F directly addresses wind energy and fluid minerals development outside of PPH: wind energy would be sited at least five miles



from active sage-grouse leks and at least four miles from the perimeter of sage-grouse winter habitat and areas within 4 miles of active sage-grouse leks would be closed to new fluid minerals leasing. Alternative F, although similar to Alternative B, would reduce the impacts of energy development on elk and elk winter range, as described under Alternative A, more so than Alternative B because it addresses siting of wind energy and fluid minerals leasing outside of PPH more thoroughly than alternative B.

Cumulative Effects

Management actions associated with energy development under Alternative F would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of livestock grazing on elk in Management Zone IV from the management actions associated with energy development under Alternative F, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

Recreation – Direct and Indirect Effects

Alternative F would follow the same general approach as Alternative A, however, like Alternative B, only recreational SUAs that are neutral or beneficial to GRSG would be permitted in PPH. In addition, within all occupied habitat, camping areas within 4 miles of active leks would seasonally be closed. The general recreational effects of Alternative F on elk and elk winter range would be the same as those for Alternatives A and B. Seasonal closures would have no impact on Rocky Mountain elk because elk utilize sagebrush habitat as winter range.

Cumulative Effects

Management actions associated with recreation management under Alternative F would increase protection of sagebrush habitat, thereby benefitting elk rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to elk in Management Zone IV under Alternative F, which would be largely beneficial for elk, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to elk or sagebrush habitats.

M.6.4 Riparian Bird Species Richness

The Land and Resource Management Plan for the Curlew National Grassland (USDA 2002, pg. 2-4 & 2-5) uses general species richness of breeding birds (passerines) as a management indicator species for riparian habitats.

Habitat Associations and Threats

Riparian vegetation includes willow, cottonwood, sedges or other riparian vegetation. Threats to the CNG riparian vegetation primarily include fire, and trespass grazing (i.e., grazing beyond forest plan standards).

Curlew National Grassland MIS Monitoring

Eight breeding bird survey transects have been established in the riparian areas of the CNG, including: Salyer, Meadowbrook, Rock Creek (3), Sheep Creek, North Canyon and Twin Springs. Fifty-two (52) species of birds have been documented during the riparian breeding bird survey (Colt 2009).

Alternative A

Infrastructure – Direct and Indirect Effects

Existing land use plans direction would apply under Alternative A. There would be no changes to the current National Forest System infrastructure including power lines, wind turbines, communications towers, fences or roads. Although infrastructure would not be expected to be sited in riparian areas, existing and new power lines, wind turbines, communications towers, fences, and vehicles traveling on associated roads would continue to pose a collision hazard to migratory riparian birds or those that also utilize upland habitats. It can also provide potential perching and/or nesting habitat for avian predators. Though most projects would be forced to mitigate or minimize impacts, this alternative has the potential to have the greatest impact on riparian birds and its habitat.

Cumulative Effects

The baseline date for the cumulative impacts analysis for riparian birds is 2012. The temporal scope of this analysis is a 20-year planning horizon; land use planning documents are generally evaluated on a 5-year cycle. The temporal boundary for cumulative effects analysis for riparian birds is the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone IV (Snake River Plain) for Greater Sage-Grouse because all of the Idaho/Montana planning area, with the exception of a small portion of privately-held lands located within Management Zone II within the southeastern corner of Idaho, is located within Management Zone IV (MZ IV).

Current infrastructure management activities would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, E1, E2 or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable future actions, may result in increased impacts on riparian birds in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Fire and Fuels – Direct and Indirect Effects

Alternative A would continue to manage wildfire and prescribed burns under current direction which would have the fewest restrictions for fire and fuels management actions and a high potential for vegetation disturbance, although land management plan (LMP) standards to protect riparian habitats are normally implemented. Prescribed burns could be



used within sagebrush habitat where needed to control fuel loading. Policies would not prioritize protection or restoration of mature sagebrush habitat. Increased human activity and noise associated with wildland fire suppression and prescribed fire could disrupt nesting, breeding, or foraging behavior of riparian birds although aforementioned LMP standards to protect riparian habitats would minimize these effects. The use of heavy equipment or hand tools could lead to invasion of exotic plants into riparian areas resulting in degradation of riparian areas. Other potential impacts may include injuring or killing eggs/chicks or causing changes in species movement patterns or distribution of prey species due to areas devoid of vegetation.

In addition, suppression may initially result in higher rates of juniper encroachment in some areas. In the initial stages of encroachment (phase 1), fuel loadings remain consistent with the sagebrush understory. As juniper encroachment advances (phases 2 and 3) and the understory begins to thin, the depleted understory causes the stands to become resistant to wildfire and further alter fire return intervals. During years of high fire danger, the resulting heavy fuel loadings in these stands can contribute to larger-scale wildfire events and confound control efforts due to extreme fire behavior.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E1, E2 and F. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and adjacent riparian habitat from wildfire in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative A would continue the management of invasive weeds under current direction. To reduce the likelihood of invasive weed spread and the extent of current infestations, integrated weed management techniques, including mechanical, manual, chemical, and biological control are utilized. Existing Coordinated Weed Management Areas would remain in effect, and firefighting vehicles would be washed prior to deployment. These policies would limit impacts from spread of weeds as effectively as possible under current resource constraints. Invasive plants (such as knapweeds, knotweeds and thistles) degrade riparian habitats by competing with native plants.

Management of vegetation resources to protect GRSG would alter vegetative communities by promoting increases in sagebrush height and herbaceous cover and vegetation productivity. With the exception of the riparian/sagebrush interface, treatments in sagebrush habitat designed to prevent encroachment of shrubs, non-native species or woody vegetation would be expected to have little impact on riparian vegetation. Within the riparian sagebrush interface, riparian birds would be subject to disturbance and riparian vegetation could be subjected to small amounts of herbicide drift.

Cumulative Effects

Under Alternative A, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on riparian habitats would continue to be outweighed by the long-term beneficial impacts. Therefore, the direct and indirect effects of invasive plants management to riparian habitat in Management Zone IV from the management actions under Alternative A, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Conifer Encroachment – Direct and Indirect Effects

Expansion of conifer woodlands/juniper can negatively impact riparian areas. In areas of high juniper density, less precipitation feeds surface springs and streams because juniper plants intercept and transpire water back into the atmosphere. As the carpet of native grasses converts to juniper, the soil hardens creating bare ground and runoff potential increases. Mature trees may offer perch sites for avian predators. Alternative A does not directly address conifer encroachment. However, habitat restoration and vegetation management policies described above under Invasive Plants and fuels treatments described under Fire and Fuels would likely also reduce juniper encroachment.

Cumulative Effects

Current conifer encroachment management would continue under Alternative A and the measures addressing conifer encroachment would not be instituted as they would be in several of the action alternatives. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased degradation of the existing riparian habitat from conifer encroachment in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Livestock Grazing – Direct and Indirect Effects

Under this alternative, livestock grazing would continue to be managed under current direction. There would be no change in the locations, numbers, timing, or method of livestock grazing within these national forests. Grazing practices can benefit riparian areas/birds by reducing fuel loads in adjacent sagebrush communities. However, grazing at inappropriate intensity, season, or location may alter or degrade riparian habitat. Cattle can trample or disturb individual birds or nests.

Under current direction, the Forest Service may utilize a number of mechanisms to reduce the potential for negative impacts from grazing on GRSG that could also benefit riparian areas/birds. The only planning-level decision available is to decide where areas would be open and closed to livestock grazing. Future impacts would be eliminated in areas closed to grazing, but past impacts would likely persist for some time, and closing grazing may result in other harmful impacts. Other changes in management would occur at the implementation level during the permit renewal process which occurs every ten years and for which subsequent NEPA analysis would be conducted. At the implementation level, changes in



grazing management within riparian and wet meadows could be considered which could reduce the potential for negative impacts.

Cumulative Effects

Under Alternative A, within Management Zone IV, livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative A, which would be largely neutral for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development – Direct and Indirect Effects

Under Alternative A, all mineral leasing and development and wind energy development would continue to be managed under current direction. As such, this alternative would be expected to cause the greatest amount of direct and indirect impacts on riparian birds. Although energy development infrastructure would not be expected to be sited in riparian areas, turbines and vehicles traveling on associated roads would continue to pose a collision hazard to migrating riparian birds or those that also utilize upland habitats.

Cumulative Effects

Management under Alternative A would maintain the current acreage open to energy development. Current energy development activities would continue under Alternative A. The closure of areas to energy development would not be instituted as they would be under most of the action alternatives. Therefore, under Alternative A, the direct and indirect effects of energy development, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased disturbance or mortality of riparian birds in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Recreation – Direct and Indirect Effects

Under this alternative there would be no changes to the current National Forest System Roads, transportation plan, or recreation management on these forests. Under current management, travel on Forest Service-administered lands is limited to existing/designated roads. There would be minimal seasonal restrictions. In general, the more acres and lineal miles of routes that are designated in an area, the greater the likelihood of wildlife habitat fragmentation and disturbance. In addition, less restrictive travel conditions usually mean higher concentrations of human use adjacent to motorized routes and in riparian areas. This can cause disruption of nesting activities, abandonment of young and temporary displacement. In addition, impacts from roads may include habitat loss from road construction, noise disturbance from vehicles, and direct mortality from collisions with vehicles. This alternative has the greatest potential to impact riparian birds and habitat due to the lack of restrictions on activities that cause these effects. Therefore all direct and indirect effects on riparian birds/habitat would likely cause current trends to continue.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on recreational disturbances to GRSG would not be instituted as they would be under the action alternatives. Under Alternative A, the direct and indirect effects from recreation management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing riparian habitat and disturbance to riparian birds in Management Zone IV (refer to the Cumulative Effects section of the Draft EIS).

Alternative B

Infrastructure – Direct and Indirect Effects

Alternative B places a 3% disturbance threshold on new ROWs or SUAs within PPH. Under this alternative, all PPH would be managed as exclusion areas and PGH would be managed as an avoidance area for new ROW and SUA projects, and it would require co-location of new ROWs or SUAs with existing infrastructure. In PPH, new facilities would be co-located with existing facilities where possible and use of existing roads, or realignments to access valid existing rights that are not yet developed or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads. This alternative would minimize infrastructure-related impacts on riparian birds in riparian areas overlapping PPH. Collision hazards (power lines, communications towers, fences, and vehicles traveling on associated roads) for riparian birds that utilize upland habitats would be reduced as would potential perching and/or nesting habitat for avian predators.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat which would benefit riparian birds by preventing collisions and predator perches. Therefore, the direct and indirect effects of infrastructure management to riparian birds in Management Zone IV under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to riparian birds or riparian habitat.

Fire and Fuels – Direct and Indirect Effects

Under Alternative B, suppression would be prioritized in PPH to protect mature sagebrush habitat and could, therefore, protect riparian habitat as well. Suppression would be prioritized in PGH only where fires threaten PPH. The effects of suppression-related juniper encroachment on riparian birds as discussed under Conifer Encroachment in Alternative A could increase in some areas under Alternative B. Alternative B does not include any other specific management for wildland fire management in PGH. In addition, fuels treatments in PPH would include monitoring and control for invasive species and fuels management



BMPs would incorporate invasive plant prevention measures. These measures would reduce the likelihood of invasion of exotic plants into riparian areas and the potential for degradation of riparian areas resulting from invasion.

Cumulative Effects

Management actions under Alternative B, with respect to fire and fuels management, would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting adjacent riparian habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities and pre-suppression planning and staging for maximum protection of sagebrush habitat would be included. Fuels treatment activities would focus on protecting sagebrush habitat, primarily within PPH. Therefore, the direct and indirect effects of fire to riparian birds in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Under Alternative B, weed control efforts would continue to be managed under current direction (see Alternative A). However, vegetation management conservation measures would benefit weed control efforts in PPH by prioritizing restoration efforts, including reducing invasive plants and by monitoring and control after fuels treatments and at existing range improvements. Together, these measures would reduce impacts to riparian habitat overlapping PPH from invasive plants as described under Alternative A although the effects of the treatments would be the same.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the minor, short-term negative impacts of these activities on riparian birds in adjacent riparian habitat would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat, under Alternative B would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of invasive plants management to riparian birds in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Conifer Encroachment – Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment, but the vegetation management conservation measures for PPH described above in Invasive Plants would be likely to reduce the negative impacts of conifer encroachment, as described under Alternative A, on riparian habitat overlapping PPH.

Cumulative Effects

Under Alternative B, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to riparian birds in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Livestock Grazing – Direct and Indirect Effects

Alternative B would implement a number of beneficial management actions in PPH to incorporate sage-grouse habitat objectives and management considerations into livestock grazing management. Those that could affect riparian birds and riparian habitat include completion of Land Health Assessments, consideration of grazing methods and systems to reduce the potential for negative impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, authorization of new water developments and structural range improvements only when beneficial to GRSG, and BMPs for West Nile Virus. Several management actions to reduce impacts from livestock grazing on sage-grouse general habitat would be incorporated, including the potential to modify grazing systems to meet seasonal sage-grouse habitat requirements and management to improve the conditions of riparian areas and wet meadows. Together these efforts would reduce the potential for negative grazing-related impacts on riparian birds and riparian habitat overlapping PPH as described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative B would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development – Direct and Indirect Effects

Under this Alternative, PPH would be closed to new fluid mineral leasing, non-energy leasable mineral leasing, and mineral material sales, and it would be proposed for withdrawal from mineral entry. In addition, mandatory BMPs would be applied as conditions of approval on fluid mineral leases. Existing leases entirely within PPH would require application of 4-mile, no surface occupancy (NSO) buffers around leks, limiting disturbances within sections to the 3% threshold and application of numerous conservation measures reduce impacts from mineral exploration and development activities in PPH.

Alternative B does not include specific management for fluid, saleable, locatable, and non-energy leasable minerals in PGH or wind energy in PPH or PGH. As a result, current trends



would continue and impacts would be similar to those under Alternative A. Although Alternative B does not directly address wind energy development or industrial solar development, its 3% threshold for anthropogenic disturbances (including, but not limited to, highways, roads, geothermal wells, wind turbines, and associated facilities) would apply to energy development and would limit the extent of all types of energy development in PPH. These measures would reduce the impacts of energy development on riparian birds and their habitat as discussed under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included, reducing the potential for predator perches and collisions with riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Recreation – Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative B conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative B, only recreational SUAs that are neutral or beneficial to sage-grouse would be permitted in PPH and there would be limited opportunities for road construction in PPH, with minimum standards applied and no upgrading of current roads. Restricting recreational SUAs in PPH, as well as the travel restrictions under those SUAs, would be expected to have a minor beneficial effect to riparian habitat and birds by reducing the general recreational impacts, as discussed under Alternative A, to a small degree.

Cumulative Effects

Management actions associated with recreation management under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting adjacent riparian habitat and riparian birds. Under Alternative B, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to riparian birds in Management Zone IV under Alternative B, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Alternative C

Infrastructure – Direct and Indirect Effects

Unlike Alternative B, which would permit wind energy siting in PPH provided a development disturbance threshold of 3% were not exceeded, Alternative C would not permit wind energy development siting in all occupied GRSG habitat. In addition, Alternative C would extend many of the Alternative B conservation measures to all occupied GRSG habitat and all occupied GRSG habitat would be managed as an exclusion area for new ROW projects. As a result, management under Alternative C would encourage consolidation of sagebrush habitats, facilitate habitat conservation and management and reduce the impacts of infrastructure on riparian birds as described under Alternatives A and B in a wider area than Alternative B. Therefore, of the three alternatives discussed so far, it would be the most protective of riparian birds in terms of infrastructure.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included which would benefit riparian birds by preventing collisions and predator perches. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to riparian birds in Management Zone IV under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Fire and Fuels – Direct and Indirect Effects

The conservation measures in Alternative C are similar to Alternative B except that prioritization of suppression would apply to All Occupied GRSG Habitat. Therefore, more riparian habitat could be protected from wildfire but the effects of suppression-related juniper encroachment on riparian birds as discussed under Conifer Encroachment in Alternative A could increase relative to Alternative B in some areas. Measures to manage vegetation for good or better ecological and the prioritization of restoration treatments invasive plants (see below) would reduce the likelihood of invasion of exotic plants into riparian areas and the potential for degradation of riparian areas resulting from invasion. The general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

Management actions under Alternative C, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting adjacent riparian habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities would be included. Therefore, the direct and indirect effects of fire to riparian birds in Management



Zone IV from the management actions under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative C would maintain the direction described under Alternative A along with additional provisions that would limit invasive weed spread in all occupied GRSG habitat. Vegetation management would benefit weed control efforts, by prioritizing restoration, including reducing invasive plants, in all occupied GRSG habitat in order to benefit sage-grouse habitats. These policies would reduce impacts from invasive plants on riparian habitat overlapping occupied GRSG habitat as described under Alternative A, and have similar impacts associated with treatment, but would include additional conservation measures specific to limiting the spread of invasive plants. In addition, grazing would be eliminated within all occupied sage-grouse habitat, eliminating the potential for invasive plant spread by livestock into riparian habitat overlapping GRSG occupied habitat. This would make Alternative C more protective of riparian habitat than Alternatives A or B.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue. However, additional emphasis on protecting existing sagebrush habitat, under Alternative C would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of invasive plants management to riparian birds in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment but the weed control policies described above in Invasive Plants and the fuels treatments described above in Fire and Fuels have the potential to reduce juniper encroachment in the long term.

Cumulative Effects

Under Alternative C, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to riparian birds in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Livestock Grazing – Direct and Indirect Effects

Under Alternative C, grazing would be eliminated within all occupied sage-grouse habitat reducing the potential for both negative and positive grazing-related impacts on riparian birds and habitat discussed under Alternative A more so than any of the other alternatives. No new water developments or range improvements would be constructed in occupied habitat which could benefit riparian habitat by preventing additional diversions from seeps or springs.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would be eliminated which would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development – Direct and Indirect Effects

Alternative C would expand the protections under Alternative B to all occupied GRSG habitat as well as prohibit new exploration permits for unleased fluid minerals. Unlike Alternative B, wind energy development would not be allowed in occupied GRSG habitat. Like Alternative B, the conservation measures would reduce the general impacts of energy development on riparian birds described under Alternatives A and B, but possibly to a larger degree than any of the other alternatives because of the greater potential for overlap of all occupied GRSG habitat with riparian habitat.

Cumulative Effects

Under Alternative C, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all occupied GRSG habitat to existing closures and proposing it for withdrawal would be included, reducing the potential for predator perches and collisions with riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Recreation – Direct and Indirect Effects

Alternative C is similar to Alternative B but applies to all occupied GRSG habitat as opposed to PPH. Therefore, it has the potential to protect a larger amount of riparian birds and habitat from the general recreational impacts described in Alternatives A and Alternative B.

Cumulative Effects

Management actions associated with recreation management under Alternative C would increase protection of sagebrush habitat, thereby benefitting adjacent riparian habitat and riparian birds. Under Alternative C, within Management Zone IV, some of the current



recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to riparian birds in Management Zone IV under Alternative C, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Alternative D

Infrastructure – Direct and Indirect Effects

Many of the infrastructure-related conservation measures under Alternative D address siting and, as discussed under Alternative A, would have little bearing on riparian habitat or birds, but Alternative D conservation measures that prohibit wind developments in Priority Habitat, restrict them in Medial Habitat and avoid them in General Habitat could reduce collision hazards with migratory riparian birds or those that utilize upland habitats. Like Alternatives B and C, co-location of new authorizations within or adjacent to existing disturbance/footprint and burying of power and communication lines could reduce the collision hazard of power lines, communications towers or fences for riparian birds that utilize upland areas.

Unlike Alternatives B and C, Alternative D has no provisions requiring the use of existing roads or realignments to access valid existing rights that are not yet developed or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads. Therefore, it would be less protective than Alternative B in terms of its potential to reduce collision hazards between riparian birds that utilize upland habitats and vehicles traveling on roads associated with infrastructure.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat which would benefit riparian birds by preventing collisions and predator perches. Therefore, the direct and indirect effects of infrastructure management to riparian birds in Management Zone IV under Alternative D, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to riparian birds or riparian habitat.

Fire and Fuels – Direct and Indirect Effects

Alternative D would prioritize fire suppression in Priority and Medial Habitats, which together equal PPH. Unlike Alternative B, it would also include the following conservation measures in Priority, Medial and General Habitat to strategically reduce fire effects: pre-planning and firefighter training in sagebrush management as related to suppression activities; designing and implementing fuels treatments with an emphasis on maintaining, protecting and expanding sage grouse habitats; and considering conifer encroachment areas

as areas to manage wildfire for resource benefit. Although Alternative D is similar to Alternatives B and C in prioritizing fire suppression, it would prioritize it in more GRSG habitat than Alternative B (only PPH) and less than Alternative C (all occupied habitat). Therefore, based on suppression alone, the potential for the negative effects of suppression-related juniper encroachment on riparian birds (see Conifer Encroachment in Alternative A) would be less under Alternative D than under Alternatives B or C. However, delineating conifer encroachment areas in Priority, Medial and General GRSG habitat as areas to manage wildfire for resource benefit would reduce the amount of juniper encroachment, protecting a larger amount of riparian habitat than any of the other alternatives from the negative impacts of conifer/juniper encroachment and counteracting at least some suppression-related conifer encroachment.

Cumulative Effects

Management actions under Alternative D, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting adjacent riparian habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities would be included. Therefore, the direct and indirect effects of fire to riparian birds in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Under Alternative D, the direction described under Alternative A would be maintained making it the same in terms of impacts from invasive plants and associated treatments. Similar to those of Alternative B, vegetation management conservation measures included in this alternative would benefit weed control efforts in the long term by prioritizing restoration efforts, including reducing invasive plants, and monitoring and controlling invasive species after construction, fuels treatments and at new range improvements. Unlike Alternative B, monitoring and controlling invasive species after fuels treatments and at new range improvements would apply to Priority, Medial, and General Habitat rather than only PPH. These policies have the potential to reduce the general impacts of invasive plants described under Alternative A on riparian habitat overlapping these areas.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue. However, additional emphasis on protecting existing sagebrush habitat, under Alternative C would provide a net added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of invasive plants management to riparian birds in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for riparian



birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Conifer Encroachment – Direct and Indirect Effects

Under Alternative D, implementation of vegetation rehabilitation projects designed to achieve the greatest improvement in sage-grouse abundance and distribution, including those that address conifer encroachment, in Priority, Medial and General habitat would be prioritized. Factors contributing to higher emphasis would include the likelihood of conifer encroachment into sage-grouse habitat. In addition, vegetation management tools described above for Invasive Plants and Fire and Fuels would help to reduce encroachment in Priority, Medial and General habitat, and to reduce the negative impacts of conifer encroachment on riparian habitat overlapping these areas as discussed under Alternative A. Impacts from treatments associated with this alternative would be the same as those described for vegetation treatments under Invasive Plants and Fire and Fuels under Alternative A. Alternative D would address conifer encroachment more so than any of the other alternatives and, therefore, is more protective of riparian habitat overlapping GRSG habitat than any of the other alternatives.

Cumulative Effects

Under Alternative D, within Management Zone IV, vegetation rehabilitation projects targeting conifer encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to riparian birds in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Livestock Grazing – Direct and Indirect Effects

Management under Alternative D would include the same conservation measures as Alternative B, but expands many of those measures to Priority, Medial habitat and General Habitat. It would also manage for vegetation composition (including riparian and lentic areas) and structure consistent with appropriate sage-grouse seasonal habitat objectives relative to site potential. Both Alternatives D and F apply the same conservation measures as Alternative B, but Alternative B largely applies only to PPH, whereas Alternative D applies to Priority, General, and Medial habitat, and Alternative F applies to all occupied habitat. Together, these efforts would reduce the potential for negative grazing-related impacts on riparian birds and habitat described under Alternative A more so than Alternatives B, or E, but less than Alternative C. It would be similar to Alternative F.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for

riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development – Direct and Indirect Effects

Alternative D would close most Priority Habitat to future fluid mineral leasing and non-energy minerals leasing and development. It would place additional stipulations and seasonal restrictions on existing and future fluid mineral leases in certain Medial Habitat areas: leasing would be allowed subject to standard seasonal and daily stipulations in breeding and winter habitat and well density would not be allowed to exceed 1/640 acres; NSO of 3 km (1.86 miles) would be allowed around leks. In addition, Medial Habitat would be closed to non-energy minerals leasing. In General Habitat, NSO would be allowed for non-energy minerals leasing, or within 3 km (1.86 miles of Priority or Medial Habitat), or for future fluid mineral leasing within 3 km of occupied leks. Otherwise, General Habitat would be available for fluid or non-energy minerals leasing subject to applicable seasonal and daily timing restrictions. Geophysical exploration would be allowed in Priority, Medial and General Habitat, subject to seasonal timing restrictions and/or other restrictions that may apply. These actions would probably reduce the impacts of energy development on riparian birds discussed under Alternative A to a level similar to that of Alternative B.

Unlike Alternative B, Alternative D directly addresses solar and wind energy development. Solar and wind energy development would not be allowed within Priority Habitat. In Medial Habitat, wind and solar energy development would be restricted where adverse effects could not be mitigated. Ancillary facilities such as roads, electric lines, etc. could potentially be authorized provided mitigation prevents any net loss of sage-grouse habitat. General Habitat would be considered avoidance areas for wind and solar development. Relative to Alternatives A and B, these actions could reduce the potential for collisions between turbines and riparian birds within habitat overlapping with Medial Habitat. But if these measures lead to the concentration of wind energy developments outside of Medial Habitat, any net benefit to riparian birds could be eliminated.

Cumulative Effects

Under Alternative D, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included, reducing the potential for predator perches and collisions with riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative D, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Recreation – Direct and Indirect Effects

Alternative D would apply the following conservation measures to reduce the potential negative impacts of recreation on GRSG in Priority, Medial and General Habitat: Special Recreation Permits would be analyzed on a case-by-case basis and use would be directed away from sensitive seasons and/or areas; certain developed recreation sites and associated facilities would be designed or designated to direct use away from sensitive areas; and



seasonal restrictions for authorized activities would be incorporated. Under Alternative D, these measures could reduce the general impacts of recreation on riparian birds and habitats overlapping Priority, Medial and General Habitat that were described under Alternatives A and B. This alternative might have an extra protective benefit to riparian birds and their habitat than Alternatives A, B or C because it addresses roughly the same amount of GRSG habitat as Alternative C but includes additional conservation measures.

Cumulative Effects

Management actions associated with recreation management under Alternative D would increase protection of sagebrush habitat, thereby benefitting adjacent riparian habitat and riparian birds. Under Alternative D, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to riparian birds in Management Zone IV under Alternative D, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Alternative E1

Infrastructure – Direct and Indirect Effects

Alternative E1 is similar to Alternative B but not as restrictive. Core and Important habitat areas would generally be identified as new ROW avoidance areas. Within Core habitat, new infrastructure ROWs or SUAs would be co-located with existing infrastructure. In Important areas, new infrastructure could be built if GRSG habitat protection criteria are met. General impacts on riparian birds and riparian habitat under this alternative would be the same as those for Alternative A. Because Alternative E1 includes fewer limitations on infrastructure within sage-grouse habitat than Alternative B, the potential for some infrastructure-related impacts on riparian birds may be higher under Alternative E1. While Alternative E1 would reduce the likelihood of impacts from infrastructure compared to existing management under Alternative A, it would not be as protective as sagebrush habitat as Alternative D, which would designate Priority, Medial and General Habitat as new ROW avoidance areas, or Alternatives C or F, which would generally manage all occupied GRSG habitat as a new ROW exclusion area.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat which would benefit riparian birds by preventing collisions and predator perches. Therefore, the direct and indirect effects of infrastructure management to riparian birds in Management Zone IV under Alternative E1, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to riparian birds or riparian habitat.

Fire and Fuels – Direct and Indirect Effects

Alternative E1 would focus resources to reduce wildfire in sagebrush areas, prioritizing fire suppression and maintaining fuel breaks in Core and Important habitats. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to Core and Important habitat areas would be reduced to limit fire damage. This alternative is unique compared with the others in that adaptive management would be used to account for acres of habitat lost to fire in Core and Important habitat. Although these measures would reduce the threat of wildfire to riparian habitat overlapping with Core, Important, and, in some cases, General habitat, suppression-related juniper encroachment discussed in Alternative A could increase in some areas under Alternative E1. This would be offset to a certain degree, however, by restoration and vegetation management measures that prioritize the removal of conifers, through appropriate methods, in Core and Important habitat.

The general effects of fire suppression and fuels treatments under Alternative E1 would be similar to those of Alternative A. Alternative E1 would be the most beneficial in terms of protecting riparian areas overlapping sage-grouse habitat from wildfire due to the combination of suppression prioritization and adaptive management measures.

Cumulative Effects

Management actions under Alternative E1, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting adjacent riparian habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities would be included. Therefore, the direct and indirect effects of fire to riparian birds in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Alternative E1 would maintain the policies described under Alternative A and include additional measures to protect Core, Important and General habitat areas. Core, Important and General habitat would be actively managed to prevent invasion. Eradication and control of invasive plants threatening sage-grouse habitat would be actively pursued in Core and Important habitat and invasive plants would be monitored for three years following a fire in these habitat areas. The measures under Alternative E1 would significantly reduce the impacts of invasive plants described under Alternative A on riparian areas overlapping Core, Important and General habitat, and would be the most protective in terms of controlling invasive plants in riparian zones overlapping these areas. However, the short-term impacts on riparian habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical,



manual, chemical, and biological control of invasive plants, would continue. However, additional emphasis on protecting existing sagebrush habitat, under Alternative E1 would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of invasive plants management to riparian birds in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Conifer Encroachment – Direct and Indirect Effects

Alternative E1 would prioritize conifer removal in Core and Important habitat using methods that would minimize disturbance to GRSG. Conifer encroachment projects would focus on areas with highest restoration potential (low canopy cover, existing sagebrush understory, and adjacent sage-grouse populations, and would not be conducted in juniper stands older than 100 years). In addition, as described above Invasive Plants, Core, Important and General habitat would be actively managed to prevent invasion. Unlike Alternative D, Alternative E contains a specific restoration measure addressing conifer encroachment. However, Alternative D addresses conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area. Although treatments associated with these measures have the potential to negatively impact riparian habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would riparian habitat in the long term by reducing the negative impacts from conifer encroachment described in Conifer Encroachment under Alternative A.

Cumulative Effects

Under Alternative E1, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to riparian birds in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Livestock Grazing – Direct and Indirect Effects

Alternative E1 takes a very different approach to livestock grazing than the other alternatives. Management under Alternative E1 would add sage-grouse guidelines to grazing management plans in Core and Important habitat. Rangeland health assessments and permit renewal assessments would be conducted in Core and Important habitat; allotments within Core habitat that have declining sage-grouse populations would be prioritized, followed by allotments within Important habitat that contain breeding habitats with decreasing lek counts. If assessments determined that livestock grazing were limiting the achievement of desired habitat characteristics, grazing permits would be adjusted during the renewal process to include measures to achieve desired conditions. These measures could reduce the potential for riparian habitat degradation in areas riparian habitat overlaps GRSG Core and Important habitat. Relative to Alternative B, Alternative E1 focuses less management on riparian areas, meadows, and other wetlands.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development – Direct and Indirect Effects

Alternative E1 would follow much of the current guidance on leasing and development of mineral resources (Alternative A) but would add measures to minimize impacts to sage-grouse that could also minimize impacts on riparian birds: In Core and Important habitat, surface occupancy associated with oil and gas development would not be allowed unless the surface development would not accelerate and/or cause declines in sage-grouse populations; surface disturbance from roads associated with fluid mineral development would be limited to three percent and five percent of suitable habitat per an average of 640 acres in Core and Important habitat, respectively; and wind energy development projects would comply with all infrastructure development best management practices and the 2012 U.S. Fish and Wildlife Service Wind Energy Guidelines. Under Alternative E1, exploration activities associated with oil and gas development that use temporary roads would be permissible if site disturbance were minimized which could lead to vehicle collisions with riparian birds. Under Alternative E1, impacts on riparian birds and habitat from energy development activities would essentially continue as described in Alternative A. The effects of wind energy on riparian birds, as described in Infrastructure and Energy Development under Alternative A, would be expected to be reduced as the result on compliance with FWS Wind Energy Guidelines.

Cumulative Effects

Under Alternative E1, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included, reducing the potential for negative impacts on riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative E1, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Recreation – Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative E1 conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative E1, timing and seasonal restrictions would be applied to activities known to disturb nesting sage-grouse. These conservation measures

would have no measurable impact, either positive or negative, on riparian birds or riparian habitat.

Cumulative Effects

Management actions associated with recreation management under Alternative E1 would largely be neutral to riparian habitat and riparian birds. Therefore, the direct and indirect effects of recreation management on riparian birds in Management Zone IV under Alternative E1, which would be largely neutral for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Alternative E2

Infrastructure

Alternative E2 infrastructure conservation measures addressing the siting of ROWs/SUAs and wind energy developments would benefit riparian birds by reducing the potential for collision hazards and avian predators as discussed under Alternative A. Under Alternative E2, Priority Habitat would be designated as an avoidance area for new ROWs/SUAs, which would be less protective of riparian birds than Alternatives B, C or F but similar to Alternatives D and E1. Similar to Alternative D, Alternative E2 directly addresses siting of wind energy facilities, however, Alternative E2 would be less restrictive than Alternative D by avoiding rather than excluding siting of wind energy developments in Priority Habitat, and applying BMPs and industry, state and federal stipulations in cases where siting in Priority Habitat could not be avoided. Similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities. Electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, new linear transmission features would be sited in existing corridors, or at a minimum, in concert with existing linear features in GRSG habitat. Therefore, in this respect, Alternative E2 would not be as likely to prevent collisions with birds as Alternatives B, C, D or F and would not be as protective. GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat. Therefore, current trends for riparian species would likely continue outside of priority habitat.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat which would benefit riparian birds by preventing collisions and predator perches. Therefore, the direct and indirect effects of infrastructure management to riparian birds in Management Zone IV under Alternative E2, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to riparian birds or riparian habitat.

Fire and Fuels

Alternative E2 fire and fuels conservation measures with the potential to reduce the general effects of fire and fuels on riparian birds, as described under Alternative A, include the following: creation and implementation of statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority habitat; focusing research efforts on effective reclamation and restoration of landscapes altered by wildfire; and promoting efforts to reduce the size and frequency of catastrophic fires. Similar to Alternative B, Alternative E2 would consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. Overall, the protective benefits of Alternative E2 on riparian birds and habitat would likely be most similar to that of Alternative B, but Alternative E2 would also have the potential for similar negative impacts from the use of heavy equipment for suppression as those described under Alternative A: invasion of exotic plants into riparian areas that could result in degradation of riparian areas, injury or death to eggs/chicks, or changes in species movement patterns or distribution of prey species due to areas devoid of vegetation.

Cumulative Effects

Management actions under Alternative E2, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting adjacent riparian habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities would be included. Therefore, the direct and indirect effects of fire to riparian birds in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Invasive Plants

Alternative E2 directs land managers to aggressively respond to new infestations to keep invasive species from spreading. Every effort would be made to identify and treat new infestations before they become larger problems. Additionally, containment of known infestations in or near sagebrush habitats would be a high priority for all land management, and vegetation management tools described above for Fire and Fuels and below for Livestock Grazing would help to reduce the general impacts of invasive plants on riparian habitat as described under Alternative A. Alternative E2, like Alternative E1, probably would be more protective with respect to controlling invasive plants in riparian habitats adjacent to sagebrush habitats than any of the other alternatives, but the short-term negative impacts on riparian birds and habitat associated with invasive plant treatments, that were described under Alternative A, would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the Draft EIS), current invasive plants management treatments, including mechanical,



manual, chemical, and biological control of invasive plants, would continue. However, additional emphasis on protecting existing sagebrush habitat, under Alternative E2 would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of invasive plants management to riparian birds in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Conifer Encroachment

Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively remove encroaching conifers and other plant species to expand GRSG habitat, where possible. This would benefit riparian birds and riparian habitat by reducing the negative impacts from conifer encroachment described in Conifer Encroachment under Alternative A. In comparison, Alternative D would address conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area which would potentially provide a greater benefit to riparian birds and riparian habitat. Alternative E2 is probably most similar to that of Alternative E1.

Cumulative Effects

Under Alternative E2, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to riparian birds in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Livestock Grazing

Alternative E2 would continue to make GRSG priority and general habitat available for livestock grazing. Should site-specific concerns be raised about the effect of grazing upon GRSG habitat, and such effects are documented over a sufficiently long time-frame, corrective management actions would be addressed through the application of BMPs. Incompatible grazing strategies would be addressed through established rangeland management practices consistent with the maintenance or enhancement of habitat. GRSG seasonal habitat (leks, nesting/early brood rearing, late brood rearing and winter) requirements would be considered when managing sagebrush rangelands. Water developments would be designed to enhance mesic habitat for use by GRSG and maintain adequate vegetation in wet meadows. Within priority habitat, GRSG stipulations would take precedence over stipulations for other species if conflicts occur, if otherwise allowable by law. Livestock fences would be located away from leks and employ the NRCS fence standards to reduce bird strikes. New infestations of invasive exotic plants would be responded to aggressively to prevent spreading. Overall, measures associated with livestock grazing under Alternative E2 would benefit riparian birds and riparian habitat, but

Alternative E2 would be less protective of riparian birds and riparian habitat than Alternatives B, C, D or F.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development

As previously discussed under Alternative A, energy development infrastructure would not be expected to be sited in or adjacent to riparian areas, but turbines and vehicles traveling on roads associated with energy development would pose a collision hazard to migrating riparian birds or those that also utilize upland habitats. Based on this rationale, the Alternative E2 conservation measure most pertinent to riparian birds would be the one designating Priority habitat as an avoidance area for wind energy development. Although wind energy development in PPH would not be entirely precluded, it could prevent strikes with turbines in some areas and perhaps more than under current management.

GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat. Similar to Alternative E1, impacts on riparian birds from energy development activities under Alternative E2 would essentially continue as described in Alternative A, although somewhat reduced by the application of BMPs.

Cumulative Effects

Under Alternative E2, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included, reducing the potential for predator perches and collisions with riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Recreation

Alternative E2 would limit or reduce impacts from recreational activities by preventing new permanent disturbance, including structures, fences, and buildings, within occupied leks or within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek. It would limit disturbance outside of leks to no more than 10 db above the ambient (background) level at the edge of the lek during breeding season. Time-of-day (when the lek is active) and



seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist.

Within priority habitat (nesting and brood-rearing areas, winter habitat, other habitat): disturbance would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided. These conservation measures are all very specific to sagebrush or GRSG habitat and would have no measurable impact, either positive or negative, on riparian birds or riparian habitat.

Cumulative Effects

Energy development under Alternative E2 would largely be neutral to riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely neutral for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Alternative F

Infrastructure – Direct and Indirect Effects

Land uses and realty management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The effects on riparian birds and habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of infrastructure management on riparian birds and riparian habitat within Management Zone IV would be the same.

Fire and Fuels – Direct and Indirect Effects

Fire and fuels management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The impacts on riparian birds and habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of fire and fuels management on riparian birds and riparian habitat within Management Zone IV would be the same.

Invasive Plants (Annual grasses and other noxious weeds) – Direct and Indirect Effects

Invasive plants management under Alternative F would essentially be the same as that under Alternative B. Together, these measures would reduce impacts from invasive plants on riparian birds, as described under Alternative A, but the effects of the treatments would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of invasive plants management on riparian birds and riparian habitat within Management Zone IV would be the same.

Conifer Encroachment – Direct and Indirect Effects

Like Alternatives A and B, Alternative F does not directly address conifer encroachment and would maintain the invasive plant direction described under Alternative A. Although the types of impacts would be the same, the conservation measures described above in Invasive Plants and the fuels treatments described above in Fire and Fuels would likely reduce the magnitude of the impacts on riparian habitat associated with conifer encroachment relative to Alternative A. Because those measures generally would apply throughout occupied GRSG under Alternative F whereas they would be limited to PPH under Alternative B, Alternative F could provide an additional reduction in the magnitude of impacts on riparian habitat from conifer encroachment relative to Alternative B.

Cumulative Effects

Refer to Alternative B. The cumulative effects of conifer encroachment management on riparian birds and riparian habitat within Management Zone IV would be the same.

Livestock Grazing – Direct and Indirect Effects

Alternative F would include beneficial management actions similar to those of Alternative B except they would apply in all GRSG habitats. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. No new construction of water developments could benefit riparian habitat overlapping occupied GRSG habitat by preventing additional diversions from seeps or springs. Together these efforts would reduce the potential for negative impacts from grazing on GRSG described under Alternative A.

Cumulative Effects

Under Alternative F, within Management Zone IV (refer to the Cumulative Effect section of the Draft EIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative F would provide an added benefit to adjacent riparian habitat. Therefore, the direct and indirect effects of livestock grazing to riparian birds in Management Zone IV from the management actions under Alternative F, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Energy Development – Direct and Indirect Effects

Most of the Alternative F energy development conservation measures, with the exception of wind energy development, would likely have little bearing on riparian birds and habitat for the reasons discussed under Alternative A. Under Alternative F siting of wind energy



development would be prevented in PPH. Outside of PPH, wind energy would be sited at least five miles from active sage-grouse leks and at least four miles from the perimeter of sage-grouse winter habitat. These measures would reduce the potential for collisions between wind turbines and migrating riparian birds or those that also utilize upland habitats.

Cumulative Effects

Under Alternative F, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included, reducing the potential for predator perches and collisions with riparian birds. Therefore, the direct and indirect effects on riparian birds in Management Zone IV from the management actions associated with energy development under Alternative F, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

Recreation – Direct and Indirect Effects

Alternative F would follow the same general approach as Alternative A, however, like Alternative B, only recreational SUAs that are neutral or beneficial to GRSG would be permitted in PPH. In addition, within all occupied habitat, camping areas within 4 miles of active leks would seasonally be closed. The general recreational effects of Alternative F would be the same as those for Alternatives A and B although riparian birds and habitats overlapping seasonal closure areas may derive a small added benefit from seasonal closures.

Cumulative Effects

Management actions associated with recreation management under Alternative F would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting adjacent riparian habitat and riparian birds. Under Alternative F, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to riparian birds in Management Zone IV under Alternative F, which would be largely beneficial for riparian birds, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to riparian birds or riparian habitat.

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Appendix N

Draft Wildlife and Sensitive Plant Specialists Report



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Draft
U.S. Forest Service
Wildlife and Sensitive Plant Specialists Report

for the

Greater Sage-Grouse Conservation Effort to Amend the
Beaverhead-Deerlodge, Boise, Caribou, Challis, Salmon, Sawtooth and
Targhee National Forest Plans and the Curlew National Grassland Plan

July 29, 2013

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N. Draft Wildlife and Sensitive Plant Specialists Report

N.1 Introduction

The purpose of this report is to identify the likely effects of the Greater Sage-Grouse (GRSG) Planning Decision for the Caribou-Targhee, Beaverhead-Deerlodge, Boise, Salmon-Challis, and Sawtooth National Forests and the Curlew National Grassland on USDA Forest Service Region 4 sensitive species. Sensitive species for Region 4 are listed on the Regional Forester's sensitive species list and comprise plants, birds, mammals, amphibians, and fish. Species listed as threatened or endangered by the USFWS are addressed in the biological assessment prepared for this project.

This Wildlife and Sensitive Plant Specialists Report addresses sensitive species that meet the following criteria:

- 1) Species that are known to occur on any of the National Forest system lands listed above based on confirmed sightings.
- 2) Species that may occur on any of the National Forest system lands listed above based on reliable unconfirmed sightings.
- 3) Species that may occur on any of the National Forest system lands listed above based on the presence of potential habitat.

Forest Service Policy - The USDA Forest Service has developed policy regarding the designation of plant and animal species (Forest Service Manual (FSM) 2670; Supplement 2600-94-2). The Regional Forester's sensitive species list contains taxa only when they meet one or more of the following three criteria:

- 1) The species is declining in numbers or occurrences and evidence indicates it could be proposed for federal listing as threatened or endangered if action is not taken to reverse or stop the downward trend.
- 2) The species' habitat is declining and continued loss could result in population declines that lead to federal listing as threatened or endangered if action is not taken to reverse or stop the decline.
- 3) The species' population or habitat is stable but limited.

Forest Service Objectives- Under FSM 2672.41, the objectives for completing biological evaluations for proposed Forest Service programs or activities are:

- 1) To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or contribute to animal species or trends toward Federal listing of any species listed as sensitive by USDA Forest Service Region 2.
- 2) To comply with the requirements of the Endangered Species Act, actions of Federal agencies should not jeopardize or adversely modify critical habitat of federally listed species.

- 3) To provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process, and to enhance opportunities for mitigation.

FSM 2670.22 #2 includes the following objective for sensitive species: “Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System Lands.” FSM 2600, Section 2671.44 (Supplement 2600-94-2) provides direction on the review of actions and programs authorized, funded or implemented by the Forest Service relative to the requirements of the Endangered Species Act.

N.2 Project History

Greater Sage-Grouse has emerged as a significant conservation concern over the last 10 years. The species is currently a candidate species for listing under the Endangered Species Act inferring that listing is “warranted, but precluded due to higher priorities” because of two primary factors: (1) the large-scale loss and fragmentation of habitats across the species range; and (2) a lack of regulatory mechanisms in place to ensure the conservation of the species. The primary threats to sage-grouse habitat are summarized in the listing decision. The two dominant threats are related to infrastructure associated with energy development in the eastern portion of the species range, and the conversion of sagebrush communities to annual grasslands associated resulting in large uncharacteristic wildfires in the western portion of the species range (U.S. Fish and Wildlife Service 2010).

The Bureau of Land Management (BLM) manages approximately half of the Greater Sage-Grouse habitats, whereas the Forest Service (FS) manages approximately 8 percent of species habitat, with most of that occurring on national forests in the Intermountain Region. The Forest Service manages approximately 9 million acres of sage-brush habitats, of which about 7.5 million acres occurring in the Intermountain Region. Most habitats on FS administered lands contribute to summer brood-rearing habitats, although some forests and grasslands do contribute important breeding nesting and winter habitat.

In 2011 and 2012, the United States Fish and Wildlife Service (USFWS) submitted letters to the BLM and FS recommending that the agencies amend Land Use Plans to provide adequate regulatory mechanisms to conserve the species. Originally, this recommendation identified 10 National Forests viewed as “high priority” to ensure appropriate regulatory mechanisms. Following scoping and discussion the FS added an additional 10 Forest Plans that would be considered for amendment. The FS is participating in several joint Environmental Impact Statements (EISs) with the BLM to develop Records of Decision that will be used as a basis for amending Land Use Plans, including Forest Plans.

Since half of all Greater Sage-Grouse habitat occurs on BLM lands, the BLM is leading the effort to amend or revise land use plans, with the Forest Service as a cooperating agency. The purpose is to provide direction in land management plans that conserve and protect sage-grouse habitat and to provide assurances to the U.S. Fish and Wildlife Service that adequate regulatory mechanisms are in place to ensure the conservation of the species. EISs



will be completed for seven sage-grouse planning sub-regions: 1) eastern Montana and portions of North and South Dakota, 2) Idaho and southwest Montana, 3) Oregon, 4) Wyoming, 5) northwest Colorado, 6) Utah, and 7) Nevada and northern California. The FS is participating in six of these EISs (excluding Eastern Montana/Dakotas and some of the areas in Wyoming). The EISs will include joint agency signatures, but separate Records of Decision.”

This Wildlife and Sensitive Plant Specialists Report is being prepared to address National Forest System-administered lands in support of the Idaho and Southwestern Montana Sub-Regional Greater Sage-Grouse EIS. All National Forests covered by that EIS are planning to amend their respective Land and Resource Management Plans for the Greater Sage-Grouse.

N.3 Purpose and Need

The purpose of the Land and Resource Management Plan amendments for the Greater Sage-Grouse is to identify and incorporate appropriate conservation measures to conserve, enhance, and/or restore sage-grouse habitat by reducing, eliminating, or minimizing threats to their habitat. The need to create this amendment arose when the inadequacy of regulatory mechanisms was identified as a significant threat in the USFWS finding on the petition to list the Greater Sage-Grouse. The USFWS identified conservation measures within Forest Service Land and Resource Management Plans (as well as BLM Land Use Plans) as the principal regulatory mechanisms for habitat conservation. Therefore, the Land and Resource Management Plan amendments will focus on areas affected by threats to sage-grouse habitat identified by the USFWS in the March 2010 listing decision (USFWS 2010).

N.4 Description of the Alternatives

Summaries of the alternatives presented in the EIS are provided below. For complete descriptions of the measures included in each alternative, please refer to the alternatives tables in the EIS and the source documents referenced below.

N.4.1 Alternative A

The No Action Alternative (Alternative A) represents the continuation of current management direction in the 21 BLM Field Office Land Use Plans (LUP) and 8 Forest Service Land and Resource Management Plans (LRMP or Forest Plan), and proposes no new plan or management actions. This alternative is required by Council on Environmental Quality (CEQ) regulations and provides a baseline for comparison of the other alternatives (CEQ 1981).

N.4.2 Alternative B

BLM and USFS management actions, in concert with other state and federal agencies and private landowners, play a critical role in the future trends of Greater Sage-Grouse (GRSG) populations. To ensure BLM and USFS management actions are effective and based on the best available science, the BLM National Policy Team, as part of the National Greater Sage-Grouse Planning Strategy, established the National Technical Team (NTT) in August 2011. The objective for chartering this team was to develop and describe conservation measures to

be considered while new or revised regulatory mechanisms as assessed, through Land Use Plan or Forest Plan Amendments, to conserve, enhance and restore the GRSG and its habitat on BLM & USFS-administered lands range-wide and over the long term. The BLM used Greater Sage-Grouse conservation measures in “A Report on National Greater Sage-Grouse Conservation Measures” (Sage-Grouse National Technical Team 2011) to form management direction under Alternative B. Conservation measures under Alternative B are focused on Priority Habitat (PH) (areas that have the highest conservation value to maintaining or increasing sage-grouse populations) and on Great Basin-wide concerns for sage-grouse. General Greater Sage-Grouse habitat is also identified, encompassing occupied (seasonal or year-round) habitat outside of priority habitat.

N.4.3 Alternative C

During scoping for this LUPA/EIS, individuals and conservation groups submitted management direction recommendations for protecting and conserving Greater Sage-Grouse and habitat range-wide. The recommendations, in conjunction with resource allocation opportunities and internal sub-regional BLM and Forest Service input, were reviewed in order to develop BLM and Forest Service management direction for Greater Sage-Grouse under Alternative C. Management actions in Alternative C are applied to all occupied habitat and focus on the removal of livestock grazing from the landscape to alleviate threats to sage-grouse.

N.4.4 Alternative D

This is the Idaho/southwest Montana sub-regional alternative, which emphasizes balancing resources and resource use among competing human interests, land uses, and the conservation of natural and cultural resource values, while sustaining and enhancing ecological integrity across the landscape, including plant, wildlife, and fish habitat. This alternative incorporates local adjustments to “A Report on National Greater Sage-Grouse Conservation Measures” (NTT 2011) and habitat boundaries to provide a balanced level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. Conservation measures under Alternative D apply to three designations of sage-grouse habitat – priority, medial and general. Priority areas contain the most important and relatively intact habitats for conserving sage-grouse, medial areas have some level of development or disturbance that reduces the effective character for sage-grouse but still provides better quality habitat than general areas. General areas represent the remaining occupied habitat outside of priority or medial areas.

N.4.5 Alternative E1

The Idaho Governor’s Sage-Grouse Task Force Recommendations were adopted as Alternative E and provide recommendations and policies to aid the State of Idaho in developing a conservation plan specifically adapted to Idaho sage-grouse populations with the objective of precluding the need to list the species under the Endangered Species Act (ESA) (Idaho Governor’s Task Force 2012). Most of the Task Force recommendations are intended to form the basis for “adequate regulatory mechanisms” that can be incorporated into federal LUPs and considered by the USFWS in any future listing decision.



N.4.6 Alternative E2

Alternative E2 applies to the portion of the Sawtooth National Forest in Utah and is based on the State of Utah's Conservation Plan for Greater Sage-Grouse in Utah. The alternative is designed to address the threats facing the sage-grouse while balancing the economic and social needs of the residents of Utah. The State of Utah's Conservation Plan for Greater Sage-Grouse in Utah does not use the terms PH or GH. However, to allow for consistency within this document, GRSG habitat within the Sage-Grouse Management Areas are referred to as PH. GRSG habitat outside of Sage-Grouse Management Areas are referred to as GH. Under Alternative E2, management of activities within Sage-Grouse Management Areas would be based on a hierarchical protocol that includes:

- Avoidance of disturbance to habitat or birds by an activity as the preferred option.
- Minimization of disturbance if the disturbance cannot be avoided in GRSG habitat, with mitigation for the effects of the minimization decisions.
- Mitigation of the disturbance from an activity within GRSG habitat is required if a disturbance cannot be avoided.
- In addition to avoidance of disturbance, emphasis would be placed on expanding GRSG habitat by aggressively treating areas where there are encroaching conifers or invasive species. This alternative includes a general limit on new permanent disturbance of 5 percent of habitat on state or federally managed lands. Fire would count toward the disturbance threshold, but vegetation treatments would not. Under Alternative E2, occupied habitat outside of the state-identified Sage-Grouse Management Areas would not receive any management protection.

N.4.7 Alternative F

Similar to Alternative C, Alternative F was derived from individual and conservation group scoping comments. This alternative contains a mixture of management actions from *A Report on National Greater Sage-Grouse Conservation Measures* as well as additional restrictions on resource uses and increased resource protection. As such, Alternative F provides greater restrictions on allowable uses and less resource management flexibility than Alternative B. Conservation measures in Alternative F are focused on priority, general, and restoration Greater Sage-Grouse habitat areas.

N.5 Analysis Area

The ID/swMT Sub-region includes lands managed by the BLM and USFS in Southwestern Montana and portions of Idaho, excluding the northern panhandle (Figure 1). The specific National Forests included in the planning area are: Boise NF, Caribou-Targhee NF, Curlew National Grassland, Salmon-Challis NF, and Sawtooth NF in Idaho; and Beaverhead-Deerlodge NF in southwest Montana. The ID/swMT sub-regional boundary also includes the portion of the Sawtooth NF located within Box Elder County in Utah.



Idaho/Montana Greater Sage-Grouse EIS

EIS Boundaries and Associated National Forests

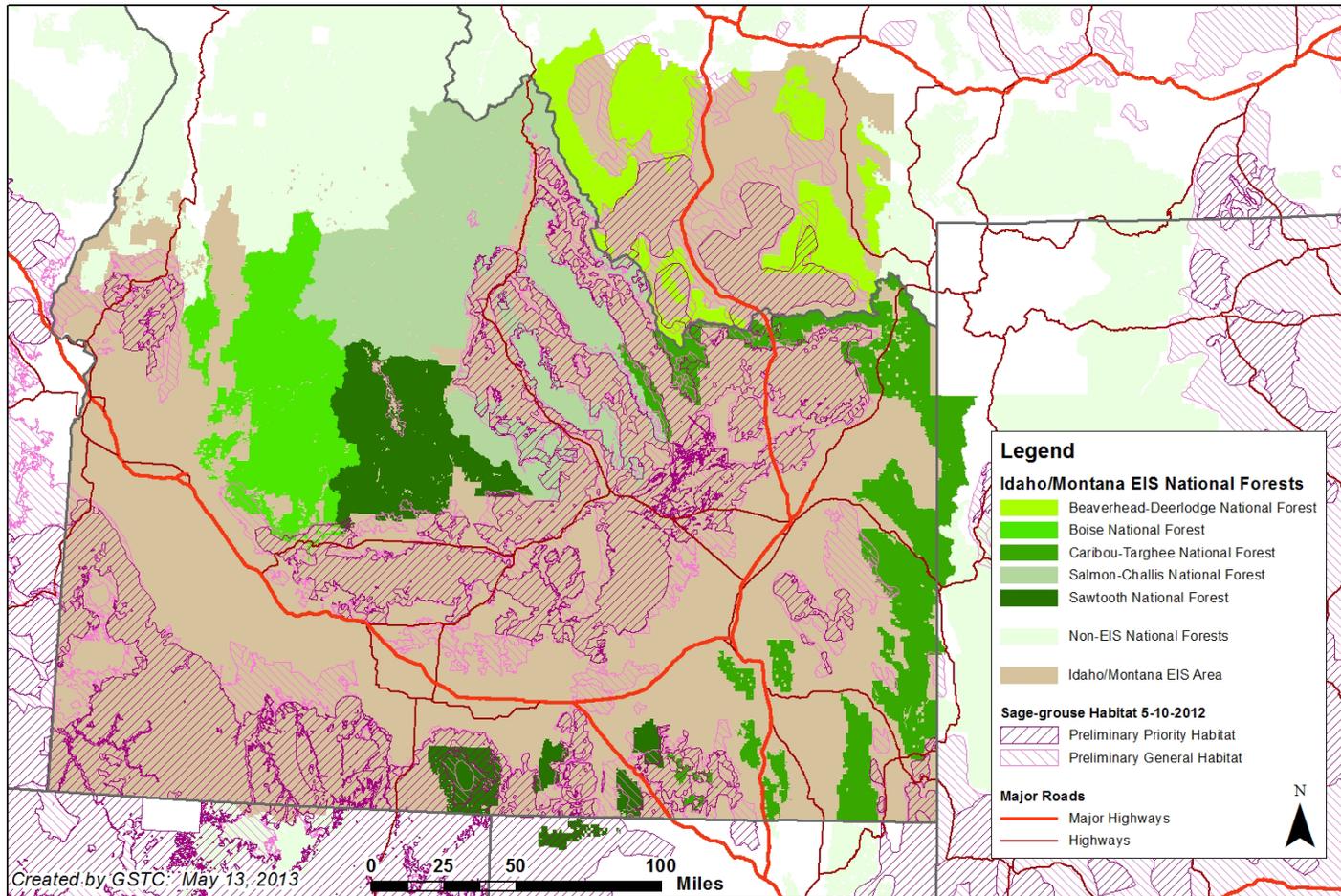


Figure 1. Idaho and southwestern Montana analysis area showing National Forest-administered lands

Idaho and Southwestern Montana Sub-Region Greater Sage-Grouse LUPA/EIS
October 2013

Preliminary Priority Habitat and PGH have been delineated for both Idaho and Montana. In Idaho, PPH & PGH were identified based on a model incorporating sage-grouse breeding bird density and lek connectivity models, informed with additional ancillary broad scale habitat data, seasonal habitat maps, connectivity information, expert opinion, population persistence model, local priority areas and agriculture and conifer (refer to the Draft EIS for additional information). In Montana, PPH was delineated based on Montana Fish, Wildlife and Park's (MFWP) modeling of GRSG Core areas using a model based on male lek attendance and refined with seasonal habitat, telemetry, connectivity information and field review. Through this land use planning process, the BLM and USFS continue to refine Preliminary Priority Habitat and Preliminary General Habitat data to: (1) identify Priority Habitat and analyze actions within Priority Habitat to conserve GRSG habitat functionality, and/or where appropriate, improve habitat functionality, and (2) identify General Habitat and analyze actions within General Habitat that provide for major life history function in order to maintain genetic diversity needed for sustainable GRSG populations. While PPH and PGH is not a designation of habitat, the delineation of these areas provides a common descriptor for GRSG habitat in the sub region, both for baseline conditions and for alternative comparison. For the remainder of this document PPH and PGH refer to the areas identified in the April 2012 map of GRSG habitat (refer to the Draft EIS).

Many areas of GRSG habitat in the ID/swMT sub-region are contiguous with habitats in the neighboring states of Utah, Nevada, Oregon, and Montana. The vast majority of the ID/swMT sub-region lies within Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone (MZ) IV; a small portion of southeastern Idaho, occurs within Management Zone II and is associated with the Wyoming Basin population. Within the sub-region, GRSG occupy all or portions of ten populations described in Connelly et al (2004). Two populations (Great Basin Core, Wyoming Basin) encompass portions of adjacent states.

N.6 Species Considered in the Analysis

The following sensitive species list is composed of plants, birds, mammals, amphibians, fish and plants. We conducted a review for Region 4 sensitive species occurring within the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF and Curlew NG, and Region 1 sensitive species occurring within the Beaverhead-Deerlodge National Forest that may overlap with the range of the GSG or be affected by activities associated with the Planning EIS and subsequent Region 4 or Region 1 Plan Amendments for the Greater Sage-Grouse. Existing occurrence information, as well as known or potential habitat, was obtained from the Boise, Sawtooth, Caribou, Targhee, Salmon-Challis, and Beaverhead-Deerlodge National Forests; Curlew National Grassland; and NatureServe (2013).

Table 1 lists Forest Service sensitive species known or suspected to exist on the aforementioned national forests. Threatened, endangered, proposed and candidate species are addressed separately in the biological assessment prepared for this project. All of the species in Table 1 were considered in this analysis and compared to the five criteria listed below. The five criteria were used to identify species that would experience “no impact”

from the implementation of the action alternatives and could therefore be eliminated from detailed analysis. These numerical categories below are referred to in Table 1:

1. Analysis area is outside species' range.
2. Potential habitat for the species does not exist within greater sage-grouse habitat (sagebrush-steppe) or is outside the elevation range of the greater sage-grouse.
3. The type or intensity of the activity in the proposed action is expected to have no impact/effect on these species or their habitat.
4. Individual animals may be accidental, dispersing, migrating, happenstance, vagrant, nomadic or opportunistic visitors to the habitat(s) impacted by the proposal, but no affiliation or dependence upon these habitat(s) has been shown.
5. The associated conservation design or mitigations eliminate any potential for impact to the species.

Species in Table 1 are likely to occur within or near the analysis area, or with potential habitat in or near the analysis area that may be affected (negatively or positively, directly, indirectly and/or cumulatively) by implementation of an action alternative were it carried forward into Table 2, and a more detailed analysis of the project effects was subsequently conducted.

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
USFS REGIONAL FORESTER'S SENSITIVE SPECIES				
MAMMALS				
Bighorn sheep <i>Ovis canadensis</i>	Rugged canyons, foothills, and mountainous terrain at elevations ranging from 450-3,300 m (1,450-10,500 ft). Key habitat features include steep, rugged "escape" terrain, grasses and forbs for forage. Utilizes the Lima Tendoy landscape in PPH and PGH habitat (Southwest portion of the BDNF near the Idaho border) as part of winter range	Y	Not excluded	See detailed analysis below
Fisher <i>Martes pennanti</i>	Forested stands with high canopy cover and riparian corridors; in ID and MT, moderately moist forest habitats at low or mid elevations are important habitat	N	2	No Impact
Gray wolf <i>Canis lupus</i>	Habitat generalist occurring in parts of ID characterized by a mosaic of dry and mesic conifer and subalpine forest, as well as grassland and shrubland that support big-game (elk, moose, and deer) populations	Y	4	No Impact
Great Basin pocket mouse <i>Perognathus parvus</i>	Occupied habitats in Montana are arid and sometimes sparsely vegetated. They include grassland-shrubland with less than 40% cover, stabilized sandhills, and landscapes with sandy soils, more than 28% sagebrush cover, and 0.3 to 2.0 (12 – 78") meters shrub height	Y	Not excluded	See detailed analysis below
North American wolverine <i>Gulo gulo luscus</i>	Remote habitats within subalpine and montane forests	N	2	No Impact
Northern bog lemming <i>Synaptomys borealis</i>	Primarily in sedge or alder-willow bogs on the edge of spruce-fir and/or lodgepole pine forest	N	2	No Impact

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
Pygmy rabbit <i>Brachylagus idahoensis</i>	Tall clumps of Big Sage with shrub canopy cover > 21% and loose, crumbly soil generally deeper than 14", for burrows	Y	Not excluded	See detailed analysis below
Southern Idaho ground squirrel <i>Spermophilus brunneus endemicus</i>	Lower elevation shrubsteppe (big sagebrush, bitterbrush, native forbs and bunch-grasses) habitat (2,200-3,200 feet)	N	2, 3 ¹	No Impact
Spotted bat <i>Euderma maculatum</i>	Mostly in open arid habitats dominated by Utah juniper and sage-brush, sometimes intermixed with limber pine or Douglas-fir, or in grassy meadows in ponderosa pine savannah	Y	Not excluded	See detailed analysis below
Townsend's western big-eared bat <i>Corynorhinus townsendii</i>	Roost in caves, old mines, canyons with cliffs and buildings in Douglas-fir and lodgepole pine forests, ponderosa pine woodlands, Utah juniper-sagebrush scrub, and cottonwood bottomland	Y	Not excluded	See detailed analysis below
BIRDS				
Bald eagle <i>Haliaeetus leucocephalus</i>	Nests in large trees (conifers or cottonwoods) near large rivers or water bodies and prefer fish for prey	Y	4	No Impact
Black-backed woodpecker <i>Picoides arcticus</i>	Forested areas with abundant wood-boring insects resulting from fires or high-density; and unburned, old forest with high levels of snags and logs	N	2	No Impact
Boreal owl <i>Aegolius funereus</i>	In ID: High-elevation spruce-fir, mixed conifer and aspen forests	N	2	No Impact

¹ This species is not documented on the Boise National Forest. Survey efforts in non-forest portions of the Emmett Ranger District on the Forest have not identified habitat or individuals. Nearest populations to the Forest are 5 air miles from the administration boundary. Therefore there is little-to-no potential for effects from the Federal Action.

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
Columbian sharp-tailed grouse <i>Tympanuchus phasianellus columbianus</i>	Low elevation native shrub-grasslands with grass and forbs with insects for broods. Abundant grass composition important during all life stages. Shrubs (serviceberry, chokecherry, bitter brush, bitter cherry, hawthorn, and aspen) are important winter food.	Y	Not excluded	See detailed analysis below
Common loon <i>Gavia immer</i>	Nest in extreme eastern ID in shallow-watered natural lakes (5,000 – 9,000 feet) without rapidly fluctuating water levels, human disturbance, turbid water and no protective cover	N	2	No Impact
Flammulated owl <i>Otus flammeolus</i>	In ID: Mid-elevation, old growth, or mature stands of open ponderosa pine, Douglas-fir, or stands dominated by both species	N	2	No Impact
Great gray owl <i>Strix nebulosa</i>	Mature forest that provide suitable nesting sites and foraging areas (seedling forests, meadows, and open riparian habitats adjacent to meadows), and large-diameter trees or snags	N	2	No Impact
Greater Sage-Grouse (C) <i>Centrocercus urophasianus</i>	Sagebrush/grassland vegetation with abundant native grass, forbs and insects	Y	Not excluded	See detailed analysis below
Harlequin duck <i>Histrionicus histrionicus</i>	Uses riparian habitats for feeding, nesting, and cover; breeds near swiftly flowing, clear, forested or well vegetated, undisturbed mountain streams	N	2	No Impact
Mountain quail <i>Oreortyx pictus</i>	Brushy slopes and shrub-dominated communities in interior Douglas-fir, interior ponderosa pine, and chokecherry–serviceberry-rose (2,300 to >9,850 feet); in ID: associated with riparian shrub habitats. Overlaps with Greater sage-grouse range, but utilizes steeper terrain and different cover type (dense, tall shrubs vs. sagebrush) than GSG.	N	2	No Impact

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
Northern goshawk <i>Accipiter gentilis</i>	Use a variety of forest ages, structural conditions, and successional stages and are associated with shrubland and grassland habitats; prefer transitional zones for hunting	N	2	No Impact
Peregrine falcon <i>Falco peregrinus anatum</i>	Nest sites on cliffs with a wide view, low disturbance, and abundance of prey; all forest vegetation types located within 10 miles of suitable cliffs	Y	4	No Impact
Three-toed woodpecker <i>Picoides tridactylus</i>	Mature stands with bark beetles, disease, and heart rot and recent stand-replacing burns with abundant wood-boring insects	N	2	No Impact
Trumpeter Swan <i>Cygnus buccinator</i>	Lakes and ponds and adjacent marshes containing room to take off (~100 m), shallow, unpolluted water with sufficient emergent vegetation and invertebrates, appropriate nest sites (i.e. muskrat lodges), and areas with little human disturbance	N	2	No Impact
White-headed woodpecker <i>Picoides albolarvatus</i>	In ID: Open and mature ponderosa pine and mixed ponderosa pine/Douglas-fir forests with large-diameter (>20 inches dbh) live ponderosa pines and snags	N	2	No Impact
Yellow-billed cuckoo (C) <i>Coccyzus americanus</i>	Large blocks of cottonwood gallery riparian habitat with a dense understory of foliage; generally local and un-common in scattered drainages	N	2	No Impact
REPTILES AND AMPHIBIANS				
Boreal toad <i>Anaxyrus boreas boreas</i>	Wetlands at elevations from 2,250 to 3,600 meters	Y	Not excluded	See detailed analysis below

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
Columbia spotted frog <i>Rana luteiventris</i>	Permanent water (marshy edges of ponds or lakes, in algae-grown overflow pools of streams), or in wet areas with emergent vegetation; may move considerable distances (mixed conifer and subalpine forests, grasslands, and shrublands) from permanent water during rainy periods after breeding,	Y	3 ²	No Impact
Western toad <i>Bufo boreas</i>	Largely terrestrial and found in a variety of habitats from valley bottoms to high elevations; breeds in lakes, ponds and occasionally in slow flowing streams	Y	Not excluded	See detailed analysis below
FISH				
Big Lost River whitefish <i>Prosopium williamsoni</i>	Cold mountain lakes and fast, clear or silty streams with large pools within the Big Lost River drainage of the Salmon-Challis NF	Y	3	No Impact
Bonneville cutthroat trout <i>Oncorhynchus clarkia utah</i>	The Bonneville cutthroat trout is endemic to the Bonneville Basin. While some stream populations survive, this subspecies evolved primarily in a lake environment. This species is distributed throughout the southern portion of the Caribou NF within the Soda Springs, Montpelier, and Westside RDs with very little overlap of winter habitat for the GSG	N	2, 3	No Impact
Northern leatherside chub <i>Lepidomeda copei</i>	Endemic to streams within the northeastern portions of Bonneville Basin and a few drainages within the upper Snake River Basin in Idaho	Y	3	No Impact

² Subsequent review of the alternatives indicates that this species will experience no effects to its habitat or populations. None of the alternatives is expected to impact any of the identified limiting factors for this species or its life requirements. Based on these factors, the Columbia spotted frog will not be analyzed in additional detail.

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
Westslope cutthroat trout <i>Oncorhynchus clarki pleuriticus</i>	Relatively cold and nutrient poor waters of the Columbia River Basin	Y	3	No Impact
Wood River sculpin <i>Cottus leiopomus</i>	Clean, clear streams with clean rock or gravel bottoms and cool water with high oxygen content; only occurs in the Big and Little Wood River, and Camas Creek subbasins within the Ketchum and Fairfield Ranger Districts of the Sawtooth National Forest	Y	3	No Impact
Yellowstone cutthroat trout <i>Oncorhynchus clarkii bouveri</i>	Clear, cold streams, rivers, and lakes	Y	3	No Impact
PLANTS				
<i>Adoxa moschatellina</i> Musk-root	Vernally moist places in mountains at the bottom of undisturbed, open rock slides in areas of cold air drainage. 4,400-7,000 ft. in MT. Circumboreal with US occurrences in AK, CO, IA, IL, MN, MT, NM, NY, SD, UT, WI, and WY. In MT documented from Carbon, Granite, Jefferson, Madison, Meagher, Park, and Stillwater Counties.	N	2	No impact
<i>Agastache cusickii</i> Cusick's horse-mint	Within rolling sagebrush hills primarily on steep, loose talus slopes with little vegetation cover below limestone outcrops, often in chutes. Woody dominants include limber pine, Douglas fir, mountain mahogany, big sagebrush, and gooseberry. 6,500-9,500 ft. in MT. Documented from ID, MT, NV, and OR.	Y	Not excluded	See detailed analysis below

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Agoseris lackschewitzii</i> Pink agoseris	Wet meadows with soil saturated through the growing season and in ecotones between wet meadows and forest. 6,950-9,450 ft. in MT. Occurs in ID, MT, WA, WY, Alberta, and British Columbia.	Y	Not excluded	See detailed analysis below
<i>Allium acuminatum</i> Tapertip onion	Dry, open forests and grasslands in the montane zone. 2,600-8,000 ft. Documented from AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY, and British Columbia.	Y	Not excluded	See detailed analysis below
<i>Allium parvum</i> Small onion	Dry, open forests, woodlands, or grasslands on warm slopes in the montane zone. 4,000-6,500 ft. in MT. Documented from CA, ID, MT, NV, OR, and UT.	Y	Not excluded	See detailed analysis below
<i>Allium tolmiei</i> var. <i>persimile</i> Tolmie's onion	Mixed semiarid shrub and grasslands in swales, ephemeral watercourses or seep areas with basaltic soils. 3,000-5,000 ft. ID endemic.	Y	Not excluded	See detailed analysis below
<i>Androsace chamaejasme</i> ssp. <i>carinata</i> Sweet-flowered rock jasmine	Rock crevices and mountain slopes. 9,500-10,800 ft. CO, NM, UT, and WY.	N	2	No impact
<i>Antennaria densifolia</i> Dense-leaved pussy-toes	Limestone talus near or above timberline. 9,148 ft. in MT. Documented from AK and MT and northwestern Canada. In MT, documented from Deer Lodge and Granite Counties.	N	2	No impact
<i>Astragalus amnis-amissi</i> Lost River milkvetch	In Douglas fir, mountain mahogany, and sagebrush ³ mostly in moist shaded areas in cracks in ledges and similar sites on near	Y	2	No impact

³ Although Lost River milkvetch sometimes occurs within sagebrush, its habitat occurs on near vertical limestone cliffs and in talus at base of cliffs, which do not constitute greater sage grouse habitat.

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
	vertical limestone cliffs and in talus at base of cliffs. 6,300-6,600 ft. Endemic to east-central ID.			
<i>Astragalus anserinus</i> Goose Creek milkvetch	In sagebrush, rabbitbrush, and juniper on barren slopes composed of white tuffaceous sand. 5,000-5,200 ft. NV, ID, and UT.	Y	Not Excluded	See detailed analysis below
<i>Astragalus aquilonius</i> Lemhi milkvetch	Within the sagebrush-steppe zones at lower elevations on shale, gravel banks, clay washes of gullied clay bluffs, steep eroded canyon banks, and sand bars. Endemic to east-central Idaho with documented occurrences in Custer, Butte, and Lemhi Counties.	Y	Not excluded	See detailed analysis below
<i>Astragalus diversifolius</i> var. <i>diversifolius</i> Meadow milkvetch	Sagebrush valleys or closed drainage basins in moist, often alkaline meadows and swales. 4,400-6,620 ft. Endemic to central ID and northern UT with one historic occurrence from western WY. In ID distributed primarily in Custer and Lemhi Counties.	Y	Not excluded	See detailed analysis below
<i>Astragalus jejunus</i> var. <i>jejunus</i> Starveling milkvetch	Sagebrush and pinyon-juniper on dry, barren ridges, summits, bluffs, hilltops, and river-terraces on tuff, shale, sandstone, cobble or clays. 5,700-7,310. CO, ID, NV, UT, and WY.	Y	Not excluded	See detailed analysis below
<i>Astragalus paysonii</i> Payson's milkvetch	In open areas within the timber belt in open sites, such as burned areas, on decomposed granite, silty, and ashy soils. 5,500-9,300 ft. WY and ID.	N	2	No impact

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Astragalus scaphoides</i> Bitterroot milkvetch	Sagebrush grassland, generally with a dense cover of sagebrush on silty soils with a moderate to high content of coarse material, often along drainages between rocky, steep upper slopes and nearly level benches. 5,300-7,160 ft. Distribution limited to Lemhi County ID and Beaverhead County MT.	Y	Not excluded	See detailed analysis below
<i>Astragalus vexilliflexus var. nubilus</i> White cloud milkvetch	Subalpine and alpine areas on dry open ridges and associated slopes in White Cloud Range. 8,700-9,500 ft. Endemic to White Cloud Peaks and Boulder Mountains in Custer County ID.	N	2	No impact
<i>Balsamorhiza macrophylla</i> Large-leaved balsamroot	Sagebrush and grasslands in the montane zone, most often on open, east-facing slopes (8-15%), with loamy soils, in a sagebrush-forb community. 7,400-7,920 ft. Documented from ID, MT, UT, and WY.	Y	Not excluded	See detailed analysis below
<i>Boechera fecunda</i> Sapphire rockcress	Moderate to steep slopes with periodic natural erosion, warm aspects, and sparse vegetation. In Beaverhead and Silver Bow Counties, grows in mountain mahogany- juniper, limber pine woodland, very open Douglas-fir forest, sagebrush, and sparse bluebunch wheatgrass grasslands on soils derived exclusively from calcareous sediments. 4,200-7,960 ft. MT endemic.	Y	Not excluded	See detailed analysis below
<i>Botrychium crenulatum</i> Dainty moonwort	Stream bottoms, seeps, marsh edges, wet swales, alpine meadows, and grassy roadsides, often on soils of reprecipitated calcium. 2,000-7,500 ft. in MT. Documented from AZ, CA, ID MT, NV, OR, UT, WA, WY, British Columbia, and Alberta.	Y	Not excluded	See detailed analysis below

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Botrychium hesperium</i> Western moonwort	Valley and montane zones along roadsides and in dry to moist gravelly and lightly disturbed grasslands, meadows, and mid-succession gravel bars. 2,000-9,500 ft. in MT. Documented from AK, AZ, CO, ID, MT, OR, UT, WA, WY, and Canada.	Y	Not excluded	See detailed analysis below
<i>Botrychium lineare</i> Slender moonwort	Moist to dry meadows, bogs, swamps, roadside ditches, dry fields, and forests in a variety of areas ranging from limestone cliffs and gravelly beaches to forest understory. Most occurrences are montane at 4,900-9,800 ft., but known from sea level to 10,000 ft. Occurs in AK, CA, CO, SD, MT, UT, WA, WY, and Canada. In ID documented from one possibly extirpated occurrence in Upper Priest Lake area.	Y	Not excluded	See detailed analysis below
<i>Botrychium paradoxum</i> Peculiar moonwort	Montane and subalpine zones in mesic meadows within sagebrush and spruce lodgepole pine forests with rough fescue, Virginia strawberry, and potentilla. 2,500-9,500 ft. in MT. Documented from CA, CO, ID, MT, OR, UT, WA, WY, and Canada.	Y	Not excluded	See detailed analysis below
<i>Botrychium simplex</i> Little grape fern	Diverse habitats across its range, including pastures, meadows, orchards, prairies, wetlands, fens, roadsides, and sand dunes, most of which are temporarily wet to permanently saturated, in full sun to low light understory conditions. 4,000-6,000 ft. Broadly distributed across US and Canada with low abundance in most many states and provinces within its range. Documented from ID and MT.	Y	Not excluded	See detailed analysis below

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Bryum calobryoides</i> Beautiful Bryum	Montane to subalpine in bogs, meadows, and damp cliff sides on substrates that range from basic to acidic rock and moist soils. 5000 ft. and above. CA, CO, ID, MT, OR, WA, and Canada.	Y	Not excluded	See detailed analysis below
<i>Carex idaho</i> Idaho sedge	Moist alkaline meadows, often in subirrigated soils associated with low-gradient streams or springs and seeps, often in ecotones between wet meadow and sagebrush steppe. 4,500-8,420 ft. Documented from CA, ID, MT, OR, and UT.	Y	Not excluded	See detailed analysis below
<i>Carex incurviformis</i> Seaside sedge	Alpine and subalpine moist tundra, wet rock ledges, and mossy hummocks. Elevation 10,000 to 12,200 ft. Documented from AK, CA, CO, ID, MT, WY, and Canada.	N	2	No impact
<i>Castilleja christii</i> Christ's Indian Paintbrush	Grassy subalpine meadows along mountain slopes and crests in loamy gravel, mainly in areas where snow drifts remain into early summer. 9,000-9,100 ft. Endemic to Harrison Mountain ID.	N	2	No impact
<i>Castilleja covilleana</i> Coville Indian paintbrush	Stony soil of slopes and summits in the montane and subalpine zones within bluebunch wheatgrass and Idaho fescue grasslands. 4,600-8,700 ft. Distribution limited to ID and MT.	N	2, 3	No impact
<i>Chrysothamnus parryi ssp. montanus</i> Centennial rabbitbrush	Beaverhead Conglomerate rock outcrops, slump gravels, and relatively stable talus of southeast to southwest exposures. 8,800-9,800 ft. Endemic to Red Conglomerate Peaks of Idaho-Montana state line.	N	2	No impact
<i>Collomia debilis var. camporum</i> Flexible alpine collomia	Talus slopes. Documented from the North Fork of the Salmon River drainage in ID. Also in MT.	N	2, 3	No impact

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USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Cymopterus davisii</i> Davis' wavewing	Subalpine and alpine areas on grassy slopes in gravelly disturbed sites or rock outcrops on granite and quartzite substrates. Endemic to ID.	Y	2	No impact
<i>Cymopterus douglassii</i> Douglass' biscuitroot	Alpine areas on open slopes, ridges, and summits in calcareous or dolomitic substrates and subalpine areas in open coniferous woodlands. Above 9,000 ft. ID endemic documented from Custer and Lemhi Counties.	Y	2	No impact
<i>Douglasia idahoensis</i> Idaho douglasia BOI, SAW	Whitebark pine and subalpine fir forests on north and east open gravelly soils and unstable slopes and ridges. 7,200-9,000 ft. Endemic to central ID.	N	2	No impact
<i>Draba globosa</i> (<i>D. densifolia</i> <i>var. apiculata</i>) Rockcress draba	Alpine zone in fellfields and sparsely vegetated meadows, on dry rocky ridges, at the base of talus slopes, on rocky outcrops, and among granitic boulders and talus. 9,186-9,842 ft. CO, ID, MT, UT, and WY.	Y	2	No impact
<i>Draba trichocarpa</i> Stanley's whitlow-grass	Steep exposed rocky slopes and rock outcroppings on granitic parent material with low vegetation cover, typically within mountain big sage habitat ⁴ . 6,000-7,000 ft. Endemic to Stanley Basin in Custer County, central ID.	Y	2	No impact

⁴ Although Stanley's whitlow-grass typically occurs within mountain big sage vegetation, its habitat consists of steep exposed rocky slopes and rock outcroppings, which do not constitute greater sage grouse habitat.

Table 1

USDA Forest Service Region 4 Sensitive Species Occurring or Potentially Occurring on the Boise NF, Sawtooth NF, Caribou NF, Targhee NF, Salmon-Challis NF or Curlew NG and Region 1 Sensitive Species Occurring within the Beaverhead-Deerlodge National Forest that may be Influenced by an Action Alternative and will be Further Analyzed in this Document

Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Drosera anglica</i> English sundew	With sphagnum moss in wet, organic soils of fens and bogs in the montane zone. Approximately 7,000 ft. on B-D. Scattered distribution over broad range. In US, documented from AK, CA, CO, HI, ID, ME, MI, MN, MT, NJ, OR, WA, WI, and WY.	N	2	No impact
<i>Eleocharis rostellata</i> Beaked spikerush	Wet, often alkaline soils, associated with warm springs or fens in the valley and foothills zones. 2,700-6,100 ft. Scattered distribution over broad range that encompasses much of the US, 3 Canadian provinces, northern Mexico, the Greater Antilles, and the Andes. In US, documented from 39 states (including ID and MT).	Y	Not excluded	See detailed analysis below
<i>Epipactis gigantea</i> Giant helleborine	Stream banks, lake margins, fens with springs and seeps, often near thermal waters. 2,500-6,000 ft. in MT. Also documented from AZ, CA, CO, ID, KS, MT, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY, and British Columbia.	Y	Not excluded	See detailed analysis below
<i>Erigeron asperuginus</i> Idaho fleebane	Windswept rocky or gravelly slopes and ridges in alpine zones, often on limestone-derived soils always with sparse vegetation. 6,000-10,000 ft. ID, MT, and NV.	Y	2	No impact
<i>Eriogonum brevicaulis</i> var. <i>desertorum</i> Desert buckwheat	Mixed grassland, saltbush, and sagebrush communities and in pinyon-juniper woodlands on gravelly or silty to clayey flats, slopes, and ridges. 4,900-9,700 ft. Documented from NV and UT.	Y	Not excluded	No impact
<i>Eriogonum capistratum</i> var. <i>welshii</i> Welsh buckwheat	Rocky volcanic slopes and gravelly clay or sedimentary barren flats with minimal vegetation consisting of scattered sagebrush and grasses. 6,000-8,000 ft. ID endemic.	Y	Not excluded	See detailed analysis below

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Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Eriogonum meledonum</i> Guardian buckwheat	Rocky outcroppings and unstable scree slopes on granitic parent materials with low vegetation. Typically surrounded by mountain big sage habitat ⁵ . 6,200 ft. Narrow endemic to Sawtooth Valley in central ID.	Y	2	No impact
<i>Eupatorium occidentale</i> Western Joepye weed	Cliff crevices and rocky outcrops and slopes in the montane and lower subalpine zones. 4,920-9,350 ft. CA, ID, MT, NV, OR, UT, and WA.	N	2, 3	No impact
<i>Gentianopsis simplex</i> Hiker's gentian	Fens, meadows, and seeps, usually in areas of crystalline parent material, in the montane and subalpine zones. 4,460-8,400 ft. CA, ID, MT, NV, OR, and WY.	Y	Not excluded	See detailed analysis below
<i>Haplopappus macronema</i> var. <i>macronema</i> Discoid goldenweed	Rocky, open or sparsley wooded slopes (often coarse talus) in or near alpine zone. 6,840-8,900 ft. CA, CO, ID, MT, NV, OR, and UT.	N	2, 3	No impact
<i>Juncus hallii</i> Hall's rush	Moist to dry meadows & slopes from valley to montane zones. 4,000-8,860 ft. CO, ID, MT, UT, and WY.	Y	Not excluded	See detailed analysis below
<i>Lewisia sacajawean</i> Sacajawea's bitterroot	Subalpine to subalpine on sparsely vegetated upper slopes and ridgetops on fractured bedrock and granitic soils near late snowbanks. 5,400-9,500 ft. Endemic to mountains of central ID.	N	2, 3	No impact
<i>Mimulus primuloides</i> Primrose monkeyflower	Fens, sphagnum bogs, and wet meadows in montane & subalpine zone. 6,750-8,440 ft. AZ, CA, ID, MT, NM, NV, OR, UT, and WA.	Y	Not excluded	See detailed analysis below

⁵ Although guardian buckwheat occurs in areas that are usually surrounded by mountain big sage vegetation, its habitat consists of rock outcroppings and unstable scree slopes, which do not constitute greater sage grouse habitat.

Table 1

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Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Noccaea idaboensis</i> var. <i>aileeniae</i> (= <i>Thlaspi aileeniae</i>) Idaho pennycress	In sagebrush-fescue flats on loose bare sandy soil, on steep slopes among small rocks in the openings between sagebrush, and on alluvial terraces. 6,000-11,000 ft. Endemic to intermountain valleys of central ID.	Y	Not excluded	See detailed analysis below
<i>Oxytropis besseyi</i> var. <i>salmonensis</i> Challis crazyweed	Sagebrush and salt desert shrub in sandy washes or open slopes of rocky volcanic soil. 5,400-6,750 ft. ID endemic.	Y	Not excluded	See detailed analysis below
<i>Oxytropis podocarpa</i> Stalked-pod crazyweed	Gravelly ridges & slopes often on limestone in alpine zone. 7,300-8,200 ft. AK, CO, MT, WY, and Canada.	N	2	No impact
<i>Phlox kelseyi</i> var. <i>missoulensis</i> Missoula phlox	Open, exposed, limestone-derived slopes in the foothills to exposed ridges in the subalpine zone. 3,600-8,100 ft.	N	2	No impact
<i>Penstemon compactus</i> Cache beardtongue	Subalpine in rocky limestone open areas. 7,870-9,850 ft. ID and UT.	N	2	No impact
<i>Penstemon idaboensis</i> Idaho penstemon	Most commonly in Utah juniper communities restricted to tuffaceous outcrops of the Salt Lake Formation on gentle to steep slopes, usually of south to southwest aspects. 4,900-5,710 ft. ID, NV, and UT.	Y	Not excluded	See detailed analysis below
<i>Penstemon lemhiensis</i> Lemhi penstemon	Mountain big sagebrush, grassland, and openings in Douglas fir, lodgepole pine, and ponderosa pine forests with big sagebrush and bunchgrasses on moderate to steep, east- to southwest-facing slopes. Some populations grow partially or entirely on road banks. 4,150-8,200 ft. Regional endemic of ID and MT.	Y	Not excluded	See detailed analysis below

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Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Phacelia minutissima</i> Least phacelia	Sagebrush and lower montane forests within ephemeral moist areas, often near late snow banks, typically in meadows, springs, seeps, and along stream banks. 5000-8200 ft. NV, ID OR, and WA.	Y	Not excluded	See detailed analysis below
<i>Physaria carinata</i> ssp. <i>carinata</i> Keel bladderpod	Gravelly, calcareous slopes in the foothill zone within grassland and sagebrush. 4,000-7,500 ft. in MT. Endemic to carbonate mountain ranges of ID, MT, and WY.	Y	Not excluded	See detailed analysis below
<i>Physaria carinata</i> ssp. <i>pulchella</i> Beautiful bladderpod	Gravelly calcareous soils of sparsely vegetated foothill slopes in mountain mahogany or limber pine woodlands, poorly developed stony soils of subalpine slopes and ridges, sparse grassland or cushion plant communities, and sagebrush. Usually associated with calcareous parent material but found on both limestone and associated quartzite. 6,300-9,600 ft. Endemic to Beaverhead County MT.	Y	Not excluded	See detailed analysis below
<i>Physaria didymocarpa</i> var. <i>lyrata</i> Salmon twin bladderpod	Within basin big sagebrush-bluebunch wheatgrass vegetation on rocky, sparsely vegetated, south slopes. 4,050-5,000 ft. Endemic to Lemhi County, ID.	Y	Not excluded	See detailed analysis below
<i>Pinus albicanlis</i> Whitebark pine	Harsh, cold sites on rocky, poorly developed soils that lack fine material with snowy, wind-swept exposures. In association with subalpine fir, lodgepole pine, and Engelmann spruce. 5,900-10,000 ft. CA, ID, MT, NV, OR, WA, WY, Alberta, and British Columbia.	N	2	No impact
<i>Poa abbreviata</i> ssp. <i>marshii</i> Marsh's bluegrass	Alpine and granite talus slopes. 9,000-10,000 ft. CA, NV, and ID.	N	2	No impact

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Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Polygonum douglasii</i> spp. <i>austiniae</i> Austin's knotweed	Gravelly, often shale-derived soil on open slopes & banks in montane zone. 4,320-8,520 ft. CA, ID, MT, NV, OR, WA, WY, Alberta and British Columbia.	Y	Not excluded	See detailed analysis below
<i>Potentilla cottamii</i> Cottam cinquefoil	Cracks and crevices in quartzite outcrops, often shaded from the midday sun. 7,500 to 10,400 ft.	N	2, 3	No impact
<i>Potentilla quinquefolia</i> Five-leaf cinquefoil	Montane to alpine zones on dry, gravelly soil of exposed ridges and slopes within Idaho fescue grassland. Above 8,500 ft. on B-D. CO, ID, MT, OR, UT, and WY. Also in Canada.	N	2, 3	No impact
<i>Primula alcalina</i> Alkali primrose	Moist to wet alkaline meadows on low, relatively level benches immediately adjacent to creeks and spring heads in which subirrigated soils are saturated to the surface throughout the growing season. Soils are alluvial, alkaline, fine-textured, light-colored soils are derived from outwash of predominantly carbonate rocks. 6,300-7,200 ft. ID and MT.	Y	Not excluded	See detailed analysis below
<i>Primula incana</i> Mealy primrose	Wet meadow habitats, often calcareous, with relatively stable water tables in which soils remain moist to saturated throughout the growing season but are seldom to never inundated, bogs, and stream banks. 6,500-8,694 ft. AK, CO, ID, MT, ND, UT, WY, and Canada.	Y	Not excluded	See detailed analysis below
<i>Pyrracoma</i> (=Haplopappus) <i>insecticuriis</i> Bugleg goldenweed	Grassland and sagebrush communities in vernal wet meadows and flats with shallow, basalt soils. Grassland/sagebrush communities. 4,500-7,500 ft. Endemic to ID.	Y	Not excluded	See detailed analysis below
<i>Saussurea weberi</i> Weber's saw-wort	Moist meadows in the alpine zone. 9,400 ft. Regional endemic of southwest MT, northwest WY, and central CO.	N	2	No impact

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Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Saxifraga tempestiva</i> Storm saxifrage	Vernally moist, open soil in meadows & on rock ledges in subalpine and alpine zones. 7,920-9,900 ft. Endemic to western MT.	N	2	No impact
<i>Scheuchzeria palustris</i> Pod grass	Valley and montane zones in wet, organic soil of fens, usually with sphagnum. Surrounding vegetation is coniferous forest. 2,500-7,000 ft. in MT. Circumboreal species with broad range in US that includes ID and MT	N	2	No impact
<i>Thalictrum alpinum</i> Alpine meadowrue	Moist valley, montane, and lower subalpine areas, often in moist alkaline meadows, sometimes along stream channels on variable substrates, including peat, marl, calcareous silt, silty clay, or clay loam. 4,855-8,280 ft. Circumpolar distribution. In US documented from AK, CA, CO, ID, MT, NM, NV, OR, UT, and WY.	Y	Not excluded	See detailed analysis below
<i>Thelypodium repandum</i> Wavy-leaf thelypody	Within the shrub-steppe zone on moderate to steep, unstable, generally southerly facing slopes of rocky, gravelly to cindery substrate derived from Challis volcanic and metamorphic rock with extensive bare ground and sparse vegetation (5 to 20% cover). 4,900-7,000 ft. Endemic to east-central ID.	Y	Not excluded	See detailed analysis below
<i>Trichophorum cespitosum</i> Tufted club-rush	Montane to alpine zones in wet meadows and sphagnum-dominated fens. 2,500-9,500 ft. in MT. Circumboreal with US distribution south to OR, ID, MT, and UT.	Y	Not excluded	See detailed analysis below
<i>Trifolium eriocephalum</i> Woolly-head clover	Dry meadows, woods and margins in the foothill and lower montane zones. 4,500-5,500 ft. in MT. CA, ID, MT, NV, OR, UT, and WA.	Y	Not excluded	See detailed analysis below

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Species	Habitat Description and Range	Known or Suspected to be Present in Analysis Area?	Evaluation Criteria	Initial Biological Determination
<i>Trifolium gymnocarpon</i> Holly-leaf clover	Open woods and slopes, usually in dry soil of sagebrush steppe to ponderosa pine forest in the foothills to lower montane zone. 4,800-6,300 ft. AZ, CA, CO, ID, MT, NM, NV, OR, UT, and WY.	Y	Not excluded	See detailed analysis below
<i>Veratrum californicum</i> California false-hellebore	Montane and subalpine zone in wet meadows and along streambanks. On B-D, these wetlands are within forest. 6,100-7,360 ft. AZ, CA, ID, MT, NM, NV, OR, UT, WA, and WY.	N	2	No impact
<i>Xanthoparmelia idahoensis</i> Idaho range lichen	Mountain rangelands of central Idaho in sagebrush. Documented from widely disjunct localities in CO, ID, and Alberta.	Y	Not excluded	See detailed analysis below

Table 2
Species Analyzed in Detail because they may be Affected by one of the Action Alternatives

Species	Category	Habitat affinity	Species Group
MAMMALS			
Bighorn sheep <i>Ovis canadensis</i>	R1 Sensitive	CF, DF, SHR, MS, GRA, S	Sagebrush-associated species
Great Basin pocket mouse <i>Perognathus parvus</i>	R1 Sensitive	GRA, SHR, S	Sagebrush-associated species
Pygmy rabbit <i>Brachylagus idahoensis</i>	R1 & R4 Sensitive	S	Sagebrush-associated species
Spotted bat <i>Euderma maculatum</i>	R1 & R4 Sensitive	DF, FM, PP, S	Sagebrush-associated species
Townsend's western big-eared bat <i>Corynorhinus townsendii</i>	R1 & R4 Sensitive	DF, PP, S	Sagebrush-associated species
BIRDS			
Columbian sharp-tailed grouse <i>Tympanuchus phasianellus</i>	R4 Sensitive	SHR, GRA, MS, S, RIP	Sagebrush-associated species
Greater Sage-Grouse <i>Centrocercus urophasianus</i>	R1 & R4 Sensitive	MS, S	Sagebrush-associated species
REPTILES AND AMPHIBIANS			
Boreal toad <i>Anaxyrus boreas boreas</i>	R4 Sensitive	WET, WST, T	Sagebrush-associated species
Western toad <i>Bufo boreas</i>	R1 Sensitive	WAT, WET, WST, T	Sagebrush-associated species
PLANTS			
Agastache cusickii Cusick's horse-mint	R1 Sensitive	C, MS, S	Plants
Agoseris lackschewitzii Pink agoseris	R4 Sensitive	M	Plants
Allium acuminatum Tapertip onion	R1 Sensitive	C, GRA	Plants
Allium parvum Small onion	R1 Sensitive	C, GRA	Plants
Allium tolmiei var. persimile Tolmie's onion	R4 Sensitive	SP in SHR & GRA	Plants
Astragalus anserinus Goose Creek milkvetch	R4 Sensitive	S, SHR, P/J	Plants
Astragalus aquilonius Lemhi milkvetch	R4 Sensitive	DR, R in S	Plants
Astragalus diversifolius var. diversifolius Meadow milkvetch	R4 Sensitive	M & SP in S	Plants
Astragalus jejunus var. jejunus Starveling milkvetch	R4 Sensitive	S, P/J	Plants
Astragalus scaphoides Bitterroot milkvetch	R1 Sensitive	S, GRA	Plants

Table 2
Species Analyzed in Detail because they may be Affected by one of the Action Alternatives

Species	Category	Habitat affinity	Species Group
Balsamorhiza macrophylla Large-leaved balsamroot	R1 Sensitive	S, GRA	Plants
Boechera fecunda Sapphire rockcress	R1 Sensitive	SHR, P/J, C, S, GRA	Plants
Botrychium crenulatum Dainty moonwort	R1 & R4 Sensitive	SP, M	Plants
Botrychium hesperium Western moonwort	R1 Sensitive	GRA, M, R	Plants
Botrychium lineare Slender moonwort	R4 Sensitive	M, SP, R	Plants
Botrychium paradoxum Peculiar moonwort	R1 & R4 Sensitive	M in S & C	Plants
Botrychium simplex Little grape fern	R4 Sensitive	M, SP	Plants
Bryum calobryoides Beautiful Bryum	R4 Sensitive	M	Plants
Carex idahoia Idaho sedge	R1 Sensitive	M, SP	Plants
Eleocharis rostellata Beaked spikerush	R1 Sensitive	SP	Plants
Epipactis gigantea Giant helleborine	R1 Sensitive	RIP, SP	Plants
Eriogonum brevicaulum var. desertorum Desert buckwheat	R4 Sensitive	GRA, S, SHR	Plants
Eriogonum capistratum var. welshii Welsh buckwheat	R4 Sensitive	S, GRA	Plants
Gentianopsis simplex Hiker's gentian	R1 Sensitive	M, SP	Plants
Juncus hallii Hall's rush	R1 Sensitive	M	Plants
Mimulus primuloides Primrose monkeyflower	R1 Sensitive	M	Plants
Noccaea idahoensis var. aileeniae (=Thlaspi aileeniae) Idaho pennycress	R4 Sensitive	S	Plants
Oxytropis besseyi var. salmonensis Challis crazyweed	R4 Sensitive	S, SHR	Plants
Penstemon idahoensis Idaho penstemon	R4 Sensitive	P/J	Plants
Penstemon lemhiensis Lemhi penstemon	R1 & R4 Sensitive	GRA, C, S	Plants

Table 2
Species Analyzed in Detail because they may be Affected by one of the Action Alternatives

Species	Category	Habitat affinity	Species Group
Phacelia minutissima Least phacelia	R4 Sensitive	S, C	Plants
Physaria carinata ssp. carinata Keel bladderpod	R1 Sensitive	GRA, S	Plants
Physaria carinata ssp. pulchella Beautiful bladderpod	R1 Sensitive	SHR, C, GRA, S	Plants
Physaria didymocarpa var. lyrata Salmon twin bladderpod	R4 Sensitive	S	Plants
Polygonum douglasii spp. austinae Austin's knotweed	R1 Sensitive	R, SHR, C	Plants
Primula alcalina Alkali primrose	R1 & R4 Sensitive	M	Plants
Primula incana Mealy primrose	R1 Sensitive	M	Plants
Pyrrocoma (=Haplopappus) insecticuriis Bugleg goldenweed	R4 Sensitive	GRA, S	Plants
Thalictrum alpinum Alpine meadowrue	R1 Sensitive	M, RIP	Plants
Thelypodium repandum Wavy-leaf thelypody	R4 Sensitive	S	Plants
Trichophorum cespitosum Tufted club-rush	R1 Sensitive	M	Plants
Trifolium eriocephalum Woolly-head clover	R1 Sensitive	M, C	Plants
Trifolium gymnocarpon Holly-leaf clover	R1 Sensitive	S, PP	Plants
Xanthoparmelia idahoensis Idaho range lichen	R4 Sensitive	S	Plants

Key: C = Coniferous forest; DF= Douglas fir; DR = ephemeral drainages, washes; FM = Forest meadows; GRA = Grassland; M = Meadows (wet or dry), fens; MS = Mountain shrub; P/J = Pinyon and/or juniper; PP = Ponderosa pine; R = Rock outcrops, gravel, open talus; RIP = Riparian; SHR = Shrubland; S = Sagebrush; SP = Seeps, springs, swales; T = Terrestrial; WAT = Water; WET = Marshes, shallow ponds; WST = Streams;

N.7 Species Information and Effects Analysis (Direct, Indirect, and Cumulative)

N.7.1 Greater Sage Grouse

Life History

Sage-grouse depend on a variety of semiarid shrub-grassland (shrub steppe) habitats throughout their life cycle, and are considered obligate users 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.* 2000; Connelly *et al.* 2004; Miller *et al.* 2011). Sage-grouse also use other



sagebrush species (which can be locally important) 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). Sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats (Schroeder *et al.* 2004; Connelly *et al.* 2011b). Sage-grouse exhibit strong site fidelity (loyalty to a particular area) to seasonal habitats (i.e., breeding, nesting, brood rearing, and wintering areas) (Connelly *et al.* 2004; Connelly *et al.* 2011a). Adult sage-grouse rarely switch from these habitats once they have been selected, limiting their ability to respond to changes in their local environments (Schroeder *et al.* 1999). (Life history section was copied from the USFWS FINAL COT report – Feb. 2013)

Based on GIS analysis of the EIS planning area, Table 2 describes the number of acres on each Forest, the number of acres of GRSG preliminary priority habitat (PPH) and preliminary general habitat (PGH) on each Forest, and the percentage of the Forest considered occupied habitat.

Table 3
Acres of Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH) by National Forest within the Planning Area

Forest Name	Forest Acres	PPH	PGH	Total Occupied	% of Forest
Beaverhead-Deerlodge National Forest	2,070,286	162,485	194,581	357,066	17%
Boise National Forest	2,204,572	21,287	57,252	78,539	4%
Caribou-Targhee National Forest	2,849,127	108,857	179,774	288,631	10%
Curlew National Grassland	47,479	39,820	7,083	46,904	99%
Salmon-Challis National Forest	4,353,530	348,158	208,487	556,645	13%
Sawtooth National Forest	2,110,657	282,062	212,498	494,560	23%
Total EIS Area	13,635,651	962,669	859,675	1,822,344	13%

Habitat conditions and population information were largely taken from the USFWS FINAL COT report – Feb. 2013 and from the BLM draft EIS chapter 3.

Habitat and Population Condition by Forest

Beaverhead-Deerlodge NF

The Beaverhead-Deerlodge National Forest falls within the Southwest Montana Sage-Grouse population (COT report 2013). Garton et al. (2011) analyzed this population as 4 separate smaller populations (i.e., Bannack, Wisdom, Red Rock, and Bridges), but did not provide an analysis of the overall population. Telemetry data, however, has demonstrated considerable intermingling between each of these lek complexes, clarifying that these birds represent a single population. Based on current management strategies and threats and known population numbers in this area, Garton et al. (2011), suggested that there was between 55-70% chance of the population dropping below 500 birds/200 males by 2037.

There are a total of 162,485 acres of PPH and 195,581 acres of PGH on the Beaverhead-Deerlodge National Forest.

Boise NF

The Boise National Forest is contained within the Northside Snake River population. This area contains a large amount of publicly managed land (largely BLM and USFS). Within the southern portion of this population, wildfires and invasive species have continued to reduce the quality of habitat. The mountain valley portions of this population appear to have relatively stable habitats. Thus far, energy development is very limited and there are few wild horses. A recent rate of change analysis indicates this population has been stable to increasing from 2007 to 2010. Garton et al. (2011) indicated that this population had virtually no chance of declining below 500 in the next 100 years. Population analysis indicates that Sage-Grouse have fluctuated around 5,000 males since 1992. Because of relatively large numbers of birds and stable to increasing populations, this population is considered low risk.

Habitat trends are relatively static during the last decade based on some changes to livestock grazing on adjacent lands. Higher elevation areas are generally in-tact, though may be at risk to encroachment by Douglas-fir. There are a total of 21,287 acres of PPH and 57,252 acres of PGH on the Boise National Forest.

Caribou-Targhee NF

The Caribou and Targhee National Forests can be found in portions of four different Sage-Grouse populations as described in the COT report (2013): Bear Lake, Southside Snake River, Mountain Valleys, and East Central Idaho populations. Each of these populations differs in its security (very secure to at-risk), population numbers and trends, and quantity and quality of habitats. Most of the habitat contained on the Forest is generally intact and provides brood rearing habitat during the summer and early fall.

On the Caribou-Targhee National Forests, there are a total of 108,857 acres of PPH and 179,774 acres of PGH. Based on current management strategies and threats and known population numbers in this area, Garton et al. (2011), suggested that depending upon which population (mentioned above) you refer to, that in part can be found on the Forest, there was between 0-100% chance of the population dropping below 500 birds/200 males by 2037.

Curlew NG

The Curlew National Grasslands is found in the Southside Snake River population as described in the COT report (2013). This area contains a large amount of publicly managed land (largely BLM). The area also includes among the least fragmented and largest sagebrush dominated landscapes within the extant range of Sage-Grouse (Knick and Hanser 2011). However, the northeastern portion of the population is more environmentally similar to areas where sage-grouse have been extirpated (Wisdom et al. 2011).

On the Curlew National Grasslands, there are a total of 39,820 acres of PPH and 7,083 acres of PGH. Based on current management strategies and threats and known population numbers in this area, in the Northern Great Basin, Garton et al. (2011) suggested that there was a 2% chance of the population dropping below 500 birds/200 males by 2037.



Salmon-Challis NF

The Salmon-Challis National Forest is found in the Mountain Valleys Sage-Grouse population. The mountain valley portions of this population found on the Forest are generally used by birds for mid- and late-season brood rearing habitat. On the Salmon-Challis National Forest, there are a total of 348,158 acres of PPH and 208,487 acres of PGH.

A recent rate of change analysis indicates this population has been stable to increasing from 2007 to 2010. Garton et al. (2011) indicated that this population had virtually no chance of declining below 500 in the next 100 years. The birds that pertain to this population are part of a larger population that has fluctuated around 5,000 males since 1992. Because of relatively large numbers of birds and stable to increasing populations, this population is considered low risk.

Sawtooth NF

As the Sawtooth National Forest is divided over a large landscape, some of the habitat falls within one of the following 3 different populations: Sawtooth, Southside Snake River, and the Northside Snake River population as described in the COT report (2013).

The Sawtooth population in central Idaho did not have sufficient data to allow analysis by Garton et al. (2011). No occupied leks are known to exist at this time. This area is largely encompassed by the Sawtooth National Recreation Area and includes a high proportion of public land. This population declined to one male on one lek in 1986 and was subsequently increased by translocation during the mid-1980s. Overall this population is at high risk.

Habitat on the Sawtooth NF found within the Snake River population is generally made up of mountain valleys that provide birds with mid- and late-season brood rearing habitat. A recent rate of change analysis indicates this population has been stable to increasing from 2007 to 2010. Garton et al. (2011) indicated that this population had virtually no chance of declining below 500 in the next 100 years.

Lastly there is a portion of the Forest within the boundaries of the Northern Great Basin population. This area contains a large amount of publicly managed land (largely BLM). The area also includes among the least fragmented and largest sagebrush dominated landscapes within the extant range of Sage-Grouse (Knick and Hanser 2011). However, the northern and eastern portions of the population are more environmentally similar to areas where Sage-Grouse have been extirpated (Wisdom et al. 2011).

There are a total of 282,062 acres of PPH and 212,498 acres of PGH on the Sawtooth National Forest.

Threats by Forest

Beaverhead-Deerlodge NF

Key threats are generally limited to improper grazing management, isolated sagebrush control efforts, and expansion of conifers into Sage-Grouse habitat in localized instances. Habitat conversion on the Idaho side of this Management Zone may also affect this

population to some extent. Given this population's size, limited habitat threats, and ties to Idaho's birds, the Southwest Montana population is characterized as being at a low level of risk.

Boise NF

Key wide-scale threats to this Sage-Grouse population that contains habitat on and adjacent to the Boise National Forest include: wildland fire, weeds/invasive annual grasses, potential wind energy development, and grazing. Those threats characterized as localized include: sagebrush elimination, agricultural conversion, encroachment of conifers (pinyon-juniper), land development for human habitation, and recreation.

Caribou-Targhee NF

Key Sage-Grouse threats on and around the Caribou-Targhee NF include: wildfire and subsequent invasion of exotic and/or annual grasses or weeds, some mining, grazing, and the potential threat of wind energy development in the area.

Curlew NG

Key Sage-Grouse threats on and around the Curlew NG include: wildfire and invasion of exotic and/or annual grasses or weeds. Other lesser threats include grazing and a limited spatial area of public ownership with interspersed private lands largely under cultivated agricultural.

Salmon-Challis NF

Threats to sage-grouse and their habitats on and around the Salmon-Challis NF include: grazing and disturbances from recreation and travel management due to the linear configuration of the mountain valley and ranges. At a localized scale conifer encroachment, infrastructure, and recreation might also threaten persistence of Sage-Grouse in the area.

Sawtooth NF

Key threats to Sage-Grouse on and around the Sawtooth NF include: wildfire, invasive species (cheatgrass and other weeds), pinyon/juniper and other conifer encroachment, grazing, and infrastructure. In addition, on local scales threats may include: conversion of sagebrush to agricultural fields, wind energy development, mining, and recreational activities that are ongoing on the Forest.

Alternative A

Infrastructure

Direct and Indirect Effects

Existing land use plans direction would apply under Alternative A. There would be no changes to the current National Forest System infrastructure including power lines, wind turbines, communications towers, fences, or roads. Permitted right-of-ways (ROWs) or special use authorities (SUAs) would continue to allow construction, maintenance, and operation activities that could result in habitat loss, fragmentation, or degradation of Greater Sage-Grouse (GRSG) habitat or result in barriers to migration corridors or seasonal habitats.



Construction and maintenance of infrastructure would continue to lead to higher short-term concentrations of human noise and disturbance that could cause disruption of nesting activities, abandonment of young, or temporary displacement; these could also lead to new infestations of noxious or invasive weeds and an increase in edge habitat. Existing and new power lines, wind turbines, communications towers, fences, and vehicles traveling on associated roads would continue to pose a collision hazard to GRSG or to provide potential perching and/or nesting habitat for avian predators that could result in declines in lek attendance or nest success. Though most projects would be forced to mitigate or minimize impacts, this alternative would likely have the greatest impact on the GRSG and its habitat.

Cumulative Effects

The baseline date for the cumulative impacts analysis for Greater Sage-Grouse is 2012. The temporal scope of this analysis is a 20-year planning horizon; land use planning documents are generally evaluated on a 5-year cycle. The temporal boundary for cumulative effects analysis for Greater Sage-Grouse is the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone IV (Snake River Plain) because all of the Idaho/Montana planning area, with the exception of a small portion of privately-held lands located within Management Zone II within the southeastern corner of Idaho, is located within Management Zone IV (MZ IV).

Current infrastructure management activities would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, E1, E2 or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to GRSG in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Fire and Fuels

Direct and Indirect Effects

Alternative A would continue to manage wildfire and prescribed burns under current direction which would have the fewest restrictions for fire and fuels management actions and a high potential for vegetation disturbance. Prescribed burns could be used within sagebrush habitat where needed to control fuel loading. Policies would not prioritize protection or restoration of mature sagebrush habitat. Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by sage-grouse could disrupt nesting, breeding, or foraging behavior. Important habitats could be removed or degraded because of the use of heavy equipment or hand tools. Other potential impacts may include injuring or killing eggs/chicks, causing changes in species movement patterns due to areas devoid of vegetation, or reducing population viability and increasing the contribution to the need to list the species.

In addition, suppression may initially result in higher rates of juniper encroachment in some areas. In the initial stages of encroachment (phase 1), fuel loadings remain consistent with the sagebrush understory. As juniper encroachment advances (phases 2 and 3) and the

understory begins to thin, the depleted understory causes the stands to become resistant to wildfire and further alter fire return intervals. During years of high fire danger, the resulting heavy fuel loadings in these stands can contribute to larger-scale wildfire events and confound control efforts due to extreme fire behavior.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E1, E2 and F. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from wildfire in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Alternative A would continue the management of invasive weeds under current direction. To reduce the likelihood of invasive weed spread and the extent of current infestations, integrated weed management techniques, including mechanical, manual, chemical, and biological control are utilized. Existing Coordinated Weed Management Areas would remain in effect, and firefighting vehicles would be washed prior to deployment. These policies would limit impacts from spread of weeds as effectively as possible under current resource constraints. The spread of weeds would continue to pose a substantial threat to the planning area by altering plant community structure and composition, productivity, nutrient cycling, and hydrology that could result in fragmentation or degradation of existing sage-grouse habitat. Weeds may cause declines in native plant populations, including sagebrush habitat, through competition or displacement and, in cases where monocultures occur, eliminate vegetation that sage-grouse use for food and cover. Invasives do not provide suitable sage-grouse habitat, since the species depends on a variety of native forbs and the insects associated with them for chick survival. Sage-grouse also depend on sagebrush, which is eaten year-round and used exclusively throughout the winter for food and cover. Along with competitively excluding vegetation essential to sage-grouse, invasives fragment existing sage-grouse habitat or reduce habitat quality. Invasives can also create long-term changes in ecosystem processes, such as fire-cycles (see discussion under *Fire and Fuels* above).

Current treatments and active vegetation management typically focus on vegetation composition and structure for fuels management, habitat management and/or productivity manipulation for improving the habitat and forage conditions for ungulates and other grazers, using surface soil stabilization to increase productivity, or by removing invasive plants. Management of vegetation resources to protect GRSG would alter vegetative communities by promoting increases in sagebrush height and herbaceous cover and vegetation productivity. Treatments designed to prevent encroachment of shrubs, non-native species or woody vegetation would alter the condition of native vegetation communities by



changing the density, composition, and frequency of species within plant communities. The intent of these management programs is to improve rangeland condition and enhance sagebrush ecosystems. Vegetation treatments could negatively impact GRSG and GRSG habitat in the short term from vegetation removal and disturbance, but would result in long-term improvements.

Cumulative Effects

Under Alternative A, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative A, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Direct and Indirect Effects

Expansion of conifer woodlands, especially juniper, displaces shrubs, grasses and forbs through direct competition for resources; juniper expansion is also associated with increased bare ground and increased potential for erosion. Mature trees may offer perch sites for avian predators. Alternative A does not directly address conifer encroachment. However, habitat restoration and vegetation management policies described above under *Invasive Plants* and fuels treatments described under *Fire and Fuels* would likely also reduce juniper encroachment.

Cumulative Effects

Current conifer encroachment management would continue under Alternative A and the measures addressing conifer encroachment would not be instituted as they would be in several of the action alternatives. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from conifer encroachment in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Livestock Grazing

Direct and Indirect Effects

Under this alternative, livestock grazing would continue to be managed under current direction. There would be no change in the locations, numbers, timing, or method of livestock grazing within these national forests. Depending upon site-specific management, beneficial or adverse impacts of grazing on GRSG or their habitat would continue. Grazing practices can be used as a tool that benefits sage grouse by reducing fuel load, protecting intact sagebrush habitat and increasing habitat extent and continuity. However, grazing at

inappropriate intensity, season, or location may alter or degrade sagebrush ecosystems, or reduce cover and structure that could negatively impact lek sites or reduce the suitability of nesting and brood-rearing habitat that could negatively impact sage-grouse nesting success. Other potential effects on GRSG could include: degradation of meadow/wetland/spring/stream habitat crucial for brood rearing habitat; competition with sage-grouse for forbs; occasional trampling of birds or nests or disturbance and temporarily displacement of lekking or nesting sage-grouse during movement or trailing operations.

Under current direction, the Forest Service may utilize a number of mechanisms to reduce the potential for negative impacts from grazing on sage-grouse, if necessary. The only planning-level decision available is to decide where areas would be open and closed to livestock grazing. Future impacts would be eliminated in areas closed to grazing, but past impacts would likely persist for some time, and closing grazing may result in other harmful impacts. Other changes in management would occur at the implementation level during the permit renewal process which occurs every ten years and for which subsequent NEPA analysis would be conducted. At the implementation level, changes in grazing practices or systems can be considered, which could reduce grazing intensity or change the season of use, for example. In addition, changes in grazing management within riparian and wet meadows can reduce impacts in these important seasonal habitats.

Cumulative Effects

Under Alternative A, within Management Zone IV, livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health. Therefore, the direct and indirect effects of livestock grazing on Greater Sage-Grouse in Management Zone IV from the management actions under Alternative A, which would be largely neutral for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Direct and Indirect Effects

Under Alternative A, all mineral leasing and development and wind energy development would continue to be managed under current direction. As such, this alternative would be expected to cause the greatest amount of direct and indirect impacts on GRSG and their habitat including habitat loss, degradation, and fragmentation by roads, pipelines and power lines, higher levels of noise, increased presence of roads/humans, and a larger number of anthropogenic structures in an otherwise open landscape that could result in abandonment of leks, decreased attendance at the leks that do persist, lower nest initiation, poor nest success, decreased yearling survival, and avoidance of energy infrastructure in important wintering habitat.

Cumulative Effects

Management under Alternative A would maintain the current acreage open to energy development. Current energy development activities would continue under Alternative A.

The closure of areas to energy development would not be instituted as they would be under most of the action alternatives. Therefore, under Alternative A, the direct and indirect effects of energy and locatable minerals development, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from energy and locatable minerals development in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Recreation

Direct and Indirect Effects

Under this alternative there would be no changes to the current National Forest System Roads, transportation plan, or recreation management on these forests. Under current management, travel on Forest Service-administered lands is limited to existing/designated roads. There would be minimal seasonal restrictions. In general, the more acres and miles of routes that are designated in an area, the greater the likelihood of habitat fragmentation and disturbance on GRSG. In addition, less restrictive travel conditions usually mean higher concentrations of human use adjacent to motorized routes. This can cause disruption of nesting activities, abandonment of young, and temporary displacement. In addition, impacts from roads may include habitat loss from road construction, noise disturbance from vehicles, and direct mortality from collisions with vehicles. Roads may also present barriers to migration corridors or seasonal habitats. This alternative has the highest potential to impact GRSG due to the lack of restrictions on activities that cause these effects. Therefore all direct and indirect effects on the species and its habitat would likely cause current trends to continue.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on recreational disturbances to GRSG would not be instituted as they would be under the action alternatives. Under Alternative A, the direct and indirect effects from recreation management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased fragmentation of the existing sagebrush habitat and disturbance to Greater sage-Grouse in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Alternative B

Infrastructure

Direct and Indirect Effects

Under this alternative, all PPH would be managed as exclusion areas and PGH would be managed as an avoidance area for new ROW and SUA projects. It would also include the following within PPH: co-location of new ROWs or SUAs with existing infrastructure; removal, burying, or modification of existing power lines; co-location of new facilities with existing facilities, where possible; use of existing roads, or realignments to access valid existing rights that are not yet developed or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads;

and a 3% threshold on anthropogenic disturbance (including, but not limited to, highways, roads, geothermal wells, wind turbines, and associated facilities) within PPH. This alternative would benefit GRSG by maximizing connectivity and minimizing loss, fragmentation, degradation and disturbance of sagebrush habitats within PPH by power lines, communication towers and roads. GRSG and GRSG habitat outside PPH would likely experience little change in direct or indirect effects. However, if the 3% development threshold ended up concentrating new infrastructure development outside PPH rather than just reducing it within PPH, the extent of impacts on GRSG and GRSG habitat outside PPH could increase under Alternative B relative to Alternative A. Alternative B would reduce the likelihood of collisions addressed in Alternative A. These conservation measures make this alternative more protective than Alternative A, although the general effects would be the same.

Cumulative Effects

Management actions associated with infrastructure management under Alternative B would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels

Direct and Indirect Effects

Under Alternative B, suppression would be prioritized in PPH to protect mature sagebrush habitat. Suppression would be prioritized in PGH only where fires threaten PPH. Alternative B does not include any other specific management for wildland fire management in PGH. Fuels treatments would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, implementing fuel breaks, applying seasonal restrictions, protections for winter range, and requiring use of native seeds. Post-fuels treatments in PPH would be designed to ensure long-term persistence of seeded areas and native plants and maintain 15 percent canopy cover. Fuels treatments in PPH would also monitor and control for invasive species, and fuels management BMPs would incorporate invasive plant prevention measures. Overall, these conservation measures would reduce the threat of wildfire to sagebrush compared to Alternative A though, in general, the effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

Management actions under Alternative B, with respect to fire and fuels management, would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities and pre-suppression planning and staging for maximum protection of Greater Sage-Grouse habitat would be included. Fuels treatment activities would focus on protecting Greater Sage-Grouse habitat, primarily within PPH. Therefore, the direct and indirect effects of fire to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Under Alternative B, weed control efforts would continue to be managed under current direction (see Alternative A). However, GRSG vegetation management conservation measures included in Alternative B would benefit weed control efforts by prioritizing restoration efforts, including reducing invasive plants in PPH, in order to benefit GRSG habitats. BLM and Forest Service would require the use of native seeds and would design post-restoration management to ensure the long-term persistence of the restoration efforts, and would consider changes in climate when determining species for restoration. Invasive species would also be monitored and controlled after fuels treatments and at existing and new range improvements in PPH. Alternative B incorporates fewer invasive plant management measures in PGH compared to PPH. However, many of the same habitat restoration and vegetation management actions would be applied, including prioritizing the use of native seeds. Together, these measures would reduce impacts on GRSG from invasive plants described under Alternative A although the effects of the treatments would be the same.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat, under Alternative B would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment but the vegetation management conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would also likely reduce juniper encroachment and the general effects on GRSG and GRSG habitat as described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing

Direct and Indirect Effects

Alternative B would implement a number of beneficial management actions in PPH to incorporate sage-grouse habitat objectives and management considerations into livestock grazing management. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Several management actions to reduce impacts from livestock grazing on sage-grouse general habitat would be incorporated, including the potential to modify grazing systems to meet seasonal sage-grouse habitat requirements and management to improve the conditions of riparian areas and wet meadows. Together these efforts would reduce the potential for negative impacts from grazing on GRSG described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative B would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.



Energy Development

Direct and Indirect Effects

Under this Alternative, PPH would be closed to new fluid mineral leasing, nonenergy leasable mineral leasing, and mineral material sales, and it would be proposed for withdrawal from mineral entry. In addition, mandatory BMPs would be applied as conditions of approval on fluid mineral leases. No surface occupancy (NSO) would be stipulated for leased fluid minerals within PPH. A 3% disturbance cap to activities in PPH would be applied and numerous conservation measures would be implemented to reduce impacts from mineral exploration and development activities in PPH. These measures would reduce the impacts of energy development on GRSG and GRSG habitat, as described under Alternative A, in PPH.

Alternative B does not include specific management for fluid, saleable, locatable, and nonenergy leasable minerals in PGH or wind energy or solar energy in PPH or PGH. As a result, current trends would continue and impacts would be similar to those under Alternative A. Although Alternative B does not directly address wind energy development or industrial solar development, its 3% threshold for anthropogenic disturbances (See *Infrastructure*) would apply to energy development and would limit the extent of all types of energy development in PPH.

Cumulative Effects

Management actions associated with energy development under Alternative B would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation

Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative B conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative B, only recreational SUAs that are neutral or beneficial to sage-grouse would be permitted in PPH and there would be limited opportunities for road construction in PPH, with minimum standards applied and no upgrading of current roads. Although general impacts would be the same as Alternative A, Alternative B is more restrictive than Alternative A. It would likely reduce loss,

fragmentation and disturbance to GRSG leks and nesting habitat by minimizing human use and road construction or upgrades and reduce automotive collisions with individual birds.

Cumulative Effects

Management actions associated with recreation management under Alternative B would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative B, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative C

Infrastructure

Direct and Indirect Effects

Alternative C would have the most protective measures for GRSG. Alternative C would extend many of the Alternative B conservation measures to all occupied habitat and all occupied habitat would be managed as an exclusion area for new ROW projects. As a result, management under Alternative C would encourage consolidation of sage-grouse habitats, facilitating habitat conservation and management and reduce the impacts of infrastructure on GRSG described under Alternatives A and B in a wider area than Alternative B.

Unlike Alternative B, that would permit wind energy siting in PPH provided a development disturbance threshold of 3% were not exceeded, Alternative C would not permit wind energy development siting in all occupied GRSG habitat. This would reduce the effects of wind energy on GRSG as discussed under Alternative A more so than Alternative B.

Cumulative Effects

Management actions associated with infrastructure management under Alternative C would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current land and realty operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.



Fire and Fuels

Direct and Indirect Effects

Alternative C is similar to Alternative B except that it is more protective of GRSG and GRSG habitat because prioritization of suppression would apply to PGH in addition to PPH (i.e., All Occupied habitat), it includes measures to manage vegetation for good or better ecological condition, and it focuses fuel breaks on areas of human habitation or significant disturbance. The general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

The cumulative effect of management actions related to fire and fuels under Alternative C, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Alternative C would maintain the direction described under Alternative A along with additional provisions that would limit invasive weed spread in all occupied GRSG habitat. Vegetation management would benefit weed control efforts, by prioritizing restoration, including reducing invasive plants, in order to benefit sage-grouse habitats. In all cases, local native plant ecotype seeds and seedlings would be used. These policies would reduce impacts from invasive plants on GRSG described under Alternative A and have similar impacts associated with treatment, but would include additional conservation measures specific to limiting the spread of invasive plants. In addition, grazing would be eliminated within all occupied sage-grouse habitat, eliminating the potential for invasive plant spread by livestock. This would make Alternative C more protective of GRSG and GRSG habitat than Alternatives A or B.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative C would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment but the weed control policies described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would also likely reduce juniper encroachment and the general effects of it on GRSG and GRSG habitat as described under Alternative A.

Cumulative Effects

Under Alternative C, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing

Direct and Indirect Effects

Under Alternative C, grazing would be eliminated within all occupied sage-grouse habitat (PPH and PGH) reducing the potential for both negative and positive grazing-related impacts on GRSG and GRSG habitat discussed under Alternative A more so than any of the other alternatives. No new water developments or range improvements would be constructed in occupied habitat and only habitat treatments that benefit GRSG would be allowed. Retirement of grazing would be allowed and fast tracked.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), livestock grazing would be eliminated within all occupied GRSG habitat, providing a net benefit to GRSG habitat. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from management under Alternative C, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Direct and Indirect Effects

Alternative C would expand several of the protections under Alternative B, including exclusion of new ROWs, to all occupied habitat as well as prohibit new exploration permits for unleased fluid minerals (also see *Infrastructure* section above). Like Alternative B, the conservation measures proposed under Alternative C would reduce many of the impacts of energy and locatable minerals development on GRSG described under Alternative A, but to a larger degree than any of the other alternatives.



Cumulative Effects

Management actions under Alternative C with respect to energy development would increase protection of all occupied habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all occupied habitat to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse (refer to the Cumulative Effects section of the DEIS).

Recreation

Direct and Indirect Effects

Alternative C is similar to Alternative B except that it would apply to all occupied habitat and, therefore, protect a larger area of GRSG habitat than Alternative B from the same types of general recreational impacts described in Alternative A.

Cumulative Effects

Recreation management actions under Alternative C would increase protection of all occupied Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative C, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative D

Infrastructure

Direct and Indirect Effects

Under Alternative D, priority, medial, and general habitat would be designated ROW avoidance areas, as opposed to ROW exclusion areas for PPH under Alternative B or all occupied habitat under Alternative C, and new authorizations would be co-located, when possible, within or adjacent to existing disturbance/footprint to avoid disturbance to GRSG or GRSG habitat. In priority areas, a subset of PPH, new authorizations for the following would not be allowed: larger transmission facilities greater than 50 kV, wind and solar developments, commercial geothermal development, nuclear, gas or oil developments, airports, ancillary facilities associated with any of the aforementioned development, paved or gravel roads or landfills. In medial habitat, wind and solar development would be restricted

where adverse effects could not be mitigated; general habitat would be an avoidance area for wind or solar reauthorization.

New ROWs and SUAs allowed in priority or medial habitat would not result in a net loss of GRSG habitat in the respective priority or medial habitat area. New authorizations or facilities would be sited outside of the 3 km (1.86 mile) lek avoidance buffer areas unless NEPA analysis suggested a greater or lesser required distance. New power and communications lines in priority, medial or general habitat outside of existing ROWS would be required to be buried; existing lines would be evaluated for burying, modification or relocation to at least 3km (1.86 miles) from occupied leks or winter habitat. These conservation measures would reduce the amount of impacts from infrastructure relative to existing management under Alternative A and may provide some additional reduction in impacts over Alternative B, but would not be as protective of GRSG as the measures proposed in Alternative C.

Cumulative Effects

Management actions associated with infrastructure under Alternative D would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels

Direct and Indirect Effects

Like Alternative B, Alternative D would prioritize fire suppression in priority and medial habitats, which together equal PPH. Unlike Alternative B, it would also include the following conservation measures in priority, medial and general habitat to strategically reduce fire effects: pre-planning and firefighter training in sagebrush management as related to suppression activities; designing and implementing fuels treatments with an emphasis on maintaining, protecting and expanding sage grouse habitats; and considering conifer encroachment areas as areas to manage wildfire for resource benefit. Overall, Alternative D would limit damage to sagebrush habitat areas from wildfire. The general effects of fire suppression and fuels treatments would be similar to those described in Alternative A. Delineating conifer encroachment areas in priority, medial and general habitat as areas to manage wildfire for resource benefit could protect GRSG habitat by reducing the amount of suppression-related juniper encroachment, and reducing fuel loadings that can contribute to larger-scale wildfire events that confound control efforts due to extreme fire behavior.



Cumulative Effects

The cumulative effect of management actions under Alternative D, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Under Alternative D, the direction described under Alternative A would be maintained making it the same in terms of impacts from invasive plants and associated treatments. Similar to those of Alternative B, vegetation management conservation measures included in this alternative would benefit weed control efforts in the long term by prioritizing restoration efforts, including reducing invasive plants, and monitoring and controlling invasive species after construction, fuels treatments and at new range improvements. Unlike Alternative B, monitoring and controlling invasive species after fuels treatments and at new range improvements would apply to priority, Medial, and general habitat rather than only PPH.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to GRSG. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Direct and Indirect Effects

Under Alternative D, implementation of vegetation rehabilitation projects designed to achieve the greatest improvement in sage-grouse abundance and distribution, including those that address conifer encroachment, in priority, medial and general GRSG habitat would be prioritized. Factors contributing to higher emphasis would include the likelihood of conifer encroachment into sage-grouse habitat. In addition, vegetation management tools described above for *Invasive Plants* and *Fire and Fuels* would help to reduce conifer encroachment in medial habitat, and to reduce the impacts of conifer encroachment on GRSG and GRSG habitat that were described under Alternative A. Impacts from treatments associated with this alternative would also be the same as those described for vegetation treatments under *Invasive Plants* and *Fire and Fuels* under Alternative A. Alternative D would address conifer encroachment more so than Alternatives A, B or C and, therefore, is more protective of GRSG and GRSG habitat than those alternatives.

Cumulative Effects

Under Alternative D, within Management Zone IV, conifer encroachment measures for invasive plants having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing

Direct and Indirect Effects

Management under Alternative D would include the same measures as Alternative B, but expands many of those measures to priority, medial habitat and general habitat. It would also manage for vegetation composition (including riparian and lentic areas) and structure consistent with appropriate sage-grouse seasonal habitat objectives relative to site potential. Both Alternatives D and F apply the same conservation measures as Alternative B, but Alternative B largely applies only to PPH whereas Alternative D applies to priority, general, and medial habitat and Alternative F applies to all occupied habitat. Together, these efforts would reduce the potential for negative grazing-related impacts on GRSG and GRSG habitat described under Alternative A more so than Alternatives B, or E, but less than Alternative C. It would be similar to Alternative F.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to GRSG. Therefore, the direct and indirect effects of livestock grazing on Greater Sage-Grouse in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Direct and Indirect Effects

Alternative D would close most priority and medial habitat to future fluid mineral leasing and non-energy minerals leasing and development. It would place additional stipulations and seasonal restrictions on existing fluid mineral leases in priority, medial and general habitats. In addition, medial habitat would be closed to non-energy minerals leasing. General habitat would generally be available for new fluid or non-energy minerals leasing subject to applicable seasonal and daily timing restrictions, except 0.6 mile NSO would be required near occupied and undetermined status leks for future fluid mineral leases. Geophysical exploration would be allowed in priority, medial and general habitat, subject to



seasonal timing restrictions and/or other restrictions that may apply. These actions would probably reduce the impacts of mineral development on GRSG discussed under Alternative A to a level similar to that of Alternative B.

Unlike Alternative B, Alternative D directly addresses solar and wind energy development. Solar and wind energy development would not be allowed within priority habitat. In medial habitat, wind and solar energy development would be restricted where adverse effects could not be mitigated. Ancillary facilities such as roads, electric lines, etc. could potentially be authorized provided mitigation prevents any net loss of sage-grouse habitat. General habitat would be considered avoidance areas for wind and solar development. These actions could reduce negative impacts associated with energy development on GRSG that occur in medial habitat relative to Alternatives A and B.

Cumulative Effects

Under Alternative D, within Management Zone IV, some of the current management direction associated with energy development would continue, however, additional emphasis on protecting existing sagebrush would be included. Therefore, the direct and indirect effects of energy development to Greater Sage-Grouse in Management Zone IV from the added management actions under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse (refer to the Cumulative Effects section of the DEIS).

Recreation

Direct and Indirect Effects

Alternative D would apply the following conservation measures to reduce the potential negative impacts of recreation on GRSG in priority, medial and general habitat: Special Recreation Permits would be analyzed on a case-by-case basis and use would be directed away from sensitive seasons and/or areas; certain developed recreation sites and associated facilities would be designed or designated to direct use away from sensitive areas; and seasonal restrictions for authorized activities would be incorporated. Alternative D could be more protective of GRSG and GRSG habitat than Alternatives A, B or C because it includes additional measures.

Cumulative Effects

Alternative D would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone under Alternative D, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative E1

Infrastructure

Direct and Indirect Effects

Alternative E1 is similar to Alternative B but not as restrictive. Core and Important habitat areas would generally be identified as new ROW avoidance areas. Within Core habitat, new infrastructure ROWs or SUAs would be co-located with existing infrastructure. In Important areas, new infrastructure could be built if habitat protection criteria are met. General impacts on GRSG and GRSG habitat under Alternative E1 would be the same as those for Alternative A. Because Alternative E1 includes fewer limitations on infrastructure within sage-grouse habitat than Alternative B, the potential for some infrastructure related impacts on GRSG may be higher under Alternative E1. However, unlike Alternative B, Alternative E1 does not promote the undergrounding of utilities and, therefore, it would not reduce the potential for collisions with GRSG.

While Alternative E1 would reduce the likelihood of impacts from infrastructure compared to existing management under Alternative A, it would not be as protective as Alternative D, which would designate Primary, medial and general habitat as new ROW avoidance areas, or Alternatives C or F, which would generally manage all occupied habitat as a new ROW exclusion area.

Cumulative Effects

Management actions associated with infrastructure under Alternative E1 would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels

Direct and Indirect Effects

Alternative E1 would focus resources to reduce wildfire in sagebrush areas, prioritizing fire suppression and maintaining fuel breaks in Core and Important habitat. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to Core and Important habitat areas would be reduced to limit fire damage. This alternative is unique compared with the others in that adaptive management would be used to account for acres of habitat lost to fire in Core and Important habitat. These measures would reduce the threat of wildfire to sagebrush and reduce damage to GRSG habitat, but the general effects of fire suppression

and fuels treatments would be similar to those of Alternative A. Alternative E1 would be the most protective in terms of GRSG and GRSG habitat due to the combination of suppression prioritization and adaptive management measures, but it would have similar short-term negative impacts on GRSG and GRSG habitats as Alternatives B, C and D from fuel break construction and maintenance.

Cumulative Effects

Management actions under Alternative E1, with respect to fire and fuels management, would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Alternative E1 would maintain the policies described under Alternative A along with additional measures to protect Core, Important and general habitat areas. Core, Important and general habitat would be actively managed to prevent invasion. Eradication and control of invasives threatening sage-grouse habitat would be actively pursued in Core and important habitat and invasives would be monitored and controlled for three years following a fire in these habitat areas. The measures under Alternative E1 would significantly reduce the impacts from invasive plants described in Alternative A and would be the most protective in terms of controlling invasive plants in GRSG habitat, but the short-term impacts on GRSG habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to GRSG. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Direct and Indirect Effects

Under Alternative E1, the Forest Service would prioritize the removal of conifers using methods that would minimize disturbance to GRSG and GRSG habitat, to the extent possible, in Core and Important habitat. Conifer encroachment projects would focus on areas with highest restoration potential, as evidenced by low canopy cover, existing sagebrush understory, and adjacent sage-grouse populations, and would not be conducted in juniper stands older than 100 years. In addition, as described above *Invasive Plants*, Core, Important and general habitat would be actively managed to prevent invasion. Unlike Alternative D, Alternative E1 contains a specific restoration measure addressing conifer encroachment. However, Alternative D addresses conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area. Although treatments associated with these measures have the potential to negatively impact GRSG and GRSG habitat in the short term (refer to vegetation treatments discussion for *Invasive Plants* in Alternative A), they would benefit GRSG and GRSG habitat in the long term by reducing the impacts from conifer encroachment described in *Conifer Encroachment* under Alternative A. Negative impacts would be expected to be negligible due to the prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E1, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing

Direct and Indirect Effects

Alternative E1 takes a very different approach to livestock grazing than the other alternatives. Management under Alternative E1 would add sage-grouse guidelines to grazing management plans in Core and Important habitat. Rangeland health assessments and permit renewal assessments would be conducted in Core and Important habitat; allotments within Core habitat that have declining sage-grouse populations would be prioritized, followed by allotments within Important habitat that contain breeding habitats with decreasing lek counts. If assessments determined that livestock grazing were limiting the achievement of desired habitat characteristics, grazing permits would be adjusted during the renewal process to include measures to achieve desired conditions. These measures would reduce the potential for negative impacts of livestock grazing on GRSG and GRSG habitat (see *Livestock Grazing* under Alternative A) more so than Alternative A, but less than Alternative C, that would eliminate grazing in all occupied habitat. However, the measures under



Alternative E1 are more likely to retain the positive benefits of livestock grazing (see *Livestock Grazing* under Alternative A) than Alternative C.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to GRSG habitat. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Direct and Indirect Effects

Alternative E1 would follow much of the current guidance on leasing and development of mineral resources (Alternative A) but would add measures to minimize impacts to sage-grouse: (1) in Core and Important habitat, exploration activities associated with oil and gas development that used temporary roads would be permissible if site disturbance were minimized; (2) in Core and Important habitat, surface occupancy associated with oil and gas development would not be allowed unless the surface development would not accelerate and/or cause declines in sage-grouse populations; (3) surface disturbance from roads associated with fluid mineral development would be limited to three percent and five percent of suitable habitat per an average of 640 acres in Core and Important habitat, respectively; and (4) wind energy development projects would comply with all infrastructure development best management practices (BMPs) and the 2012 U.S. Fish and Wildlife Service (USFWS) Wind Energy Guidelines. Impacts on GRSG from energy development activities would essentially continue as described in Alternative A, although their magnitude and spatial distribution would differ. The negative effects of wind energy on GRSG, as described in *Infrastructure* and *Energy Development* under Alternative A, would be expected to be reduced as the result on compliance with USFWS Wind Energy Guidelines.

Cumulative Effects

Management actions associated with energy development under Alternative E1 would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of energy development on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation

Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative E1 conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative E1, timing and seasonal restrictions would be applied to activities known to disturb nesting sage-grouse. Although this approach would reduce the impacts of recreation on sage-grouse described in Alternative A compared to current management under Alternative A, Alternative E1 would probably be less protective of GRSG than the other action alternatives.

Cumulative Effects

Management actions associated with recreation management under Alternative E1 would increase protection of Greater Sage-Grouse, thereby benefitting Greater Sage-Grouse. Under Alternative E1, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative E1, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative E2

Infrastructure

Direct and Indirect Effects

For all ROWs/SUAs in priority habitat, management stipulations and conditions would focus on mitigating direct disturbance to GRSG during construction. Priority habitat would be designated as an avoidance area for new ROWs/SUAs, which is less protective of GRSG habitat than Alternatives B, C or F but similar to Alternatives D and E1. Similar to Alternatives B, C, and F, Alternative E2 would include a disturbance cap. However, Alternative E2 would apply a 5% disturbance cap as opposed to a 3% disturbance cap and the areas over which the caps would apply and the types of disturbances that contribute toward the caps would differ. Similar to Alternative D, Alternative E2 directly addresses siting of wind energy facilities, however, Alternative E2 would be less restrictive than Alternative D by avoiding rather than excluding siting of wind energy developments in priority habitat, and applying BMPs and industry, state and federal stipulations in cases where siting in priority habitat could not be avoided. Similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities. Electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, new linear transmission features would be sited in existing corridors, or at a minimum, in concert with existing linear features in GRSG habitat. Therefore, in this respect, Alternative E2 would not be as likely to prevent collisions with GRSG as Alternatives B, C, D or F and,

therefore, would not be as protective of GRSG. GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat.

Cumulative Effects

Management actions associated with infrastructure under Alternative E2 would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in Greater Sage-Grouse habitat. Therefore, the direct and indirect effects of infrastructure management to Greater Sage-Grouse in Management Zone IV under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Fire and Fuels

Direct and Indirect Effects

Alternative E2 would implement the following unique strategies to address response to fire and reduce the general effects of fire on GRSG as discussed under Alternative A: create and implement a statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority habitat; allow the use of fire-retardant vegetation that would buffer areas of high quality GRSG habitat from catastrophic fire; use prescriptive fire with caution in sagebrush habitat and only at higher elevations and in a manner designed prescriptively to benefit GRSG; conduct effective research into controlling fire size and protect remaining GRSG areas that are adjacent to high-risk cheatgrass areas; focus research efforts on effective reclamation and restoration of landscapes altered by wildfire; manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush (80%), which would be available to GRSG above snow during a severe winter; and coordinate the needs and efforts related to GRSG with the State of Utah committee that was formed to develop a collaborative process to protect the health and welfare by reducing the size and frequency of catastrophic fires. Similar to Alternative B, Alternative E2 would consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. Overall, the protective benefits of Alternative E2 on GRSG and GRSG habitat would likely be most similar to that of Alternative B, but it would have similar short-term negative impacts on GRSG and GRSG habitats as those described under Alternative A for suppression and prescribed fire.

Cumulative Effects

Management actions under Alternative E2, with respect to fire and fuels management, would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush

habitat would be included. Therefore, the direct and indirect effects of fire to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Invasive Plants

Direct and Indirect Effects

Alternative E2 directs land managers to aggressively respond to new infestations to keep invasive species from spreading. Every effort would be made to identify and treat new infestations before they become larger problems. Additionally, containment of known infestations in or near sagebrush habitats would be a high priority for all land management, and vegetation management tools described above for *Fire and Fuels* and below for *Livestock Grazing* would help to reduce the general impacts of invasive plants on GRSG as described under Alternative A. Alternative E2, like Alternative E1, probably would be more protective in terms of controlling invasive plants in GRSG habitat than any of the other alternatives, but the short-term impacts on GRSG habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on GRSG and GRSG habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to GRSG. Therefore, the direct and indirect effects of invasive plants management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Conifer Encroachment

Direct and Indirect Effects

Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively remove encroaching conifers and other plant species to expand GRSG habitat where possible. Although treatments associated with the measures in Alternative E2 have the potential to negatively impact GRSG and GRSG habitat in the short term (refer to vegetation treatments discussion for Invasive Plants in Alternative A), they would benefit GRSG and GRSG habitat in the long term by reducing the negative impacts from conifer encroachment described in *Conifer Encroachment* under Alternative A. In comparison, Alternative D would address conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area which would provide a greater benefit to GRSG and GRSG habitat.

Alternative E2 is probably most similar to Alternative E1, except unlike Alternative E1, Alternative E2 does not include a stipulation for prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E2, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Livestock Grazing

Direct and Indirect Effects

Alternative E2 would continue to make GRSG priority and general habitat available for livestock grazing. Should site-specific concerns be raised about the effect of grazing upon GRSG habitat, and such effects are documented over a sufficiently long time-frame, corrective management actions would be addressed through the application of BMPs. Incompatible grazing strategies would be addressed through established rangeland management practices consistent with the maintenance or enhancement of habitat. GRSG seasonal habitat (leks, nesting/early brood rearing, late brood rearing and winter) requirements would be considered when managing sagebrush rangelands. Water developments would be designed to enhance mesic habitat for use by GRSG and maintain adequate vegetation in wet meadows. Within priority habitat, GRSG stipulations would take precedence over stipulations for other species if conflicts occur, if otherwise allowable by law. Livestock fences would be located away from leks and employ the NRCS fence standards to reduce bird strikes. New infestations of invasive exotic plants would be responded to aggressively to prevent spreading. Overall, the measures associated with livestock grazing under Alternative E2 would benefit GRSG and GRSG habitat, although probably less than those proposed under Alternatives B, C, D or F.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to GRSG. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Direct and Indirect Effects

Under Alternative E2, priority habitat would be considered to be suitable for further coal leasing and coal that would be extracted through underground mining. Priority and general habitat that is not already withdrawn or proposed for withdrawal would be available for locatable mineral entry. Priority habitat would be open to mineral materials and oil and gas leasing and would be an avoidance area for wind energy development, although it would not be precluded. All of the aforementioned forms of energy development, as well as non-energy leasable mineral lands, solid mineral exploration and geophysical exploration activities, would be subject to the following stipulations, as well as BMPs accepted by industry and state and federal agencies: new permanent disturbance, including structures, fences, and buildings should not be located within the occupied lek itself; permanent disturbance should not be allowed within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek; disturbance outside the lek should not produce noise which rises more than 10 db above the ambient (background) level at the edge of the lek during breeding season; time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist; disturbance in priority habitat would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance in priority habitat is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided.

All existing fluid mineral uses are explicitly recognized by this alternative and would not be affected by the implementation of this alternative. The GRSG conservation measures identified in the associated NEPA documents for each of these projects would continue to be implemented to protect GRSG and its habitat. Provisions of this alternative would not be added to the measures identified each specific project.

GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat. Similar to Alternative E1, impacts on GRSG from energy development activities under Alternative E2 would essentially continue as described in Alternative A, although somewhat reduced by the application of BMPs.

Cumulative Effects

Management actions associated with energy development under Alternative E2 would increase protection of Greater Sage-Grouse and GRSG habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when

combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation

Direct and Indirect Effects

Alternative E2 would limit or reduce impacts from recreational activities by preventing new permanent disturbance, including structures, fences, and buildings, within occupied leks or within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek. It would limit disturbance outside of leks to no more than 10 db above the ambient (background) level at the edge of the lek during breeding season. Time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist.

Within priority habitat (nesting and brood-rearing areas, winter habitat, other habitat): disturbance would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided. Alternative E2 has the potential to be more protective of GRSG and GRSG habitat than any of the other alternatives because measures to reduce impacts would apply to all recreational activities as opposed to only SUAs or camping.

Cumulative Effects

Management actions associated with recreation management under Alternative E2 would increase protection of Greater Sage-Grouse, thereby benefitting Greater Sage-Grouse. Under Alternative E2, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative E2, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Alternative F

Infrastructure

Direct and Indirect Effects

Land uses and realty management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The effects on GRSG and GRSG habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of infrastructure management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Fire and Fuels

Direct and Indirect Effects

Fire and fuels management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The impacts on GRSG would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of fire and fuels management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Invasive plants management under Alternative F would essentially be the same as that under Alternative B. Together, these measures would reduce impacts from invasive plants on GRSG habitat, as described under Alternative A, but the effects of the treatments would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of invasive plants management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Conifer Encroachment

Direct and Indirect Effects

Like Alternatives A and B, Alternative F does not directly address conifer encroachment and would maintain the invasive plant direction described under Alternative A. Although the types of impacts would be the same, the conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would likely reduce the magnitude of the impacts on GRSG habitat associated with conifer encroachment relative to Alternative A. Because those measures generally would apply throughout occupied GRSG under Alternative F whereas they would be limited to PPH under Alternative B, Alternative F could provide an additional reduction in the magnitude of impacts on GRSG habitat from conifer encroachment relative to Alternative B.

Cumulative Effects

Refer to Alternative B. The cumulative effects of conifer encroachment management on GRSG and sagebrush habitat within Management Zone IV would be the same.

Livestock Grazing

Direct and Indirect Effects

Alternative F would include beneficial management actions similar to those of Alternative B except they would apply in all GRSG habitats. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-grouse habitat, consideration of retiring vacant allotments, improved management of riparian

areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Together these efforts would reduce the potential for negative impacts from grazing on GRSG described under Alternative A.

Cumulative Effects

Under Alternative F, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative F would provide an added benefit to GRSG. Therefore, the direct and indirect effects of livestock grazing to Greater Sage-Grouse in Management Zone IV from the management actions under Alternative F, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Energy Development

Direct and Indirect Effects

Under Alternative F siting of wind energy development would be prevented in PPH; PPH would be closed to new fluid mineral leasing, nonenergy leasable mineral leasing, and mineral material sales; it would be proposed for withdrawal from mineral entry; no new surface occupancy (NSO) would be stipulated for leased fluid minerals and a 3% disturbance cap would be applied. Numerous conservation measures would be implemented to reduce impacts from mineral exploration and development activities in PPH. Like Alternative B, Alternative F does not include specific management for locatable, or saleable or nonenergy minerals in PGH. Unlike Alternative B, Alternative F directly addresses wind energy and fluid minerals development outside of PPH: wind energy would be sited at least five miles from active sage-grouse leks and at least four miles from the perimeter of sage-grouse winter habitat and areas within 4 miles of active sage-grouse leks would be closed to new fluid minerals leasing. Alternative F, although similar to Alternative B, would reduce the impacts of energy development on GRSG and GRSG habitat, as described under Alternative A, more so than Alternative B because it addresses siting of wind energy and fluid minerals leasing outside of PPH more thoroughly than alternative B.

Cumulative Effects

Management actions associated with energy development under Alternative F would increase protection of Greater Sage-Grouse habitat, primarily within PPH, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development on Greater Sage-Grouse in Management Zone IV from the management actions associated with energy development under Alternative F, which would be largely beneficial for Greater Sage-

Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

Recreation

Direct and Indirect Effects

Alternative F would follow the same general approach as Alternative A, however, like Alternative B, only recreational SUAs that are neutral or beneficial to GRSG would be permitted in PPH. In addition, within all occupied habitat, camping areas within 4 miles of active leks would seasonally be closed. The general recreational effects of Alternative F would be the same as those for Alternatives A and B although Alternative F would be somewhat more protective of GRSG than Alternative B due to the seasonal closures.

Cumulative Effects

Management actions associated with recreation management under Alternative F would increase protection of Greater Sage-Grouse habitat, thereby benefitting Greater Sage-Grouse rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to Greater Sage-Grouse in Management Zone IV under Alternative F, which would be largely beneficial for Greater Sage-Grouse, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to Greater Sage-Grouse.

N.7.2 Sagebrush-Associated Species

Bighorn sheep (*Ovis Canadensis*), Great Basin pocket mouse (*Perognathus parvus*), pygmy rabbit (*Brachylagus idahoensis*), Columbia spotted bat (*Euderma maculatum*), Townsend's western big-eared bat (*Corynorhinus townsendii*), Columbian sharp-tailed grouse (*Tympanuchus phasianellus*), boreal toad (*Anaxyrus boreas boreas*), and western toad (*Bufo boreas*) have been grouped as Sagebrush-associated Species (SAS) for this analysis due to the similar habitats they occupy and the programmatic nature and landscape scale of this analysis. Though each of the species may not be completely dependent upon sagebrush for every life history stage, they are all strongly associated with sagebrush habitats. The landscape scale effects of the proposed conservation measures for each program area within each alternative will be analyzed generally and collectively for this group of species.

Bighorn sheep (Ovis Canadensis)

Distribution [R1 Sensitive – BDNF]

Bighorn sheep utilize the Lima Tendoy landscape in PPH and PGH habitat (Southwest portion of the BDNF near the Idaho border) as part of their winter range.

Habitat Association and Threats

Most bighorn populations in Montana occur in the western portion of the state. The BDNF is located in the Mountain Foothills ecological region. Topography varies from gently undulating foothills to rugged mountainous terrain with elevations ranging from 4,000 to 11,000 feet. Vegetation in the foothills includes a variety of shrub species (big sage, bitterbrush, mountain mahogany, and juniper) interspersed among bunchgrass communities dominated by blue bunch wheatgrass and Idaho fescue. Riparian areas support cottonwood, aspen, willow, and hawthorn. Conifer forests of Douglas fir, ponderosa pine, lodgepole pine, subalpine fir, and whitebark pine become prevalent with increasing elevation. Subalpine and alpine vegetation is restricted to elevations above about 8,500 feet. In east central Idaho and southwest Montana bighorn sheep generally make use of sagebrush steppe near escape terrain during the winter and spring.

The main threat to this species is disease from contact with domestic sheep, but other issues include habitat deterioration, loss, and fragmentation from residential and resort development, highway development, livestock grazing, forest succession, noxious weeds, competition for forage with other wild ungulate species and human disturbance on critical winter and lambing ranges.

Great Basin pocket mouse (*Perognathus parvus*)

Distribution [R1 Sensitive – BDNF]

The Great Basin pocket mouse is found throughout the Great Basin and adjacent regions of the West, from south-central British Columbia southward through eastern Washington and Oregon to southern California, Nevada, northern Arizona, western Utah, southern Idaho, southwestern Montana, and southwestern Wyoming. It usually occurs below elevations of 8,200 feet. In Montana the species is limited to the southwestern portion of the State. It is known to occur in Beaverhead County and suspected in Madison County. It is probably limited to arid areas in southwestern Montana. Southwest Montana is on the periphery of the species' range (USDA Forest Service 2009). The BDNF is on the periphery of the range of the pocket mouse and the Forest contains limited pocket mouse habitat. Within the analysis area, the most likely areas to find the pocket mouse are the southern end of the BDNF.

Habitat Associations and Threats

Very little is known about this pocket mouse in Montana. Occupied habitats in Montana are arid and sometimes sparsely vegetated. They include grassland-shrubland with less than 40% cover, stabilized sandhills, and landscapes with sandy soils, more than 28% sagebrush cover, and 0.3 to 2.0 (12 – 78") meters shrub height.

The primary threat to the pocket mouse is direct habitat alteration, particularly conversion of habitat to agriculture (i.e. hay fields, row crops). Another possible threat is the encroachment of conifers into grassland/shrubland habitats.

Pygmy Rabbit (Brachylagus idahoensis)

Distribution [R1 Sensitive - BDNF; R4 Sensitive – Caribou NF, Salmon-Challis NF, Sawtooth NF, Targhee NF]

Montana lies on the northeastern edge of pygmy rabbit distribution. There are confirmed records dating back to 1918 from three southwestern counties (Beaverhead, Jefferson, Madison), with most of the Montana range in Beaverhead County. Montana records are between 4,500 – 6,700 feet. Based on USDA Forest Service (2009), recent Forest Service surveys in the north Big Hole have documented 3 rabbit detections on the Mudd Creek allotment approximately 17 miles north of Wisdom, MT. These detections were below 6,300 feet. Rabbits have also been seen in the Reservoir Creek drainage on BLM lands southwest of Bannack at approximately 6,400 feet. This location is 3 miles east of the nearest National Forest System lands. It is reasonable to expect to find this species on Forest lands below 6,700 feet. Habitat at these elevations is very limited on the Forest, probably less than 1% of the Forest and mainly occurring south of an east-west line below Dillon. There are no detections north of Melrose.

Pygmy rabbits occur on the Challis-Yankee Fork, Leadore, and Lost River Ranger Districts of the Salmon-Challis NF. Documented historic records for pygmy rabbits on the Caribou NF are from near Pocatello, Ft Hall and Downey, all at lower elevations below the Forest boundary; there are no known occurrences on the Forest. The pygmy rabbit potentially occurs on the west side of the Caribou NF in dense sagebrush stands, but current distribution is uncertain. On the Targhee NF, suitable pygmy rabbit habitat only occurs on the Dubois Ranger District. Pygmy rabbits have been documented in Grouse Canyon in the Crooked Creek drainage and in the Fritz Creek drainage of Medicine Lodge. They are suspected to occur wherever there is suitable habitat, including Birch Creek and east of Medicine Lodge. In addition, the Idaho Natural Heritage Database contains numerous pygmy rabbit detections adjacent to the District. The predicted range for the pygmy rabbit within the Sawtooth National Forest includes the Ketchum Ranger District, the southern half or the Fairfield Ranger District, the southeastern portion of the Sawtooth National Recreation Area, and the entire Minidoka Ranger District. Extensive surveys for pygmy rabbits have not been conducted on the Sawtooth National Forest.

Habitat Associations and Threats

Pygmy rabbits require sagebrush habitats. Tall clumps of Big Sage are particularly desirable with shrub canopy cover > 21%. Since they make extensive use of burrows, many of their own construction, they also need loose, friable soil generally deeper than 14". Pygmy rabbits eat a variety of grasses and forbs and switch to almost exclusively sagebrush during the winter. The preferred habitat in Montana appears to be gently sloping or level floodplains where adequate sagebrush and appropriate soils exist. However, many occupied sites have marginal sagebrush cover and shallow soils. Pygmy rabbits are also reported to frequent areas in Idaho supporting greasewood.

The primary cause for population declines is due to the loss, alteration, and fragmentation of sagebrush-steppe habitat because of factors such as increased fire frequency, extent, and

severity, encroachment of habitat by invasive plant species, and vegetation treatments that remove sagebrush. Fragmentation of sagebrush communities also poses a threat to populations of pygmy rabbits because dispersal potential is limited.

Columbia spotted bat (*Euderma maculatum*)

Distribution [R1 Sensitive – BDNF; R4 Sensitive – Boise NF, Caribou NF, Salmon-Challis NF, Sawtooth NF, Targhee NF]

This species is known to occur from central Mexico, north to southern British Columbia and east to Texas. Although roost habitats and sites have not been documented in Montana, rock outcrops abound on the BDNF including limestone which can provide excellent roosting habitat. Ponderosa pine forest is restricted to the northwest portion of the BDNF; cliff faces and talus slopes are widespread, as are sagebrush and riparian areas. Three detections have been recorded on the BDNF along the eastern edge of the Pioneer Mountains landscape within the GRSG analysis area (USDA Forest Service 2009).

This species has been found in SW Idaho, south of the Snake River and from Twin Falls County north to the Middle Fork of the Salmon River (personal com. L. Lewis *in* Nutt et al 2010). Roosting habitat (cracks in steep rocky outcrops and cliff faces) occurs within the Boise National Forest (BNF) area in steep basalt and limestone canyons, and also outside the Forest area (Nutt et al. 2010). There have been no documented occurrence of spotted bats within the BNF, but surveys have been limited. Population trends for spotted bats within the BNF area are unknown. There is one record of spotted bats on the Middle Fork Ranger District in the FC-RONR Wilderness Area on the Salmon-Challis National Forest that does not overlap the range of the GRSG; and one in the Valley Creek watershed adjacent to the Challis-Yankee Fork Ranger District (ID CDC and NRIS FAUNA data). It is unclear if the latter overlaps with GRSG habitat. The spotted bat has not been documented on the Caribou, Targhee and Sawtooth National Forests, but occurrence data exists for areas near the Sawtooth NF and suitable habitat is available within the Sawtooth NF.

Habitat Associations and Threats

Spotted bats have been encountered or detected most often in open arid habitats dominated by Utah juniper and sagebrush, sometimes intermixed with limber pine or Douglas-fir, or in grassy meadows in ponderosa pine savannah. Cliffs, rocky outcrops, and water are other attributes of sites where spotted bats have been found, typical for the global range. This species is sensitive to human disturbance during roosting.

Townsend's big eared bat (*Corynorhinus townsendii*)

Distribution [R1 Sensitive – BDNF; R4 Sensitive – Boise NF, Targhee NF, Caribou NF, Salmon-Challis NF, Sawtooth NF]

Elevational range for this species extends from near sea level to at least 3,300 meters in some areas. The complete extent of the range of Townsend's big-eared bat in Montana is unknown due to the limited survey effort across many areas. It has been documented in over 20 counties at elevations of 1,968 to 7,820 feet. There are 11 detections in southwest Montana through 2008 that border the BDNF. One detection is from 1997 on the Dillon

RD in the Bloody Dick drainage and one is near the forest boundary in the Argenta area. Of these detections there are only 2 since the year 2000 with none on BDNF lands. The 2008 R1 bat survey did not detect this species on the BDNF in the 13 evaluated abandoned mine shafts located in the Delmoe Lake and Pipestone Pass areas. Suitable habitat was found at 2 of the 13 sites.

Although population trends are not well documented, populations in Idaho appear to be declining. Although this species has been identified at several locations near the Boise National Forest, Idaho Department of Fish and Game Animal Conservation Database (2009 *in* Nutt et al. 2010) records identify no Townsend's big-eared bat occurrences on the Forest and Townsend's big-eared bat population trends for the Forest are unknown. Although the Townsend's big-eared bat has not been documented on the Targhee NF, winter surveys of hibernating bats conducted in 1984 and 1985 on the Idaho National Engineering Laboratory, near the western portion of the Forest detected western big-eared bats hibernating in lava tube caves. Cave and abandoned mine surveys within the Caribou National Forest have found Townsends big-eared bats using these structures for both summer roosts and winter hibernacula. Use has been documented in the Bear River range, Preuss Range, Portneuf Range and Elkhorn Mountains. Of 18 caves and mines surveyed on the Montpelier Ranger District during the winter, eleven were found to have low numbers of western big-eared bats. Of 12 caves and mines surveyed in the summer, five had low numbers of western big-eared bats. No large concentrations were found in any season. Although there are records of this species occurring on the North Fork, Salmon-Cobalt, and Lost River Ranger Districts of the Salmon-Challis National Forest (ID CDC and NRIS FAUNA data) and abandoned mine land surveys completed in the last four years have found colonies on the Lost River, Challis-Yankee Fork, Salmon-Cobalt, Leadore, and North Fork Ranger Districts, GRSG habitat only overlaps the Lost River RD and small portions of the Salmon-Cobalt, Challis-Yankee Fork and Leadore RDs. The Sawtooth National Forest contains source habitat throughout the low, mid, and high elevations. Although Townsend's big-eared bats have been documented on the Sawtooth National Forest, there are only a few point location occurrence data shown for this species. The Forest provides breeding, hibernating, and generally year-round habitat for this species. Townsend's big-eared bat population size and population trend data is unavailable for the Sawtooth National Forest.

Habitat Associations and Threats

In western Montana the Townsend's big-eared bat is most closely associated with cavernous habitat and rocky outcrops of sedimentary or limestone origin, which are used for roosting. In old-growth forests, large diameter hollow trees may be used for roosting. It is known to use caves, buildings, and tree cavities for roosts. In Idaho, most of the big-eared bat records have been in lower elevations outside of large expanses of forest cover.

Threats generally include loss of habitat due to: management activities, vandalism, and disturbance of maternity roosts and hibernacula. Managing forested types to produce a sufficient number of snags of the appropriate heights would benefit this species since snags are used for night roosting.

Columbian sharp-tailed grouse (Tympanuchus phasianellus)

Distribution [R4 Sensitive – Boise NF, Caribou NF, Sawtooth NF, Targhee NF]

The Columbian sharp tailed grouse occurs in southwestern Canada, Washington, Oregon, Idaho, Montana and Wyoming. It is not known if this bird nests on the Boise NF, but it is assumed that some do. Idaho Department of Fish and Game records show one sharp-tailed grouse record for the Forest (ICDC 2002 in Nutt et al. 2010).

Most of the Caribou-Targhee National Forest is located at a higher elevation than this species is typically found. While there are numerous leks documented adjacent to the Caribou National Forest, none are located on Caribou NF lands. Sagebrush and grassland habitats on the Forest may provide nesting, brood-rearing and winter habitat. Survey data for lek attendance on leks adjacent to the Caribou NF is very patchy. Within the Targhee National Forest, there appears to be habitat for sharp-tailed grouse in the Shotgun Valley, along the western boundary of the Ashton-Island Park District (similar to sage-grouse) and on the southern portions of the Dubois District east of I-15. Habitat on the forest is likely brood-rearing habitat, as opposed to nesting or wintering habitat.

Columbian sharp-tailed grouse populations occur in three sub basins within the Sawtooth National Forest; Curlew Valley, Raft River, and Salmon Falls Creek. Sharp-tailed grouse populations are small and isolated, and it is anticipated that this species uses adjacent Bureau of Land Management (BLM) and private lands. Forest Service administered lands are believed to provide important fall and wintering requirements, and these habitats are generally within the mountain shrub communities. It is not known definitively if this species nest on Forest Service administered lands, but it is assumed that some do.

Habitat Associations and Threats

Sharp-tailed grouse are found in low-elevation native shrub-grassland year-round. Abundant grass composition appears to be important within shrub/grassland communities during all life stages. Through the summer, the shrubs are used for cover, and the grass and forbs are used as food, including insects that are available in these habitats. During the winter, tall shrubs other than sagebrush (serviceberry, chokecherry, bitter brush, bitter cherry, hawthorn, and aspen) increase in importance for food supply because they are above snow cover and riparian cover types become a critical habitat component. These habitats are referred to as mountain shrub communities and shrub-dominated riparian areas, and include areas with the moderate to high canopy cover.

Much of the sharp-tailed grouse's low-elevation historical habitat has been converted to agriculture production. Another concern has been the extensive modification of some of these communities due to wildfire.

Western boreal toad (Anaxyrus boreas boreas)

Distribution

Western boreal toads have been observed on the Boise, Ashton, Island Park, Palisades and Teton Districts of the Caribou-Targhee National Forest. Their distribution overlaps with

that of the GRSG on the Boise Ranger District and is near it in the Ashton-Island Park District.

Habitat Associations and Threats

Boreal toads are associated with a variety of habitats, including wetlands, forests, woodlands, sagebrush, meadows, and floodplains in the mountains and valleys. Usually they inhabit wetlands near ponds, lakes, reservoirs, rivers and streams. They require 3 main habitat components; 1) shallow wetlands for breeding, 2) terrestrial habitats with vegetative cover for foraging, and 3) burrows for winter hibernation. Boreal toads have a low reproductive output.

Threats to boreal toads include: chytrid fungus *Batrachochytrium dendrobatidis*, acidification of wetlands, thinning of the ozone layer, timber harvesting that causes sedimentation, livestock grazing in and around riparian areas, pesticides and herbicides, and introduced species which prey on toads or create competition for resources or are vectors for pathogens. Any activity that alters mountain wetland habitats can affect boreal toad populations.

Western toad (Bufo boreas)

Distribution [R1 Sensitive – BDNF]

Within the last 25 years, western toads have undergone population crashes in Colorado, Utah, southeast Wyoming and New Mexico. In the northern Rocky Mountains they have also undergone declines. Surveys in the late 1990's revealed they were absent from a number of areas they historically occupied. While they remain widespread across the landscape, they appear to be occupying only 5–10%, or less, of the suitable habitat.

A systematic inventory of standing water bodies in 50 randomly chosen sub-watersheds within and adjacent to the Beaverhead-Deerlodge National Forest demonstrated similar findings. In the sub watersheds where they were found to be present, they were detected and breeding in only 7% of the suitable habitats. What this represents with regard to historic distribution and abundance in this area is not known, since there is not baseline data to compare against. However, based on declines in other western states, it seems reasonable they are depressed and a primary cause is believed to be disease.

Habitat Associations and Threats

The western toad is largely terrestrial and found in a variety of habitats from valley bottoms to high elevations. They breed in lakes, ponds and occasionally in slow flowing streams. They prefer shallow areas with muddy bottoms.

The extent of threats range-wide is not known with certainty, but there appear to be multiple causes contributing to the range-wide trend; disease and parasites appear to be contributing factors leading to population declines. Roads, water development, fire suppression, timber harvest, mining, grazing, and recreation have been the major human-caused agents of change for water resources.

Alternative A

Infrastructure

Direct and Indirect Effects

Existing land use plans direction would apply under Alternative A. There would be no changes to the current National Forest System infrastructure including power lines, wind turbines, communications towers, fences, or roads. Permitted ROWs would continue to allow construction, maintenance, and operation activities that could result in habitat loss, fragmentation, or degradation of sagebrush habitat or result in barriers to migration corridors or seasonal habitats. Construction and maintenance of infrastructure would continue to lead to higher short-term concentrations of human noise and disturbance that could cause disruption of reproductive, foraging, or other behaviors, abandonment of young or temporary displacement of individuals of SAS species. These activities could also lead to new infestations of noxious or invasive weeds and an increase in edge habitat. Existing and new power lines, wind turbines, communications towers, fences, and vehicles traveling on associated roads would continue to pose a collision hazard to SAS or to provide potential perching and/or nesting habitat for avian predators. Though most projects would be forced to mitigate or minimize impacts, this alternative would likely have the greatest impact on SAS and their habitat.

Cumulative Effects

The baseline date for the cumulative impacts analysis for SAS is 2012. The temporal scope of this analysis is a 20-year planning horizon; land use planning documents are generally evaluated on a 5-year cycle. The temporal boundary for cumulative effects analysis for SAS is the Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone IV (Snake River Plain) because all of the Idaho/Montana planning area, with the exception of a small portion of privately-held lands located within Management Zone II within the southeastern corner of Idaho, is located within Management Zone IV (MZ IV) and it is large enough to encompass larger-ranging species such as bighorn sheep.

Current infrastructure management activities would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, E1, E2 or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to SAS in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Fire and Fuels

Direct and Indirect Effects

Alternative A would continue to manage wildfire and prescribed burns under current direction which would have the fewest restrictions for fire and fuels management actions and a high potential for vegetation disturbance. Prescribed burns could be used within sagebrush habitat where needed to control fuel loading. Policies would not prioritize

protection or restoration of mature sagebrush habitat. Increased human activity and noise associated with wildland fire suppression and prescribed fire in areas occupied by SAS could disrupt nesting, breeding, or foraging behavior. Important habitats could be removed or degraded because of the use of heavy equipment or hand tools. Other potential impacts may include injuring or killing eggs, young, or individuals of less mobile species, or causing changes in species movement patterns due to areas devoid of vegetation.

In addition, suppression may initially result in higher rates of juniper encroachment in some areas, eliminating habitat for SAS. In the initial stages of encroachment (phase 1), fuel loadings remain consistent with the sagebrush understory. As juniper encroachment advances (phases 2 and 3) and the understory begins to thin, the depleted understory causes the stands to become resistant to wildfire and further alter fire return intervals. During years of high fire danger, the resulting heavy fuel loadings in these stands can contribute to larger-scale wildfire events that have a particularly negative effect on pygmy rabbit and Columbia sharp-tailed grouse habitat and confound control efforts due to extreme fire behavior.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E1, E2 and F. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from wildfire in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Alternative A would continue the management of invasive weeds under current direction. To reduce the likelihood of invasive weed spread and the extent of current infestations, integrated weed management techniques, including mechanical, manual, chemical, and biological control are utilized. Existing Coordinated Weed Management Areas would remain in effect, and firefighting vehicles would be washed prior to deployment. These policies would limit impacts from spread of weeds as effectively as possible under current resource constraints. The spread of weeds would continue to pose a substantial threat to the planning area by altering plant community structure and composition, productivity, nutrient cycling, and hydrology that could result in fragmentation or degradation of existing SAS habitat. Weeds may cause declines in native plant populations, including sagebrush habitat, through competition or displacement and, in cases where monocultures occur, eliminate vegetation that SAS use for food and cover. In addition, invasives can fragment existing sagebrush habitat or reduce habitat quality. Invasives can also create long-term changes in ecosystem processes, such as fire-cycles (see discussion under *Fire and Fuels* above).

Current treatments and active vegetation management typically focus on vegetation composition and structure for fuels management, habitat management and/or productivity

manipulation for improving the habitat and forage conditions for ungulates and other grazers, using surface soil stabilization to increase productivity, or by removing invasive plants. Management of vegetation resources to protect GRSG would alter vegetative communities by promoting increases in sagebrush height and herbaceous cover and vegetation productivity. Treatments designed to prevent encroachment of shrubs, non-native species or woody vegetation would alter the condition of native vegetation communities by changing the density, composition, and frequency of species within plant communities. The intent of these management programs is to improve rangeland condition and enhance sagebrush ecosystems. Vegetation treatments could negatively impact individuals of SAS and sagebrush habitat in the short term, primarily through disturbance, from vegetation removal activities, but would result in long-term benefits to SAS species and improvement of sagebrush habitat.

Cumulative Effects

Under Alternative A, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on SAS and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. Therefore, the direct and indirect effects of invasive plants management to SAS in Management Zone IV from the management actions under Alternative A, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Conifer Encroachment

Direct and Indirect Effects

Expansion of conifer woodlands, especially juniper, displaces shrubs, grasses and forbs through direct competition for resources. The pocket mouse, in particular, may be negatively affected by changes in sagebrush habitat due to conifer encroachment. Juniper expansion is also associated with increased bare ground and increased potential for erosion. Mature trees may offer perch sites for avian predators. Alternative A does not directly address conifer encroachment. However, habitat restoration and vegetation management policies described above under *Invasive Plants* and fuels treatments described under *Fire and Fuels* would likely also reduce juniper encroachment.

Cumulative Effects

Current conifer encroachment management would continue under Alternative A and the measures addressing conifer encroachment would not be instituted as they would be in several of the action alternatives. Under Alternative A, the direct and indirect effects, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from conifer encroachment in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Livestock Grazing

Direct and Indirect Effects

Under this alternative, livestock grazing would continue to be managed under current direction. There would be no change in the locations, numbers, timing, or method of livestock grazing within these national forests. Depending upon site-specific management, beneficial or adverse impacts of grazing on SAS or their habitat would continue. Grazing practices can benefit SAS by reducing fuel load, protecting intact sagebrush habitat and increasing habitat extent and continuity. However, grazing at inappropriate intensity, season, or location may alter or degrade sagebrush ecosystems, or reduce cover and structure that could reduce the suitability of reproductive or foraging habitat. In addition, grazing can degrade meadow/wetland/spring/stream habitat crucial riparian-dependent SAS such as bats, toads and Columbia sharp-tailed grouse; lead to competition with forb-dependent SAS species such as pygmy rabbit and sharp-tailed grouse; cause soil compaction affecting burrowing species such as pygmy rabbit; occasionally lead to trampling of less mobile SAS or their nests; disturb reproductive, foraging, or other critical behaviors; or temporarily displace SAS, particularly during movement or trailing operations.

Under current direction, the Forest Service may utilize a number of mechanisms to reduce the potential for negative impacts from grazing, if necessary. The only planning-level decision available is to decide where areas would be open and closed to livestock grazing. Future impacts would be eliminated in areas closed to grazing, but past impacts would likely persist for some time, and closing grazing may result in other harmful impacts. Other changes in management would occur at the implementation level during the permit renewal process which occurs every ten years and for which subsequent NEPA analysis would be conducted. At the implementation level, changes in grazing practices or systems can be considered, which could reduce grazing intensity or change the season of use, for example. In addition, changes in grazing management within riparian and wet meadows can reduce impacts in these important habitats.

Cumulative Effects

Under Alternative A, within Management Zone IV, livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from the management actions under Alternative A, which would be largely neutral for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Energy Development

Direct and Indirect Effects

Under Alternative A, all mineral leasing and development and wind energy development would continue to be managed under current direction. As such, this alternative would be expected to cause the greatest amount of direct and indirect impacts on SAS and their

habitat including habitat loss, degradation, and fragmentation by roads, pipelines and power lines, higher levels of noise, increased presence of roads/humans, and a larger number of anthropogenic structures in an otherwise open landscape that could result in disturbance of reproductive, foraging, or other critical behaviors or displacement.

Cumulative Effects

Management under Alternative A would maintain the current acreage open to energy development. Current energy development activities would continue under Alternative A. The closure of areas to energy development would not be instituted as they would be under most of the action alternatives. Therefore, under Alternative A, the direct and indirect effects of energy and locatable minerals development, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat from energy and locatable minerals development in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Recreation

Direct and Indirect Effects

Under this alternative there would be no changes to the current National Forest System Roads, transportation plan, or recreation management on these forests. Under current management, travel on Forest Service-administered lands is limited to existing/designated roads. There would be minimal seasonal restrictions. In general, the more acres and miles of routes that are designated in an area, the greater the likelihood of disturbance of SAS and fragmentation of SAS habitat. In addition, less restrictive travel conditions usually mean higher concentrations of human use adjacent to motorized routes. This can cause disruption of nesting activities, abandonment of young and temporary displacement, including from critical winter ranges. In addition, impacts from roads may include habitat loss from road construction, noise disturbance from vehicles, and direct mortality from collisions with vehicles. Roads may also present barriers to migration corridors or seasonal habitats. This alternative has the highest potential to impact SAS due to the lack of restrictions on activities that cause these effects.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on recreational disturbances to GRSG would not be instituted as they would be under the action alternatives. Under Alternative A, the direct and indirect effects from recreation management, in conjunction with the past, present and reasonably foreseeable future actions, may result in the increased loss and fragmentation of the existing sagebrush habitat and disturbance to SAS in Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Alternative B

Infrastructure

Direct and Indirect Effects

Alternative B places a 3% disturbance threshold on new ROWs or SUAs within PPH. Under this alternative, all PPH would be managed as exclusion areas and PGH would be managed as an avoidance area for new ROW and SUA projects, and it would require co-location of new ROWs or SUAs with existing infrastructure. It would aim to remove, bury, or modify existing power lines in PPH, having the potential to disturb SAS in the short term but reducing the potential for collisions with aerial species in the long term. In PPH, new facilities would be co-located with existing facilities where possible and use of existing roads, or realignments to access valid existing rights that are not yet developed or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads

This alternative would maximize connectivity and minimize loss, fragmentation, degradation and disturbance of sagebrush habitats within PPH by power lines, communication towers, and roads. SAS outside PPH would likely experience little change in direct or indirect effects. However, if this measure ended up concentrating new infrastructure development outside PPH rather than just reducing it within PPH, the extent of impacts on SAS outside PPH could increase under Alternative B relative to Alternative A. general impacts from infrastructure on SAS would be similar to those described for Alternative A.

Cumulative Effects

Management actions associated with infrastructure management under Alternative B would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to SAS in Management Zone IV under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Fire and Fuels

Direct and Indirect Effects

Under Alternative B, suppression would be prioritized in PPH to protect mature sagebrush habitat. Suppression would be prioritized in PGH only where fires threaten PPH. Suppression-related juniper encroachment discussed in Alternative A could increase in some areas under Alternative B, eliminating habitat for SAS and eventually resulting in heavy fuel

loadings that could contribute to larger-scale wildfire events that have a particularly negative effect on pygmy rabbit and Columbia sharp-tailed grouse habitat.

Alternative B does not include any other specific management for wildland fire management in PGH. Fuels treatments would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, implementing fuel breaks, applying seasonal restrictions, protections for winter range, and requiring use of native seeds. Post-fuels treatments would be designed to ensure long-term persistence of seeded areas and native plants and maintain 15 percent canopy cover. Fuels treatments would also monitor and control for invasive species, and fuels management BMPs would incorporate invasive plant prevention measures. These measures would benefit SAS species negatively impacted by invasive species, such as bighorn sheep and pygmy rabbit, by eliminating competition with or exclusion of forage species. Overall, these conservation measures would reduce the threat of wildfire to sagebrush compared to Alternative A although the general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

Management actions under Alternative B, with respect to fire and fuels management, would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat during suppression activities and pre-suppression planning and staging for maximum protection of sagebrush habitat would be included. Fuels treatment activities would focus on protecting sagebrush habitat, primarily within PPH. Therefore, the direct and indirect effects of fire to SAS in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Under Alternative B, weed control efforts would continue to be managed under current direction (see Alternative A). However, vegetation management conservation measures would benefit weed control efforts by prioritizing restoration efforts, including reducing invasive plants and, in turn, benefit SAS species, such as bighorn sheep and pygmy rabbit, negatively impacted by invasive species. BLM and Forest Service would require the use of native seeds and would design post-restoration management to ensure the long-term persistence of the restoration efforts, and would consider changes in climate when determining species for restoration. Invasive species would also be monitored and controlled after fuels treatments and at existing range improvements. Alternative B incorporates fewer invasive plant management measures in PGH compared to PPH. However, many of the same habitat restoration and vegetation management actions would be applied, including prioritizing the use of native seeds. Together, these measures would reduce impacts to SAS

from invasive plants as described under Alternative A although the general effects of the treatments would be the same.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants management treatments, including mechanical, manual, chemical, and biological control of invasive plants, would continue and the short-term negative impacts of these activities on SAS and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat, under Alternative B would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of invasive plants management to SAS in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Conifer Encroachment

Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment but the vegetation management conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would also likely reduce juniper encroachment and the general effects on SAS habitat as described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to SAS in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Livestock Grazing

Direct and Indirect Effects

Alternative B would implement a number of beneficial management actions in PPH to incorporate sage-grouse habitat objectives and management considerations into livestock grazing management. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sagebrush habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Several management actions to reduce impacts from livestock grazing on sage-grouse general habitat would be incorporated, including the potential to modify grazing systems to meet seasonal sage-grouse

habitat requirements and management to improve the conditions of riparian areas and wet meadows. Together these efforts would reduce the potential for negative grazing-related impacts on SAS described under Alternative A.

Cumulative Effects

Under Alternative B, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative B would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from the management actions under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Energy Development

Direct and Indirect Effects

Under this Alternative, PPH would be closed to new fluid mineral leasing, nonenergy leasable mineral leasing, and mineral material sales, and it would be proposed for withdrawal from mineral entry. In addition, mandatory BMPs would be applied as conditions of approval on fluid mineral leases. Existing leases entirely within PPH would require application of 4-mile, no surface occupancy (NSO) buffers around leks, limiting disturbances within sections to the 3% threshold and application of numerous conservation measures reduce impacts from mineral exploration and development activities in PPH.

Alternative B does not include specific management for fluid, saleable, locatable, and nonenergy leasable minerals in PGH. As a result, current trends would continue and impacts would be similar to those under Alternative A. Although Alternative B does not directly address wind energy development or industrial solar development, its 3% threshold for anthropogenic disturbances (including, but not limited to, highways, roads, geothermal wells, wind turbines, and associated facilities – see *Infrastructure*) would apply to energy development and would limit the extent of all types of energy development in PPH. These measures would reduce the impacts of energy development on SAS as described under Alternative A.

Cumulative Effects

Management actions associated with energy development under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects on SAS in Management Zone IV from the management actions associated with energy development under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Recreation

Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative B conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative B, only recreational SUAs that are neutral or beneficial to sage-grouse would be permitted in PPH and there would be limited opportunities for road construction in PPH, with minimum standards applied and no upgrading of current roads. Although general impacts would be the same as Alternative A, Alternative B is more restrictive than Alternative A. It would likely reduce loss and fragmentation of SAS habitat and disturbance to SAS in PPH by minimizing human use and road construction or upgrades, and reduce automotive collisions with individual SAS species within PPH. However, if these measures ended up concentrating recreational use and additional roads outside PPH rather than just reducing it within PPH, the extent of impacts on SAS outside PPH could increase under Alternative B relative to Alternative A.

Cumulative Effects

Management actions associated with recreation management under Alternative B would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative B, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to SAS in Management Zone IV under Alternative B, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Alternative C

Infrastructure

Direct and Indirect Effects

Alternative C would have the most protective measures for GRSG. Alternative C would extend many of the Alternative B conservation measures to all occupied habitat and all occupied habitat would be managed as an exclusion area for new ROW projects. As a result, management under Alternative C would encourage consolidation of sage-grouse habitats, facilitating habitat conservation and management and reduce the impacts of infrastructure on SAS described under Alternatives A and B in a wider area than Alternative B. Unlike Alternative B, which would permit wind energy siting in PPH provided a development disturbance threshold of 3% were not exceeded, Alternative C would not permit wind energy development siting in all occupied GRSG habitat. This would reduce the effects of wind energy on SAS discussed under Alternative A more so than Alternative B.



Like alternative B, Alternative C would aim to remove, bury, or modify existing power lines, but would apply to all occupied GRSG habitat, having the potential to disturb more SAS and habitat in the short term but, perhaps, having a greater likelihood of reducing the potential for collisions with aerial species in the long term. This alternative would be expected to have the least negative impacts and most positive impacts to wildlife species whose ranges overlap with all occupied GRSG habitat.

Cumulative Effects

Management actions associated with infrastructure management under Alternative C would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current land and realty operations would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to SAS in Management Zone IV under Alternative C, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Fire and Fuels

Direct and Indirect Effects

Alternative C is similar to Alternative B except that it is more protective of SAS and SAS habitat because prioritization of suppression would apply to PGH in addition to PPH (i.e., All Occupied habitat), it includes measures to manage vegetation for good or better ecological condition, and it focuses fuel breaks on areas of human habitation or significant disturbance. The negative impacts of fire suppression on conifer encroachment and fire suppression and fuels treatments on SAS discussed under Alternative A would be offset by the prioritization of restoration treatments described below for invasive plants. The general effects of fire suppression and fuels treatments would be similar to those of Alternative A.

Cumulative Effects

The cumulative effect of management actions related to fire and fuels under Alternative C, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Alternative C would maintain the direction described under Alternative A along with additional provisions that would limit invasive weed spread in all occupied GRSG habitat. Vegetation management would benefit weed control efforts, by prioritizing restoration,

including reducing invasive plants, in all occupied GRSG habitat in order to benefit sage-grouse habitats. In all cases, local native plant ecotype seeds and seedlings would be used. These policies would reduce impacts from invasive plants on SAS and SAS habitat described under Alternative A, and have similar impacts associated with treatment, but would include additional conservation measures specific to limiting the spread of invasive plants. In addition, grazing would be eliminated within all occupied sage-grouse habitat, eliminating the potential for invasive plant spread by livestock in SAS habitat overlapping GRSG occupied habitat. This would make Alternative C more protective of SAS and SAS habitat than Alternatives A or B.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments would continue and the short-term negative impacts of these activities on SAS and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative C would provide an added benefit to SAS. Therefore, the direct and indirect effects of invasive plants management to SAS in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Conifer Encroachment

Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment but the weed control policies described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would also likely reduce juniper encroachment and the general effects of it on SAS and SAS habitat as described under Alternative A.

Cumulative Effects

Under Alternative C, within Management Zone IV, vegetation management conservation measures for invasive plants and fuels treatments having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to SAS in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Livestock Grazing

Direct and Indirect Effects

Under Alternative C, grazing would be eliminated within all occupied sage-grouse habitat reducing the potential for both negative and positive grazing-related impacts on SAS and SAS habitat discussed under Alternative A more so than any of the other alternatives. No new water developments or range improvements would be constructed in occupied habitat



and only habitat treatments that benefit GRSG would be allowed; most habitat treatments would be expected to benefit SAS as well. Retirement of grazing would be allowed and fast tracked. Alternative C could negatively impact SAS species by eliminating artificial water developments these species have come to rely upon once grazing is eliminated.

Cumulative Effects

Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), livestock grazing would be eliminated within all occupied GRSG habitat, providing a net benefit to SAS. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from management under Alternative C, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Energy Development

Direct and Indirect Effects

Alternative C would expand the protections under Alternative B to all occupied GRSG habitat as well as prohibit new exploration permits for unleased fluid minerals. Unlike Alternative B, wind energy development would not be allowed in occupied GRSG habitat. Like Alternative B, the conservation measures would reduce the general impacts of energy development on SAS as described under Alternatives A and B, but to a larger degree than any of the other alternatives. This measure would protect larger areas of SAS habitat from degradation, fragmentation and prevent or reduce disturbance to or displacement of SAS species in larger areas.

Cumulative Effects

Management actions under Alternative C with respect to energy development would increase protection of all occupied habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all occupied habitat to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of energy development to SAS in Management Zone IV from the management actions under Alternative C, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat (refer to the Cumulative Effects section of the DEIS).

Recreation

Direct and Indirect Effects

Alternative C is similar to Alternative B but applies to all occupied GRSG habitat as opposed to PPH. Therefore, it would protect a larger area of SAS habitat from the general recreational impacts on SAS described in Alternatives A and Alternative B.

Cumulative Effects

Recreation management actions under Alternative C would increase protection of all occupied Greater Sage-Grouse habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative C, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to SAS in Management Zone IV under Alternative C, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Alternative D

Infrastructure

Direct and Indirect Effects

Under Alternative D, priority, Medial, and general habitat would be designated ROW avoidance areas, as opposed to ROW exclusion areas for PPH under Alternative B or all occupied habitat under Alternative C, and new authorizations would be co-located, when possible, within or adjacent to existing disturbance/footprint to avoid disturbance to GRSG or GRSG habitat. In priority areas, a subset of PPH, new authorizations for the following would not be allowed: larger transmission facilities greater than 50 kV, wind and solar developments, commercial geothermal development, nuclear, gas or oil developments, airports, ancillary facilities associated with any of the aforementioned development, paved or gravel roads or landfills. In medial habitat, wind and solar development would be restricted where adverse effects could not be mitigated; general habitat would be an avoidance area for wind or solar reauthorization.

New ROWs and SUAs allowed in priority or medial habitat would not result in a net loss of GRSG habitat in the respective priority or medial area. New authorizations or facilities would be sited outside of the 3 km (1.86 mile) lek avoidance buffer areas unless NEPA analysis suggested a greater or lesser required distance. New power and communications lines in priority, medial or general habitat outside of existing ROWs would be required to be buried; existing lines would be evaluated for burying, modification or relocation to at least 3km (1.86 miles) from occupied leks or winter habitat. These conservation measures would reduce the impacts on SAS and SAS habitat from infrastructure relative to existing management under Alternative A and may provide some additional reduction in impacts over Alternative B, but would not be as protective of SAS and SAS habitat as the measures proposed in Alternative C.

Cumulative Effects

Management actions associated with infrastructure under Alternative D would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the

Cumulative Effects section of the DEIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW exclusion or avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to SAS in Management Zone IV under Alternative D, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Fire and Fuels

Direct and Indirect Effects

Alternative D would prioritize fire suppression in priority and medial habitats, which together equal PPH. Unlike Alternative B, it would also include the following conservation measures in priority, medial and general habitat to strategically reduce fire effects: pre-planning and firefighter training in sagebrush management as related to suppression activities; designing and implementing fuels treatments with an emphasis on maintaining, protecting and expanding sage grouse habitats; and considering conifer encroachment areas as areas to manage wildfire for resource benefit. Overall, Alternative D would limit damage to sagebrush habitat areas from wildfire. Although Alternative D is similar to Alternatives B and C in prioritizing fire suppression, it would prioritize it in more GRSG habitat than Alternative B (only PPH) and less than Alternative C (all occupied habitat). The general effects of fire suppression and fuels treatments would be similar to those described in Alternative A. Delineating conifer encroachment areas in PPH as areas to manage wildfire for resource benefit could reduce the amount of suppression-related juniper encroachment discussed in Alternative B, protecting habitat for SAS and reducing fuel loadings that can contribute to larger-scale wildfire events that have a particularly negative effect on pygmy rabbit and Columbia sharp-tailed grouse habitat and confound control efforts due to extreme fire behavior.

Cumulative Effects

The cumulative effect of fire and fuels management actions under Alternative D, when combined with the past, present and reasonably foreseeable future actions are similar to the cumulative effects described in Alternative B, and are not expected to be substantial, change the existing population trend, or remove and fragment sagebrush habitat past a critical threshold within Management Zone IV (refer to the Cumulative Effects section of the DEIS).

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Under Alternative D, the direction described under Alternative A would be maintained making it the same in terms of impacts from invasive plants and associated treatments. Similar to those of Alternative B, vegetation management conservation measures included in this alternative would benefit weed control efforts in the long term by prioritizing restoration efforts, including reducing invasive plants, and monitoring and controlling invasive species

after construction, fuels treatments and at new range improvements. Unlike Alternative B, monitoring and controlling invasive species after fuels treatments and at new range improvements would apply to priority, Medial, and general habitats rather than only PPH. These policies would reduce the impacts of invasive plants described under Alternative A on SAS habitat.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on SAS and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to SAS. Therefore, the direct and indirect effects of invasive plants management to SAS in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Conifer Encroachment

Direct and Indirect Effects

Under Alternative D, implementation of vegetation rehabilitation projects designed to achieve the greatest improvement in sage-grouse abundance and distribution, including those that address conifer encroachment, in priority, medial and general GRSG habitat would be prioritized. Factors contributing to higher emphasis would include the likelihood of conifer encroachment into sage-grouse habitat. In addition, vegetation management tools described above for *Invasive Plants* and *Fire and Fuels* would help to reduce encroachment in priority, medial and general habitat, and to reduce the impacts of conifer encroachment on SAS and SAS habitat as described under Alternative A. Impacts from treatments associated with this alternative would be the same as those described for vegetation treatments under *Invasive Plants* and *Fire and Fuels* under Alternative A. Alternative D would address conifer encroachment more so than Alternatives A, B or C and, therefore, is more protective of SAS and SAS habitat than any of those alternatives.

Cumulative Effects

Under Alternative D, within Management Zone I, conifer encroachment projects having the potential to reduce juniper encroachment would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to SAS in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Livestock Grazing

Direct and Indirect Effects

Management under Alternative D would include the same conservation measures as Alternative B, but expands many of those measures to priority, medial habitat and general habitat. It would also manage for vegetation composition (including riparian and lentic areas) and structure consistent with appropriate sage-grouse seasonal habitat objectives relative to site potential. Both Alternatives D and F apply the same conservation measures as Alternative B, but Alternative B largely applies only to PPH, whereas Alternative D applies to priority, General, and medial habitat, and Alternative F applies to all occupied habitat. Together, these efforts would reduce the potential for negative grazing-related impacts on SAS and SAS habitat described under Alternative A more so than Alternatives B, or E, but less than Alternative C. It would be similar to Alternative F.

Cumulative Effects

Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative D would provide an added benefit to SAS. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from the management actions under Alternative D, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions, would not substantially increase impacts to SAS or sagebrush habitats.

Energy Development

Direct and Indirect Effects

Alternative D would close most priority habitat to future fluid mineral leasing and non-energy minerals leasing and development. It would place additional stipulations and seasonal restrictions on existing and future fluid mineral leases in certain medial habitat areas: leasing would be allowed subject to standard seasonal and daily stipulations in breeding and winter habitat and well density would not be allowed to exceed 1/640 acres; NSO of 3 km (1.86 miles) would be allowed around leks. In addition, medial habitat would be closed to non-energy minerals leasing. In general habitat, NSO would be allowed for non-energy minerals leasing, or within 3 km (1.86 miles of priority or medial habitat), or for future fluid mineral leasing within 3 km of occupied leks. Otherwise, general habitat would be available for fluid or non-energy minerals leasing subject to applicable seasonal and daily timing restrictions. Geophysical exploration would be allowed in priority, medial and general habitat, subject to seasonal timing restrictions and/or other restrictions that may apply. These actions would probably reduce the impacts of mineral development on SAS discussed under Alternative A to a level similar to that of Alternative B.

Unlike Alternative B, Alternative D directly addresses solar and wind energy development. Solar and wind energy development would not be allowed within priority habitat. In medial habitat, wind and solar energy development would be restricted where adverse effects could not be mitigated. Ancillary facilities such as roads, electric lines, etc. could potentially be

authorized provided mitigation prevents any net loss of sage-grouse habitat. general habitat would be considered avoidance areas for wind and solar development. These actions could reduce negative impacts associated with energy development on SAS that occur in medial habitat relative to Alternatives A and B.

Cumulative Effects

Under Alternative D, within Management Zone IV, some of the current management direction associated with energy development would continue, however, additional emphasis on protecting existing sagebrush would be included. Therefore, the direct and indirect effects of energy development to SAS in Management Zone IV from the added management actions under Alternative D, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats (refer to the Cumulative Effects section of the DEIS).

Recreation

Direct and Indirect Effects

Alternative D would apply the following conservation measures to reduce the potential negative impacts of recreation on GRSG in priority, medial and general habitat: Special Recreation Permits would be analyzed on a case-by-case basis and use would be directed away from sensitive seasons and/or areas; certain developed recreation sites and associated facilities would be designed or designated to direct use away from sensitive areas; and seasonal restrictions for authorized activities would be incorporated. Alternative D would likely be more protective of SAS and SAS habitat than Alternatives A, B or C because it includes additional measures.

Cumulative Effects

Alternative D would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative D, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to SAS in Management Zone under Alternative D, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Alternative E1

Infrastructure

Direct and Indirect Effects

Alternative E1 is similar to Alternative B but not as restrictive. Core and Important habitat areas would generally be identified as new ROW avoidance areas. Within Core habitat, new infrastructure ROWs or SUAs would be co-located with existing infrastructure. In Important areas, new infrastructure could be built if habitat protection criteria are met.

general impacts on GRSG and GRSG habitat under Alternative E1 would be the same as those for Alternative A. Because Alternative E1 includes fewer limitations on infrastructure within sage-grouse habitat than Alternative B, the potential for some infrastructure related impacts on SAS may be higher under Alternative E1. However, unlike Alternative B, Alternative E1 does not promote the undergrounding of utilities and, therefore, it would not reduce the potential for collisions with GRSG or aerial SAS.

While Alternative E1 would reduce the likelihood of impacts from infrastructure compared to existing management under Alternative A, it would not be as protective as Alternative D, which would designate priority, medial and general habitat as new ROW avoidance areas, or Alternatives C or F, which would generally manage all occupied habitat as a new ROW exclusion area.

Cumulative Effects

Management actions associated with infrastructure under Alternative E1 would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to SAS in Management Zone IV under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Fire and Fuels

Direct and Indirect Effects

Alternative E1 would focus resources to reduce wildfire in sagebrush areas, prioritizing fire suppression and maintaining fuel breaks in Core and Important habitats. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to Core and Important habitat areas would be reduced to limit fire damage. This alternative is unique compared with the others in that adaptive management would be used to account for acres of habitat lost to fire in Core and Important habitat. Although these measures would reduce the threat of wildfire to sagebrush and reduce damage to SAS habitat, suppression-related juniper encroachment discussed in Alternative A could increase in some areas under Alternative E1, eliminating habitat for SAS and eventually resulting in heavy fuel loadings that can contribute to larger-scale wildfire events that have a particularly negative effect on pygmy rabbit and Columbia sharp-tailed grouse habitat and confound control efforts due to extreme fire behavior. This would be offset to a certain degree, however, by restoration and vegetation management measures that prioritize the removal of conifers, through appropriate methods, in Core and Important habitat.

The general effects of fire suppression and fuels treatments under Alternative E1 would be similar to those of Alternative A. Alternative E1 would be the most protective in terms of

SAS and SAS habitat due to the combination of suppression prioritization and adaptive management measures, but it would have similar short-term negative impacts on SAS and SAS habitats as Alternatives B, C and D from fuel break construction and maintenance.

Cumulative Effects

Management actions under Alternative E1, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to SAS in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Alternative E1 would maintain the policies described under Alternative A and include additional measures to protect Core, Important and general habitat areas. Core, Important and general habitat would be actively managed to prevent invasion. Eradication and control of invasives threatening sage-grouse habitat would be actively pursued in Core and Important habitat and invasives would be monitored for three years following a fire in these habitat areas. The policies under Alternative E1 would significantly reduce the impacts on SAS from invasive plants described in Alternative A and would be the most protective in terms of controlling invasive plants in SAS habitat, but the short-term impacts on SAS habitat associated with invasive plant treatments (see Alternative A) would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on SAS and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E1 would provide an added benefit to SAS. Therefore, the direct and indirect effects of invasive plants management to SAS in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Conifer Encroachment

Direct and Indirect Effects

Alternative E1 would prioritize conifer removal in Core and Important habitat using methods that would minimize disturbance to GRSG and, therefore, SAS, to the extent possible. Conifer encroachment projects would focus on areas with highest restoration



potential, as evidenced by low canopy cover, existing sagebrush understory, and adjacent sage-grouse populations, and would not be conducted in juniper stands older than 100 years. In addition, as described above *Invasive Plants*, Core, Important and general habitat would be actively managed to prevent invasion. Unlike Alternative D, Alternative E1 contains a specific restoration measure addressing conifer encroachment. However, Alternative D addresses conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area. Although treatments associated with these measures have the potential to negatively impact SAS and SAS habitat in the short term (refer to vegetation treatments discussion for *Invasive Plants* in Alternative A), they would benefit SAS and SAS habitat in the long term by reducing the impacts from conifer encroachment described in *Conifer Encroachment* under Alternative A. Negative impacts would be expected to be negligible due to the prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E1, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to SAS in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Livestock Grazing

Direct and Indirect Effects

Alternative E1 takes a very different approach to livestock grazing than the other alternatives. Management under Alternative E1 would add sage-grouse guidelines to grazing management plans in Core and Important habitat. Rangeland health assessments and permit renewal assessments would be conducted in Core and Important habitat; allotments within Core habitat that have declining sage-grouse populations would be prioritized, followed by allotments within Important habitat that contain breeding habitat with decreasing lek counts. If assessments determined that livestock grazing were limiting the achievement of desired habitat characteristics, grazing permits would be adjusted during the renewal process to include measures to achieve desired conditions. These measures would reduce potential for negative impacts from livestock grazing on SAS and SAS habitat (see *Livestock Grazing* under Alternative A).

Relative to Alternative B, Alternative E1 focuses less management on riparian areas, meadows, and other wetlands, so SAS species that utilize those types of habitats would be expected to experience fewer beneficial effects under Alternative E1 than under Alternative B.

Cumulative Effects

Under Alternative E1, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under

Alternative E1 would provide an added benefit to sagebrush habitat. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from the management actions under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Energy Development

Direct and Indirect Effects

Alternative E1 would follow much of the current guidance on leasing and development of mineral resources (Alternative A) but would add measures to minimize impacts to sage-grouse that would also minimize impacts on SAS: (1) in Core and Important habitat, exploration activities associated with oil and gas development that used temporary roads would be permissible if site disturbance were minimized; (2) in Core and Important habitat, surface occupancy associated with oil and gas development would not be allowed unless the surface development would not accelerate and/or cause declines in sage-grouse populations; (3) surface disturbance from roads associated with fluid mineral development would be limited to three percent and five percent of suitable habitat per an average of 640 acres in Core and Important habitat, respectively; and (4) wind energy development projects would comply with all infrastructure development BMPs and the 2012 U.S. Fish and Wildlife Service Wind Energy Guidelines. Impacts on SAS from energy development activities would essentially continue as described in Alternative A although their magnitude and spatial distribution would differ. The effects of wind energy on SAS, as described in *Infrastructure* and *Energy Development* under Alternative A, would be expected to be reduced as the result on compliance with USFWS Wind Energy Guidelines.

Cumulative Effects

Management actions associated with energy development under Alternative E1 would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative E1, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of energy development on SAS in Management Zone IV from the management actions associated with energy development under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Recreation

Direct and Indirect Effects

Under current management, travel on Forest Service-administered lands is limited to existing/designated roads, so Alternative E1 conservation measures directed toward limiting motorized travel to designated roads, primitive roads, and trails and travel management would not be applicable. Under Alternative E1, timing and seasonal restrictions would be

applied to activities known to disturb nesting sage-grouse. Although this approach would reduce the impacts of recreation on SAS described in Alternative A, particularly for SAS species utilizing sagebrush habitats during the breeding season, compared to current management under Alternative A, Alternative E1 would probably be less protective of SAS than the other action alternatives.

Cumulative Effects

Management actions associated with recreation management under Alternative E1 would include timing and seasonal restrictions for the Greater Sage-Grouse breeding season, thereby benefitting SAS. Under Alternative E1, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to SAS in Management Zone IV under Alternative E1, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitat.

Alternative E2

Infrastructure

Direct and Indirect Effects

For all ROWs/SUAs in priority habitat, management stipulations and conditions would focus on mitigating direct disturbance to GRSG during construction. priority habitat would be designated as an avoidance area for new ROWs/SUAs, which is less protective of GRSG habitat than Alternatives B, C or F but similar to Alternatives D and E1. Similar to Alternatives B, C, and F, Alternative E2 would include a disturbance cap. However, Alternative E2 would apply a 5% disturbance cap as opposed to a 3% disturbance cap and the areas over which the caps would apply and the types of disturbances that contribute toward the caps would differ. Similar to Alternative D, Alternative E2 directly addresses siting of wind energy facilities, however, Alternative E2 would be less restrictive than Alternative D by avoiding rather than excluding siting of wind energy developments in priority habitat, and applying BMPs and industry, state and federal stipulations in cases where siting in priority habitat could not be avoided. Similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities. Electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, new linear transmission features would be sited in existing corridors, or at a minimum, in concert with existing linear features in GRSG habitat. Therefore, in this respect, Alternative E2 would not be as likely to prevent collisions with aerial species as Alternatives B, C, D or F and, therefore, would not be as protective of SAS. GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat. Therefore, current trends for SAS species would likely continue outside of priority habitat.

Cumulative Effects

Management actions associated with infrastructure under Alternative E2 would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), some of the current infrastructure management actions would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Infrastructure management activities would focus ROW avoidance areas in sagebrush habitat. Therefore, the direct and indirect effects of infrastructure management to SAS in Management Zone IV under Alternative E2, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Fire and Fuels

Direct and Indirect Effects

Alternative E2 would implement the following unique strategies to address response to fire and reduce the general effects of fire on GRSG as discussed under Alternative A: create and implement a statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority habitat; allow the use of fire-retardant vegetation that would buffer areas of high quality GRSG habitat from catastrophic fire; use prescriptive fire with caution in sagebrush habitat and only at higher elevations and in a manner designed prescriptively to benefit GRSG; conduct effective research into controlling fire size and protecting remaining GRSG areas that are adjacent to high-risk cheatgrass areas; focus research efforts on effective reclamation and restoration of landscapes altered by wildfire; manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush (80%), which would be available to GRSG above snow during a severe winter; and coordinate the needs and efforts related to GRSG with the State of Utah committee that was formed to develop a collaborative process to protect the health and welfare by reducing the size and frequency of catastrophic fires. Similar to Alternative B, Alternative E2 would consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate. Overall, the protective benefits of Alternative E2 on SAS and SAS habitat would likely be most similar to that of Alternative B, but it would have similar short-term negative impacts on SAS and sagebrush habitats as those described under Alternative A for suppression and prescribed fire.

Cumulative Effects

Management actions under Alternative E2, with respect to fire and fuels management, would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current wildfire suppression operations would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects of fire to SAS in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for

SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Invasive Plants

Direct and Indirect Effects

Alternative E2 directs land managers to aggressively respond to new infestations to keep invasive species from spreading. Every effort would be made to identify and treat new infestations before they become larger problems. Additionally, containment of known infestations in or near sagebrush habitats would be a high priority for all land management, and vegetation management tools described above for *Fire and Fuels* and below for *Livestock Grazing* would help to reduce the general impacts of invasive plants on GRSG as described under Alternative A. Alternative E2, like Alternative E1, probably would be more protective with respect to controlling invasive plants in sagebrush habitat than any of the other alternatives, but the short-term impacts on SAS and SAS habitat associated with invasive plant treatments, that were described under Alternative A, would be the same and could affect a larger area.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effects section of the DEIS), current invasive plants treatments, would continue and the short-term negative impacts of these activities on SAS and sagebrush habitats would continue to be outweighed by the long-term beneficial impacts. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to SAS. Therefore, the direct and indirect effects of invasive plants management to SAS in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Conifer Encroachment

Direct and Indirect Effects

Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively remove encroaching conifers and other plant species to expand GRSG habitat where possible. Although treatments associated with the measures in Alternative E2 have the potential to negatively impact SAS and sagebrush habitat in the short term (refer to vegetation treatments discussion for *Invasive Plants* in Alternative A), they would benefit SAS and sagebrush habitat in the long term by reducing the negative impacts of conifer encroachment described in *Conifer Encroachment* under Alternative A. In comparison, Alternative D would address conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area which would provide a greater benefit to SAS and sagebrush habitat. Alternative E2 is probably most similar to Alternative E1, except unlike Alternative E1, Alternative E2 does not include a stipulation for prioritization of removal methods minimizing disturbance.

Cumulative Effects

Under Alternative E2, within Management Zone IV, conifer encroachment projects would be instituted as opposed to no specific conifer encroachment management under Alternative A. Therefore, the direct and indirect effects of conifer encroachment management to SAS in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Livestock Grazing

Direct and Indirect Effects

Alternative E2 would continue to make GRSG priority and general habitat available for livestock grazing. Should site-specific concerns be raised about the effect of grazing upon GRSG habitat, and such effects are documented over a sufficiently long time-frame, corrective management actions would be addressed through the application of BMPs. Incompatible grazing strategies would be addressed through established rangeland management practices consistent with the maintenance or enhancement of habitat. GRSG seasonal habitat (leks, nesting/early brood rearing, late brood rearing and winter) requirements would be considered when managing sagebrush rangelands. Water developments would be designed to enhance mesic habitat for use by GRSG and maintain adequate vegetation in wet meadows. Within priority habitat, GRSG stipulations would take precedence over stipulations for other species if conflicts occur, if otherwise allowable by law. Livestock fences would be located away from leks and employ the NRCS fence standards to reduce bird strikes, benefitting sharp-tailed grouse as well. New infestations of invasive exotic plants would be responded to aggressively to prevent spreading. Overall, measures associated with livestock grazing under Alternative E2 would benefit SAS and SAS habitat, except in cases where conflicting species stipulations occur, but Alternative E2 would probably be less protective of SAS and sagebrush habitat than Alternatives B, C, D or F.

Cumulative Effects

Under Alternative E2, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative E2 would provide an added benefit to SAS. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from the management actions under Alternative E2, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Energy Development

Direct and Indirect Effects

Under Alternative E2, priority habitat would be considered to be suitable for further coal leasing and coal that would be extracted through underground mining. priority and general

habitat that is not already withdrawn or proposed for withdrawal would be available for locatable mineral entry. priority habitat would be open to mineral materials and oil and gas leasing and would be an avoidance area for wind energy development, although it would not be precluded. All of the aforementioned forms of energy development, as well as non-energy leasable mineral lands, solid mineral exploration and geophysical exploration activities, would be subject to the following stipulations, as well as BMPs accepted by industry and state and federal agencies: new permanent disturbance, including structures, fences, and buildings should not be located within the occupied lek itself; permanent disturbance should not be allowed within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek; disturbance outside the lek should not produce noise which rises more than 10 db above the ambient (background) level at the edge of the lek during breeding season; time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist; disturbance in priority habitat would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance in priority habitat is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided.

All existing fluid mineral uses are explicitly recognized by this alternative and would not be affected by the implementation of this alternative. The GRSG conservation measures identified in the associated NEPA documents for each of these projects would continue to be implemented to protect GRSG and its habitat. Provisions of this alternative would not be added to the measures identified each specific project.

GRSG habitat outside priority habitat would not be managed for the conservation of the species. No specific management actions are provided for this habitat. Similar to Alternative E1, impacts on SAS from energy development activities under Alternative E2 would essentially continue as described in Alternative A, although somewhat reduced by the application of BMPs.

Cumulative Effects

Management actions associated with energy development under Alternative E2 would increase protection of Greater Sage-Grouse and sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative E2, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat would be included. Therefore, the direct and indirect effects on SAS in Management Zone IV from the management actions associated with energy development under Alternative E2, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Recreation

Direct and Indirect Effects

Alternative E2 would limit or reduce impacts from recreational activities by preventing new permanent disturbance, including structures, fences, and buildings, within occupied leks or within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek. It would limit disturbance outside of leks to no more than 10 db above the ambient (background) level at the edge of the lek during breeding season. Time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist.

Within priority habitat (nesting and brood-rearing areas, winter habitat, other habitat): disturbance would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance is not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided. Alternative E2 has the potential to be more protective of SAS and SAS habitat than any of the other alternatives because measures to reduce impacts would apply to all recreational activities as opposed to only SUAs or camping.

Cumulative Effects

Management actions associated with recreation management under Alternative E2 would reduce disturbance to Greater Sage-Grouse, thereby benefitting SAS. Under Alternative E2, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to SAS in Management Zone IV under Alternative E2, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Alternative F

Infrastructure

Direct and Indirect Effects

Land uses and realty management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The effects on SAS and sagebrush habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of infrastructure management on SAS and sagebrush habitat within Management Zone IV would be the same.

Fire and Fuels

Direct and Indirect Effects

Fire and fuels management under Alternative F would essentially be the same as that under Alternative B. Please refer to Alternative B. The impacts on SAS and sagebrush habitat would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of fire and fuels management on SAS and sagebrush habitat within Management Zone IV would be the same.

Invasive Plants (Annual grasses and other noxious weeds)

Direct and Indirect Effects

Invasive plants management under Alternative F would essentially be the same as that under Alternative B. Together, these measures would reduce impacts from invasive plants on sagebrush habitat, as described under Alternative A, but the effects of the treatments would be the same.

Cumulative Effects

Refer to Alternative B. The cumulative effects of invasive plants management on SAS and sagebrush habitat within Management Zone IV would be the same.

Conifer Encroachment

Direct and Indirect Effects

Like Alternatives A and B, Alternative F does not directly address conifer encroachment and would maintain the invasive plant direction described under Alternative A. Although the types of impacts would be the same, the conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would likely reduce the magnitude of the impacts on GRSG habitat associated with conifer encroachment relative to Alternative A. Because those measures generally would apply throughout occupied GRSG under Alternative F whereas they would be limited to PPH under Alternative B, Alternative F could provide an additional reduction in the magnitude of impacts on SAS habitat from conifer encroachment relative to Alternative B.

Cumulative Effects

Refer to Alternative B. The cumulative effects of conifer encroachment management on SAS and sagebrush habitat within Management Zone IV would be the same.

Livestock Grazing

Direct and Indirect Effects

Alternative F would include beneficial management actions similar to those of Alternative B except they would apply in all GRSG habitats. These include completion of Land Health Assessments, consideration of grazing methods and systems to reduce impacts on sage-

grouse habitat, consideration of retiring vacant allotments, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, BMPs for West Nile Virus, and fence removal, modification or marking. Together these efforts would reduce the potential for negative impacts from grazing on SAS described under Alternative A.

Cumulative Effects

Under Alternative F, within Management Zone IV (refer to the Cumulative Effect section of the DEIS), livestock grazing would continue to be managed through existing grazing plans. However, additional emphasis on protecting existing sagebrush habitat under Alternative F would provide an added benefit to SAS. Therefore, the direct and indirect effects of livestock grazing to SAS in Management Zone IV from the management actions under Alternative F, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Energy Development

Direct and Indirect Effects

Under Alternative F siting of wind energy development would be prevented in PPH; PPH would be closed to new fluid mineral leasing, nonenergy leasable mineral leasing, and mineral material sales; it would be proposed for withdrawal from mineral entry; no new surface occupancy (NSO) would be stipulated for leased fluid minerals and a 3% disturbance cap would be applied. Numerous conservation measures would be implemented to reduce impacts from mineral exploration and development activities in PPH. Like Alternative B, Alternative F does not include specific management for locatable, or saleable or nonenergy minerals in PGH. Unlike Alternative B, Alternative F directly addresses wind energy and fluid minerals development outside of PPH: wind energy would be sited at least five miles from active sage-grouse leks and at least four miles from the perimeter of sage-grouse winter habitat and areas within 4 miles of active sage-grouse leks would be closed to new fluid minerals leasing. Alternative F, although similar to Alternative B, would reduce the impacts of energy development on SAS and sagebrush habitat, as described under Alternative A, more so than Alternative B because it addresses siting of wind energy and fluid minerals leasing outside of PPH more thoroughly than alternative B.

Cumulative Effects

Management actions associated with energy development under Alternative F would increase protection of sagebrush habitat, primarily within PPH, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current energy development management direction would continue, however, additional emphasis on protecting existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal would be included. Therefore, the direct and indirect effects of livestock grazing on SAS in Management Zone IV from the management actions associated with energy development under Alternative F, which would be largely



beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

Recreation

Direct and Indirect Effects

Alternative F would follow the same general approach as Alternative A, however, like Alternative B, only recreational SUAs that are neutral or beneficial to GRSG would be permitted in PPH. In addition, within all occupied habitat, camping areas within 4 miles of active leks would seasonally be closed. The general recreational effects of Alternative F would be the same as those for Alternatives A and B although Alternative F would be somewhat more protective of SAS and SAS habitat than Alternative B due to the seasonal closures.

Cumulative Effects

Management actions associated with recreation management under Alternative F would increase protection of sagebrush habitat, thereby benefitting SAS rather than removing or fragmenting habitat. Under Alternative F, within Management Zone IV, some of the current recreation management direction would continue, however, additional emphasis on protecting existing sagebrush habitat and preventing disturbance to GRSG would be included. Therefore, the direct and indirect effects of recreation management to SAS in Management Zone IV under Alternative F, which would be largely beneficial for SAS, when combined with the past, present and reasonably foreseeable future actions would not substantially increase impacts to SAS or sagebrush habitats.

N.7.3 Sensitive Plants

Forest sensitive plants have been grouped for this analysis due to the similar types of impacts they could experience and the programmatic nature and landscape scale of this analysis. The landscape scale effects of the proposed conservation measures for each program area within each alternative will be analyzed generally and collectively for this group of species. For each species, the NatureServe Ranking is provided in the Status section to provide additional context for the global and state rarity of the species. For a thorough discussion of NatureServe rankings, please refer to the NatureServe web site (NatureServe 2013).

***Agastache cusickii* (Cusick's horse-mint)**

Status

Cusick's horse-mint is an R1 sensitive species that is considered vulnerable to apparently secure globally (G3G4) and imperiled to vulnerable in Montana (S2S3).

Distribution

Cusick's horse-mint is documented from Idaho, Montana, Nevada, and Oregon. Within Montana, the species is documented from Beaverhead County. On the Beaverhead-Deerlodge NF, Cusick's horse mint is documented from the Dillon RD in the Tendoy Mountains.

Habitat Associations/Natural History and Threats

Cusick's horse-mint is an herbaceous long-lived perennial in the mint family. The species occurs within rolling sagebrush hills, primarily on steep, loose talus slopes with little vegetation cover below limestone outcrops and often in chutes. Within its habitat, woody dominants include limber pine, Douglas fir, mountain mahogany, big sagebrush, and gooseberry. In Montana, Cusick's horse-mint is documented from elevations of 6,500-9,500 ft. On the Beaverhead National Forest, this species is confined to the south-facing slopes of narrow canyons across a wide range of elevations. One lower-elevation occurrence occupies the slope above a broad valley. Threats to Cusick's horse-mint include overgrazing, gravel removal, slope-destabilizing road maintenance, collection by rock gardeners and recreationists, and mining activities.

Agoseris lackschewitzii (Pink agoseris)

Status

Pink agoseris is an R4 sensitive species that is considered apparently secure globally (G4) but imperiled in Idaho (S2).

Distribution

Pink agoseris occurs in Idaho, Montana, Washington, Wyoming, Alberta, and British Columbia. In Idaho, Pink agoseris has been found in Fremont and Lemhi Counties. Within Lemhi County, Pink agoseris is documented from the Lemhi Range within the Mill Creek Basin. Mapped locations occur on the Salmon-Challis NF within the Lemhi Range on the Salmon-Cobalt and Leodore RDs.

Habitat Associations/Natural History and Threats

A member of the sunflower family, pink agoseris is a perennial forb that typically flowers in July and August. Pink agoseris occurs in wet meadows in which the soil is saturated through the growing season and in ecotones between wet meadows and forest. When present, dominant overstory species include subalpine fir, Engelmann spruce, whitebark pine, and Douglas fir. In Montana, pink agoseris is documented from elevations of 6,950-9,450 ft. Cattle grazing has been identified as a threat to this species.

Allium acuminatum (Tapertip onion)

Status

Tapertip onion is an R1 sensitive species that is considered globally secure (G5) but imperiled to vulnerable in Montana (S2S3).

Distribution

Tapertip onion is documented from Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, Wyoming, and British Columbia. Tapertip onion has the potential to occur on all Ranger Districts within the Beaverhead-Deerlodge NF.

Habitat Associations/Natural History and Threats

Tapertip onion is a perennial bulb that typically flowers in May and June. The species occurs in dry open forests and grasslands in the montane zone at elevations of 2,600-8,000 ft. in Montana. No specific threats have been identified for tapertip onion at this time, though invasive weeds may pose a potential long-term threat at some sites.

Allium parvum (Small onion)

Status

Small onion is an R1 sensitive species that is considered globally secure (G5) but vulnerable in Montana (S3).

Distribution

Small onion is documented from California, Idaho, Montana, Nevada, Oregon, and Utah. Most Montana occurrences are documented from the Bitterroot NF. Within the Beaverhead-Deerlodge NF, small onion has the potential to occur on the Dillon RD.

Habitat Associations/Natural History and Threats

Small onion is a perennial bulb that typically flowers in late May and June. The species occurs in dry, open forests, woodlands, and grasslands on warm slopes in the montane zone at elevations of 4,000-6,500 ft. in Montana. Many of the documented occurrences within Montana consist of large numbers of individuals that cover extensive areas. Spotted knapweed and cheatgrass occur fairly commonly within habitat occupied by small onion and pose a threat to populations of this species.

Allium tolmiei var. persimile (Tolmie's onion)

Status

Tolmie's onion is listed as sensitive in R4 and is considered globally vulnerable (T3) and vulnerable in Idaho (S3).

Distribution

Tolmie's onion is endemic to Idaho, where it is documented from Adams and Washington Counties.

Habitat Associations/Natural History

Tolmie's onion is a perennial bulb that occurs in mixed semiarid shrub and grasslands, mainly on south aspects in swales, ephemeral watercourses, or seeps with basaltic soils that are seasonally wet but dry by mid to late summer. Tolmie's onion is documented from elevations of 3,000-5,000 ft.

Astragalus anserinus (Goose Creek milkvetch)

Status

Goose Creek milkvetch is an R4 sensitive species that is considered globally imperiled (G2) and critically imperiled in Idaho (S1).

Distribution

Goose Creek milkvetch is endemic to the Goose Creek basin in Nevada, Idaho, and Utah. In Idaho, the species is documented from Cassia County.

Habitat Associations/Natural History and Threats

A member of the pea family, Goose Creek milkvetch is a short-lived perennial herb that flowers in June and July. The species occurs in sagebrush, rabbit brush, and juniper on barren slopes composed of white tuffaceous sand at elevations of 5,000-5,200 ft. Threats to the Goose Creek milkvetch include non-native invasive species (particularly cheat grass and leafy spurge), overgrazing by cattle, construction and maintenance of roads, mineral exploration and development, and impacts to insect pollinators.

Astragalus aquilonius (Lemhi milkvetch)

Status

Lemhi milkvetch is an R4 sensitive species that is considered vulnerable globally (G3) and in Idaho (S3).

Distribution

Lemhi milkvetch is endemic to Lemhi, Custer, and Butte counties in east-central Idaho. The species is documented from the main Salmon and East Fork Salmon river canyons, the Lemhi River valley, the southwestern edge of the Lemhi Range, and the Pahsimeroi and Lost River valleys. Two occurrences are documented on the Sawtooth NRA. Within the Salmon-Challis NF, occurrences are documented from the Challis-Yankee Fork RD and the Lost River RD.

Habitat Associations/Natural History and Threats

Lemhi milkvetch is a perennial herb in the pea family. The species occurs at lower elevations within the sagebrush-steppe zones on shale, gravel banks, clay washes of gullied clay bluffs, steep eroded canyon banks, and sand bars. Associated vegetation is dominated by Wyoming big sagebrush, bluebunch wheatgrass, shadscale, bottlebrush squirreltail, Sandberg's bluegrass, and sometimes Challis milkvetch. Threats to Lemhi milkvetch include non-native species, trampling from recreation uses, maintenance or construction of trails and roads, off road vehicle uses, mining activities, herbicide applications to treat invasive species, and overgrazing by domestic livestock.

Astragalus diversifolius var. diversifolius (Meadow milkvetch)

Status

Meadow milkvetch is on the R4 sensitive list and is considered imperiled globally (G2) and in Idaho (S2).

Distribution

Meadow milkvetch is endemic to central Idaho and northern Utah, with one historic report for the Green River Basin in western Wyoming. In Idaho, meadow milkvetch is distributed primarily in Custer and Lemhi counties in the valleys of the Big Lost, Little Lost, Pahsimeroi,



and Lemhi Rivers and in Birch Creek. On the Salmon-Challis NF, meadow milkvetch is documented from the Lost River RD.

Habitat Associations/Natural History and Threats

Meadow milkvetch is a perennial herb in the pea family. Meadow milkvetch occurs in sagebrush valleys or closed drainage basins in moist, often alkaline meadows and swales at elevations of 4,400-6,620 ft. Threats to meadow milkvetch include livestock grazing and loss of habitat to agriculture.

Astragalus jejunus var. jejunus (Starveling milkvetch)

Status

Starveling milkvetch is on the R4 sensitive list and is considered vulnerable globally (T3) and imperiled in Idaho (S3).

Distribution

Starveling milkvetch is documented from Colorado, Idaho, Nevada, Utah, and Wyoming.

Habitat Associations/Natural History and Threats

Starveling milkvetch is a perennial herb that occurs within sagebrush and pinyon-juniper on dry, barren ridges, summits, bluffs, hilltops, and river-terraces on tuff, shale, sandstone, cobble or clays at elevations of 5,700-7,310 ft. Starveling milkvetch occurs most commonly on south to west aspects with slopes less than 20 degrees and is less abundant when soil texture is very fine or when shale size is greater than 5 cm.

Astragalus scaphoides (Bitterroot milkvetch)

Status

Bitterroot milkvetch is an R1 sensitive species that is considered vulnerable globally (G3) and in Montana (S3).

Distribution

The distribution of Bitterroot milkvetch is limited to Lemhi County, Idaho, and Beaverhead County, Montana. Within the Beaverhead-Deerlodge NF, Bitterroot milkvetch is documented from the Dillon RD.

Habitat Associations/Natural History and Threats

A member of the pea family, Bitterroot milkvetch is a stout perennial herb that typically flowers in late May and early June. The species occurs in sagebrush grassland, generally with a dense cover of sagebrush, on silty soils with a moderate to high content of coarse material. Bitterroot milkvetch often is found along drainages in the ecotone between rocky, steep upper slopes, and nearly level benches. The species is most frequent on south and southwest aspects. Within Montana, Bitterroot milkvetch is documented from approximately 5,000-7,000 ft. Threats to Bitterroot milkvetch include road construction, herbivory by insects and mammals, and overgrazing by livestock.

Balsamorhiza macrophylla (Large-leaved balsamroot)

Status

Large-leaved balsamroot is an R1 sensitive species that is considered vulnerable to secure globally (G3G5) and vulnerable to apparently secure in Montana (S3S4).

Distribution

Large-leaved balsamroot is documented from Idaho, Montana, Utah, and Wyoming. On the Beaverhead-Deerlodge NF, the species is known from the Madison RD in the Centennials, Gallitin, and Madison Ranges.

Habitat Associations/Natural History

Large-leaved balsamroot is a perennial herb that flowers from late June to early July. The species occurs within sagebrush and grasslands in the montane zone, most often on open, east-facing slopes of 8-15% with loamy soils in a sagebrush-forb community. Large-leaved balsamroot is known from elevations of 7,400-7,920 ft.

Boechea fecunda (Sapphire rockcress)

Status

Sapphire rockcress is an R1 sensitive species that is considered imperiled globally (G2) and in Montana (S2).

Distribution

Sapphire rockcress is endemic to Montana. On the Beaverhead-Deerlodge NF, the species is documented from the Dillon, Wise River, Jefferson, and Butte RDs.

Habitat Associations/Natural History and Threats

Sapphire rockcress is a perennial forb in the mustard family. The species occurs on moderate to steep slopes that exhibit natural erosion, warm aspects, and sparse vegetation. In Beaverhead and Silver Bow Counties, sapphire rockcress grows in mountain mahogany-juniper, limber pine woodland, very open Douglas-fir forest, sagebrush, and sparse bluebunch wheatgrass grasslands on soils derived exclusively from calcareous sediments that are sandy in texture. The elevation range of sapphire rockcress is 4,200-7,960 ft. Threats to sapphire rockcress include non-native plants (particularly spotted knapweed), overgrazing, herbicide use, mining, and pathogens.

Botrychium crenulatum (Dainty moonwort)

Status

Dainty moonwort is an R1 and R4 sensitive species that is considered globally vulnerable (G3), vulnerable in Montana (S3), and critically imperiled in Idaho (S1),

Distribution

Dainty moonwort is widely distributed throughout the western United States and Canada but is locally rare across its range. Dainty moonwort is documented from Arizona,



California, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, British Columbia, and Alberta. On the Beaverhead-Deerlodge NF, dainty moonwort is documented from the Pintler RD.

Habitat Associations/Natural History and Threats

Dainty moonwort is a small (6-16 cm) perennial fern that occurs in diverse habitats, including stream bottoms, seeps, and marsh edges, wet swales, alpine meadows, and grassy roadsides, often on soils of reprecipitated calcium. Dainty moonwort is the most hydrophyllic of the moonworts and typically grows in saturated soils. In Montana and Idaho, fronds of dainty moonwort emerge in the spring, reach maturity in June or July, and die in the fall. As with other moonworts, dainty moonwort exists underground in the gametophyte stage for much of its life cycle and may not emerge every year, making surveys unreliable. In Montana, dainty moonwort is documented at elevations of approximately 2,500-7,500 ft. Montana populations are generally small and occupy roadsides or other similarly open or disturbed habitats, which makes them particularly vulnerable to weed invasion, weed treatment, and road maintenance. Because populations of dainty moonwort are small and highly disjunct, they are particularly vulnerable to stochastic natural phenomena.

Botrychium hesperium (Western moonwort)

Status

Western moonwort is an R1 sensitive species that is considered apparently secure globally (G4) and vulnerable in Montana (S3).

Distribution

Western moonwort is widely distributed throughout the western United States and Canada but is locally rare across its range. In the United States, the species is documented from Alaska, Arizona, Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming, and in Canada it is documented from British Columbia, Alberta, and Yukon Territory. On the Beaverhead-Deerlodge NF, western moonwort occurs on the Pintler and Wise River RDs.

Habitat Associations/Natural History and Threats

Western moonwort is a small (5-20 cm) perennial fern that occurs in diverse habitats across its range, from open canopied forests in the south of its range to open meadows in the north of its range. In Montana, the species occurs in valley and montane zones along roadsides and in dry to moist gravelly and lightly disturbed grasslands, meadows, and mid-succession gravel bars. In Montana, fronds of western moonwort typically emerge in late spring, mature by June or July, and die in early fall. As with other *Botrychium* species, western moonwort exists underground in the gametophyte stage for much of its life cycle and may not emerge every year, making surveys unreliable. The elevation range of western moonwort in Montana is 2,000-9,500 ft., with a majority of occurrences between 3,000 ft. and 5,000 ft. Montana populations are poorly documented or small in size and occur along roadsides, which makes them particularly vulnerable to impacts associated with non-native species invasions, weed treatments, and road maintenance. Because populations of western moonwort are small and highly disjunct, they are particularly vulnerable to stochastic natural phenomena.

Botrychium lineare (Slender moonwort)

Status

Slender moonwort is an R4 sensitive species that is considered globally imperiled (G2) and possibly extirpated in Idaho (SH).

Distribution

Slender moonwort is widely distributed throughout the western United States and Canada but is locally rare across its range. In the United States, the species is documented from Alaska, California, Colorado, South Dakota, Montana, Utah, Washington, and Wyoming, and in Canada it is documented from Yukon Territory and historically from New Brunswick and Quebec. In Idaho, slender moonwort is documented from one possibly extirpated occurrence in Upper Priest Lake area.

Habitat Associations/Natural History and Threats

Slender moonwort is a small (6-18cm) perennial fern that occupies highly varied habitats across its range, including moist to dry meadows, bogs, swamps, roadside ditches, dry fields, and forests in a variety of areas ranging from limestone cliffs and gravelly beaches to forest understory. Slender moonwort is among the least frequently encountered moonworts. As with other *Botrychium* species, slender moonwort exists underground in the gametophyte stage for much of its life cycle and may not emerge every year, making surveys unreliable. Most occurrences are montane at 4,900-9,800 ft., but the species occupies elevation from sea level to 10,000 ft. Threats to slender moonwort include road maintenance, non-native invasive species, and overgrazing by livestock. Because populations of slender moonwort are small and highly disjunct, they also are vulnerable to stochastic natural phenomena.

Botrychium paradoxum (Peculiar moonwort)

Status

Peculiar moonwort is an R1 and R4 sensitive species that is considered vulnerable to apparently secure globally (G3G4), vulnerable in Montana (S3), and critically imperiled in Idaho (S1).

Distribution

Peculiar moonwort occurs over a large area in the western United States and Canada but is locally rare across its range. In the United States, peculiar moonwort is documented from California, Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. The species also occurs in Canada. On the Beaverhead-Deerlodge NF, peculiar moonwort is documented from the Jefferson and Pintler RDs.

Habitat Associations/Natural History and Threats

Peculiar moonwort is a small (7-15 cm) perennial fern with a single spore-bearing frond. Peculiar moonwort occurs in montane and subalpine zones in mesic meadows within sagebrush and spruce lodgepole pine forests. In Montana, associated species include rough fescue, Virginia strawberry, and potentilla. In Montana, fronds emerge in the spring, typically mature by July, and die in the fall. As with other moonworts, peculiar moonwort exists



underground in the gametophyte stage for much of its life cycle and may not emerge every year, making surveys unreliable. Occurrences in Montana are documented from 2,500-9,500 ft. Threats to peculiar moonwort include livestock grazing, weed invasion and recreational uses. Because populations of peculiar moonwort are small and highly disjunct, they also are vulnerable to stochastic natural phenomena.

Botrychium simplex (Little grape fern)

Status

Little grape fern is an R4 sensitive species that is considered globally secure (G5) but imperiled in Idaho (S2).

Distribution

Little grape fern is one of the most widely distributed moonworts. The species occurs across much of the United States (including Idaho and Montana) and Canada, though its abundance is low in many states and provinces within its range. Little grape fern is documented from northern, central, and southern Idaho. Within the Sawtooth NF, little grape fern is documented from two occurrences.

Habitat Associations/Natural History and Threats

Little grape fern is a small (3-13 cm) perennial fern that occurs in diverse habitats across its range, including pastures, meadows, orchards, prairies, wetlands, fens, roadsides, and sand dunes, most of which are temporarily wet to permanently saturated, in full sun to low light understory conditions. Fronds emerge in the spring, mature in summer, and die in the fall. As with other moonworts, little grape fern exists underground in the gametophyte stage for much of its life cycle and may not emerge every year, making surveys unreliable. Idaho occurrences are documented from 4,000-6,000 ft. Threats to little grape fern include trampling from recreation uses, off road vehicle use, construction and maintenance of trails and roads, timber sales, fuels projects, competition from non-native species, and domestic livestock grazing.

Bryum calobryoides (Beautiful Bryum)

Status

Beautiful bryum is an R4 sensitive species that is considered globally vulnerable (G3) and possibly extirpated in Idaho (SH).

Distribution

Beautiful bryum is documented from California, Colorado, Idaho, Montana, Oregon, Washington, Alberta, British Columbia, and Quebec. One known population exists in the Sawtooth NF and one historic population is documented from the Boise NF.

Habitat Associations/Natural History and Threats

Beautiful bryum is a small bright green moss that typically forms short dense tufts and occasionally occurs as individual stems. Beautiful bryum occurs in the montane to subalpine zones in bogs, meadows, and damp cliff sides on substrates that range from basic to acidic

rock to moist soils. Beautiful bryum occurs at elevations of 5000 ft. and above. As with other mosses, beautiful bryum may be under-documented due to difficulties with surveys and identification. Threats to this species include alteration of hydrology (for example, water developments, de-watering, and soil compaction), maintenance or construction of trails and roads, off road vehicle uses, non-native species, and domestic livestock grazing.

***Carex idahoensis* (Idaho sedge)**

Status

Idaho sedge is an R1 sensitive species that is considered imperiled to vulnerable globally and vulnerable in Montana (S2).

Distribution

Idaho sedge is documented from California, Idaho, Montana, Oregon, and Utah. On the Beaverhead-Deerlodge NF, Idaho sedge is documented from the Dillon, Wisdom, Jefferson, and Butte RDs and has the potential to occur on all other RDs.

Habitat Associations/Natural History and Threats

Idaho sedge is a rhizomatous perennial graminoid whose fruits mature in July and August. The species occurs in moist alkaline meadows, often in subirrigated soils associated with low-gradient streams or springs and seeps. The species commonly occupies ecotones between wet meadow and sagebrush steppe and often occurs on terraces of headwater streams above 6,000 ft. in elevation. Small populations may occur at lower elevations or along larger streams. Idaho sedge generally occurs on silty soils with high organic content and little or no coarse material. Within Montana, Idaho sedge is documented from elevations of 4,500-8,420 ft. Potential threats to Idaho sedge include overgrazing, mowing, road construction, and mineral extraction.

***Eleocharis rostellata* (Beaked spikerush)**

Status

Beaked spikerush is an R1 sensitive species that is considered globally secure (G5) but vulnerable in Montana (S3).

Distribution

Beaked spikerush occurs over a broad range that encompasses 39 of the United States (including Idaho and Montana), three Canadian provinces, northern Mexico, the Greater Antilles, and the Andes region of South America. Within Montana, beaked spikerush is documented from over a dozen extant sites and several historic locations across the state. On the Beaverhead-Deerlodge NF, beaked spikerush is documented from the Madison RD.

Habitat Associations/Natural History and Threats

Beaked spikerush is a perennial graminoid. In Montana, the species flowers in July and fruits mature in July and August. Montana populations occur in wet, often alkaline soils associated with warm springs or fens in the valley and foothills zones at elevations of 2,700-6,100 ft. Threats to beaked spikerush include hydrologic alteration and development.



Epipactis gigantea (Giant helleborine)

Status

Giant helleborine is an R1 sensitive species that is considered apparently secure globally (G4) but imperiled to vulnerable in Montana (S2S3).

Distribution

Giant helleborine is documented from Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, New Mexico, Nevada, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming, and British Columbia. Within Montana, giant helleborine is documented from Carbon, Flathead, Granite, Lake, Madison, Powell, Sanders, and Teton Counties. On the Beaverhead-Deerlodge NF, the species is known from the Madison and Pintler RDs.

Habitat Associations/Natural History and Threats

Giant helleborine is a 30-100 cm tall long-lived perennial orchid with leafy stems that arise from short rhizomes (underground stems). In Montana, plants typically flower between late June and early August. Montana populations of giant helleborine occur on stream banks, along lake margins, and in fens with springs and seeps, often near thermal waters. The species is limited to habitats that receive a constant supply of water. Documented elevations of giant helleborine in Montana range from approximately 2,500 to 6,000 ft. Primary threats to giant helleborine in Montana include hydrologic alteration and development. Elsewhere within its range, negative impacts have been documented from recreational use of hot springs, overgrazing by livestock, and non-native species invasion.

Eriogonum brevicaule var. desertorum (Desert buckwheat)

Status

Desert buckwheat is on the R4 sensitive list and is considered globally vulnerable (G3), vulnerable in Nevada (S3), and critically imperiled in Utah (S1).

Distribution

Desert buckwheat is narrowly distributed and is known only from central and eastern Elko County, Nevada, and northwestern Box Elder County, Utah.

Habitat Associations/Natural History

Desert buckwheat is a low, matted herbaceous perennial herb that typically flowers between May and August. It occurs in mixed grassland, saltbush, and sagebrush communities and in pinyon-juniper woodlands on gravelly or silty to clayey flats, slopes, and ridges, often on limestone soils. Desert buckwheat is documented from elevations of approximately 4,900-9,700 ft.

***Eriogonum capistratum var. welshii* (Welsh buckwheat)**

Status

Welsh buckwheat is on the R4 sensitive list and is considered imperiled globally (T2) and in Idaho (S2).

Distribution

Welsh buckwheat is endemic to east-central Idaho. Occurrences are known from the valleys and foothills of the upper Big Lost, Little Lost, and Pahsimeroi Rivers in Custer and adjacent portions of Lemhi and Butte Counties. On the Salmon-Challis NF, Welsh buckwheat is documented from the Lost River RD.

Habitat Associations/Natural History and Threats

Welsh buckwheat is a mat-forming perennial forb that flowers in late June. Welsh buckwheat occurs on rocky volcanic slopes and gravelly clay or sedimentary barren flats with minimal vegetation consisting of scattered fringed sagebrush, Sandberg's bluegrass, bluebunch wheatgrass, ricegrass, and cushion-like forbs. These areas occur within a larger matrix of well-developed stands of big or low sagebrush steppe vegetation, which occupies areas of deeper silt loam soils. Welsh buckwheat is documented from elevations of 6,000-8,000 ft. Threats to Welsh buckwheat include cattle grazing, off-highway vehicle use, and mining.

***Gentianopsis simplex* (Hiker's gentian)**

Status

Hiker's gentian is an R1 sensitive species that is considered globally secure (G5) but imperiled in Montana (S2).

Distribution

Hiker's gentian is documented from California, Idaho, Montana, Nevada, Oregon, and Wyoming. Within Montana, the species is documented from Beaverhead, Carbon, and Missoula Counties. On the Beaverhead-Deerlodge NF, hiker's gentian is known from the Wisdom RD and has the potential to occur on the Wise River and Dillon RDs.

Habitat Associations/Natural History

Hiker's gentian is an annual forb that flowers in July and August. The species occupies fens, meadows, and seeps in the montane and subalpine zones and typically grows within areas of crystalline parent material. Within Montana, hiker's gentian is documented from elevations of 4,460-8,400 ft. The species is thought to be under-documented in Montana.

***Juncus hallii* (Hall's rush)**

Status

Hall's rush is an R1 sensitive species that is considered apparently secure to secure globally (G4G5) and apparently secure in Montana.



Distribution

Hall's rush is documented from Colorado, Idaho, Montana, Utah, and Wyoming. In Montana, the species occurs in Beaverhead, Broadwater, Jefferson, Madison, Meagher, Powell, and Silver Bow Counties. On the Beaverhead-Deerlodge NF, Hall's rush is documented from the Wisdom, Butte, and Madison RD and has the potential to occur on the Wise River RD.

Habitat Associations/Natural History

Hall's rush is a perennial graminoid that typically flowers in July and August. The species occurs in moist to dry meadows & slopes from valley to montane zones at 4,000-8,860 ft. in Montana.

Mimulus primuloides (Primrose monkeyflower)

Status

Primrose monkeyflower is an R1 sensitive species that is considered apparently secure globally (G4) but imperiled in Montana (S2).

Distribution

Primrose monkeyflower is documented from Arizona, California, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, and Washington. Within Montana, the species is documented from Beaverhead and Ravalli Counties. On the Beaverhead-Deerlodge NF, primrose monkeyflower occurs on the Wise River, Wisdom, and Dillon RDs.

Habitat Associations/Natural History and Threats

A member of the lopseed family, primrose monkeyflower is a small perennial mat-forming herb that flowers from July to early September. Primrose monkeyflower occurs in fens, sphagnum bogs, and wet meadows in montane & subalpine zone. Within Montana, primrose monkeyflower is occurs at elevations of 6,750-8,440 ft. Potential threats to primrose monkeyflower include fire, changes in hydrology, and ski area development.

Noccaea idahoensis var. aileeniae (=Thlaspi aileeniae) (Idaho pennycress)

Status

Idaho pennycress is on the R4 sensitive list and is considered vulnerable globally (T3) and in Idaho (S3).

Distribution

Idaho pennycress is endemic to the intermountain valleys of central Idaho. Occurrences are documented from upper Marsh Creek, Stanley Basin, Sawtooth Valley, and upper Big Wood River drainage. Eight of 18 known occurrences are within the Sawtooth National Forest.

Habitat Associations/Natural History and Threats

A member of the mustard family, Idaho pennycress is a perennial herb that occurs within sagebrush-fescue flats with little sagebrush and mountain big sagebrush on loose bare sandy soil, on steep slopes among small rocks in the openings between sagebrush plants, and on

alluvial terraces. Populations are documented from elevations of 6,000-11,000 ft. Threats to Idaho pennycress include fire, cheatgrass invasion, mining activities, recreation activities, maintenance and construction of trails and roads, off road vehicle uses, competition from non-native species, herbicide application, and domestic livestock grazing.

Oxytropis besseyi var. salmonensis (Challis crazyweed)

Status

Challis crazyweed is on the R4 sensitive list and is considered vulnerable globally (T3) and in Idaho (S3).

Distribution

Challis crazyweed is endemic to Custer County, Idaho, where it occurs in the Big Lost, Pahsimeroi, and Upper Salmon watersheds. On the Salmon-Challis NF, occurrences are documented from Challis-Yankee Fork and Lost River RDs. Mapped locations occur on the Lost River Range and on adjacent BLM lands.

Habitat Associations/Natural History

A member of the pea family, Challis crazyweed is a long-lived perennial forb that flowers from June to July. Challis crazyweed occurs in sagebrush and salt desert shrub in sandy washes or open slopes of rocky volcanic soil at elevations of 5,400-6,750 ft.

Penstemon idahoensis (Idaho penstemon)

Status

Idaho penstemon is an R4 sensitive species that is considered imperiled globally (G2) and in Idaho (S2).

Distribution

Idaho penstemon is documented from Idaho, Nevada, and Utah.

Habitat Associations/Natural History

A member of the plantain family, Idaho penstemon is a perennial forb that is 8-20 cm. tall. Most occurrences consist of low numbers of individuals covering small areas. Idaho penstemon occurs most commonly in Utah juniper communities on gentle to steep slopes, usually of south to southwest aspects. Within these areas, Idaho penstemon is restricted to tuffaceous outcrops of the Salt Lake Formation. Soils on which the species occurs tend to be dry, fine-textured, and hard. The documented elevation range of Idaho penstemon is 4,900-5,710 ft.

Penstemon lemhiensis (Lemhi penstemon)

Status

Lemhi penstemon is an R1 and R4 sensitive species that is considered vulnerable globally (G3) and in Montana and Idaho (S3).



Distribution

Lemhi penstemon is a regional endemic of Lemhi County, Idaho, and Beaverhead, Deer Lodge, Ravalli, and Silverbow Counties, Montana. On the Beaverhead-Deerlodge NF, Lemhi penstemon is documented from the Wise River, Jefferson, Butte, Dillon, and Wisdom RDs. The species also is documented from over 100 occurrences on the Salmon-Challis NF.

Habitat Associations/Natural History and Threats

A member of the plantain family, Lemhi penstemon is a tall, conspicuous perennial forb that typically flowers from early June to late July. Most occurrences contain fewer than 30 individuals. Lemhi penstemon occurs in big sagebrush-grassland communities and open Douglas fir, lodgepole pine, and ponderosa pine forests on moderate to steep, east- to southwest-facing slopes. Within these areas, Lemhi penstemon usually is found in association with big sagebrush and bunchgrasses in openings, such as rock outcrops and steep, rocky slopes with natural soil slippage. Some populations grow partially or entirely on road banks. Lemhi penstemon is documented from an elevation range of 4,150-8,200 ft. Threats to this species include road construction, road maintenance, mining, botanical collection, herbicide spraying, weed invasion, livestock grazing, fire suppression, logging, and prolonged drought.

Phacelia minutissima (Least phacelia)

Status

Least phacelia is an R4 sensitive species that is considered globally vulnerable (G3) but imperiled in Idaho (S2).

Distribution

Least phacelia is a regional endemic that is documented from Nevada, Idaho, Oregon, and Washington. Within Idaho, multiple occurrences of least phacelia are known from the Owyhee Mountains. Two occurrences have been documented north of the Snake River. One is located on a ridge extending east-southeast from Smoky Dome in the Soldier Mountains within the Fairfield Ranger District of the Sawtooth NF, and the other is located near Hash Spring on the Shoshone BLM. Both are considered historic occurrences as recent surveys have failed to detect any individuals at either site.

Habitat Associations/Natural History and Threats

A member of the waterleaf family, least phacelia is an annual forb that occurs in sagebrush and lower montane forests within ephemeral moist drainages. Individuals of this species grow singly or close together in dense mats. Least phacelia often occurs near areas of late snow banks in meadows, springs, and seeps and along stream banks. Idaho populations occur mostly in stands of false hellebore and adjacent forbs/grasses or near mixed aspen, willow, subalpine fir communities. The elevation range of least phacelia is approximately 5000-8200 ft. Threats to least phacelia include mining activities, recreation, construction and maintenance of trails and roads, off road vehicle use, water development, and competition from non-native species, herbicide application, and domestic livestock grazing.

Physaria carinata ssp. carinata (Keeled bladderpod)

Status

Keeled bladderpod is on the R1 sensitive list and is considered vulnerable globally (T3) and critically imperiled in Montana (S1).

Distribution

Keeled bladderpod is endemic to carbonate mountain ranges of Idaho, Montana, and Wyoming. Within Montana, occurrences are documented from Beaverhead and Granite Counties. On the Beaverhead-Deerlodge NF, keeled bladderpod occurs on the Wise River and Pintler RDs

Habitat Associations/Natural History and Threats

A member of the mustard family, keeled bladderpod is a biennial to short-lived perennial forb that typically flowers in early June. Keeled bladderpod occurs on gravelly, calcareous slopes in the foothill zone within grassland and sagebrush and near the upper tree line. Within Montana, occurrences are documented from an elevation range of approximately 4,000-7,500 ft. Non-native invasive species, particularly spotted knapweed, have been documented as a threat to some occurrences of keeled bladderpod.

Physaria carinata ssp. pulchella (Beautiful bladderpod)

Status

Beautiful bladderpod is on the R1 sensitive list and is considered imperiled globally (T2) and in Montana (S2).

Distribution

Beautiful bladderpod is endemic to Beaverhead County, Montana, where it occurs within the Pioneer Mountains, the Grasshopper Creek drainage, and the Centennial Mountains. On the Beaverhead-Deerlodge NF, beautiful bladderpod is documented from the Wise River, Madison, and Dillon RDs.

Habitat Associations/Natural History and Threats

A member of the mustard family, beautiful bladderpod is a perennial forb that typically flowers in June at lower elevations and July through August at higher elevations. Beautiful bladderpod occurs on gravelly calcareous soils of sparsely vegetated foothill slopes within mountain mahogany or limber pine woodlands, on poorly developed stony soils of subalpine slopes and ridges, within sparse grassland or cushion plant communities, and within sagebrush communities. Though usually associated with calcareous parent material, beautiful bladderpod also occurs on limestone and quartzite. Within Montana, beautiful bladderpod is documented from an elevation range of 6,300-9,600 ft. Potential threats to beautiful bladderpod include non-native invasive species and mining.



Physaria didymocarpa var. lyrata (Salmon twin bladderpod)

Status

Salmon twin bladderpod is on the R4 sensitive list and is critically imperiled globally (T1) and in Idaho (S1).

Distribution

Salmon twin bladderpod is endemic to Lemhi County, Idaho. Within the Salmon-Challis NF, salmon twin bladderpod is documented from the Salmon-Cobalt and Leadore RDs. Until the 1980s, Salmon twin bladderpod was known only from one location on BLM land at Williams Creek in the Salmon River Mountains. Occurrences currently are documented from Pattee Creek, Williams Creek, Agency Creek, Basin Creek, and Bear Basin Creek, and from the Lake Mountain area. The Bear Basin Creek and Lake Mountain area occurrences are within the Salmon-Challis NF.

Habitat Associations/Natural History and Threats

Salmon twin bladderpod is a long-lived perennial forb in the mustard family. Occurrences are found within basin big sagebrush-bluebunch wheatgrass vegetation on rocky, sparsely vegetated south slopes at elevations of 4,050-5,000 ft. Threats identified for salmon twin bladderpod include mining activities (including gravel removal), non-native invasive species proliferation, herbicide spraying, off-road vehicle use, and soil erosion.

Polygonum douglasii spp. austiniae (Austin's knotweed)

Status

Austin's knotweed is on the R1 sensitive list and is considered apparently secure globally (T4) and imperiled to vulnerable in Montana (S2S3).

Distribution

A member of the buckwheat family, Austin's knotweed is documented from California, Idaho, Montana, Nevada, Oregon, Washington, Wyoming, Alberta, and British Columbia. Within Montana, occurrences are sparsely distributed from the Rocky Mountain Front to the Madison and Gallatin Ranges. On the Beaverhead-Deerlodge NF, Austin's knotweed is documented from the Jefferson, Madison, and Pintler RDs. The probability of finding additional occurrences of Austin's knotweed within Montana is thought to be high because extensive areas of suitable habitat across western and central Montana remain unsurveyed.

Habitat Associations/Natural History and Threats

Austin's knotweed is an annual forb that typically flowers in July and fruits in August. The subspecies occurs on gravelly, often shale-derived soil on open slopes & banks and along roads in the montane zone. Within Montana, Austin's knotweed is documented from an elevation range of 4,320-8,520 ft. Occurrences of Austin's knotweed along roads may be particularly susceptible to road maintenance activities and invasion by non-native species.

Primula alcalina (Alkali primrose)

Status

Alkali primrose is an R1 and R4 sensitive species that is considered imperiled globally (G2) and in Montana and Idaho (S2).

Distribution

Alkali primrose is a regional endemic from east-central Idaho and adjacent Montana. Within Montana, the species is known only from Beaverhead County, where it occurs on BLM and National Forest System land. On the Beaverhead-Deerlodge NF, the species occurs on the Dillon RD. Within Idaho, alkali primrose is documented from Lemhi County.

Habitat Associations/Natural History and Threats

Alkali primrose is a perennial forb that typically flowers in May and early June and fruits from June to August. Alkali primrose occurs in moist to wet alkaline meadows on low, relatively level benches immediately adjacent to creeks and spring heads in which subirrigated soils are saturated to the surface throughout the growing season. Occupied areas often display hummock-hollow topography. Alkali primrose is associated with alluvial, alkaline, fine-textured, light-colored soils derived from outwash of predominantly carbonate rocks. The documented elevation range of alkali primrose is approximately 6,300-7,200 ft. Threats to alkali primrose include cattle grazing and alteration of hydrology.

Primula incana (Mealy primrose)

Status

Mealy primrose is an R1 sensitive species that is considered apparently secure to secure globally (G4G5) but imperiled in Montana (S2).

Distribution

Mealy primrose is broadly distributed in the United States and Canada. Occurrences are documented from Alaska, Colorado, Idaho, Montana, North Dakota, Utah, Wyoming, Alberta, British Columbia, Manitoba, Northwest Territories, Ontario, Saskatchewan, and Yukon Territory. On the Beaverhead-Deerlodge, the species occurs on the Dillon and Madison RDs.

Habitat Associations/Natural History and Threats

Mealy primrose is a perennial forb that typically flowers in May and June in Montana. The species occurs in wet meadow habitats with relatively stable water tables in which soils remain moist to saturated throughout the growing season but are seldom to never inundated. Mealy primrose also occurs in bogs and along stream banks. Associated soils are usually calcareous. The elevation range of mealy primrose in Montana is 6,500-8,694 ft. Threats to mealy primrose include cattle grazing and alteration of hydrology.



Pyrocoma (=Haplopappus) insecticruris (Bugleg goldenweed)

Status

Bugleg goldenweed is an R4 sensitive species that is considered vulnerable globally (G3) and in Idaho (S3).

Distribution

Bugleg goldenweed is endemic to south-central Idaho, where it occurs in Camas and Blaine Counties. Several occurrences of bugleg goldenweed are documented from the Sawtooth NF.

Habitat Associations/Natural History and Threats

Bugleg goldenweed is a perennial forb in the sunflower family. The species typically flowers in July and August. Bugleg goldenweed occurs in grassland and sagebrush communities on dry ground within vernal wet grasslands, meadows, and swales, and along the dry edges of seeps at elevations of 4,500-7,500 ft. Though bugleg goldenweed occurs at many undisturbed sites, past or on-going disturbance is evident at numerous occupied sites, including road shoulders, road right-of-ways, fence lines, pastures, corrals, and abandoned fields. Species associated with bugleg goldenweed include western yarrow (*Achillea millefolium*), asters (*Aster* spp.), early low (alkali) sagebrush (*Artemisia arbuscula longiloba*), low sagebrush (*Artemisia longifolia*), mountain big sagebrush (*Artemisia tridentata vaseyana*), rabbitbrush (*Chrysothamnus* spp.), oatgrass (*Danthonia* spp.), bottlebrush squirreltail (*Elymus elymoides*), Idaho fescue (*Festuca idahoensis*), Great Basin wildrye (*Leymus cinereus*), lupines (*Lupinus* spp.), tarweed (*Madia* spp.), bluebunch wheatgrass (*Pseudoroegneria spicata*), bluegrass (*Poa secunda*), cinquefoil (*Sphaeromeria potentilloides*), and northern mule's-ears (*Wyethia amplexicaulis*). Threats to bugleg goldenweed include fire, cheatgrass invasion, construction and maintenance of trails and roads, off road vehicle use, competition from non-native species, herbicide application, and domestic livestock grazing.

Thalictrum alpinum (Alpine meadowrue)

Status

Alpine meadowrue is an R1 sensitive species that is considered globally secure (G5) but imperiled in Montana (S2).

Distribution

Alpine meadowrue has a circumpolar distribution that extends south in the United States to California, Nevada, New Mexico, and Utah. In the United States, the species also occurs in Alaska, Colorado, Idaho, Montana, Oregon, and Wyoming. In Montana, alpine meadowrue is documented from Beaverhead, Deer Lodge, and Granite Counties. On the Beaverhead-Deerlodge NF, alpine meadowrue is documented from the Pintler, Madison, and Dillon RDs and has the potential to occur on all other RDs.

Habitat Associations/Natural History and Threats

Alpine meadowrue is a perennial forb in the buttercup family. In Montana, the species typically flowers in late May and June and fruits in July. Alpine meadowrue occurs in moist

valley, montane, and lower subalpine areas, often in moist alkaline meadows and sometimes along stream channels. Alpine meadowrue occupies a range of substrates, including peat, marl, calcareous silt, silty clay, and clay loam, often of limestone parent material. In Montana, the species is documented from an elevation range of 4,855-8,280 ft. Threats to alpine meadowrue include alteration of hydrology and overgrazing that results in stream downcutting and loss of riparian habitat.

Thelypodium repandum (Wavy-leaf thelypody)

Status

Wavy-leaf thelypody is an R4 sensitive species that is considered vulnerable globally (G3) and in Idaho (S3).

Distribution

Wavy-leaf thelypody is endemic to east-central Idaho, where it is documented in Custer and Lemhi Counties. Populations occur along the Salmon River and lower elevations of tributaries from Ellis to Clayton, along the East Fork Salmon River and tributaries, and south of Challis. On the Salmon-Challis NF, the species is documented from the Challis-Yankee Fork RD.

Habitat Associations/Natural History and Threats

Wavy-leaf thelypody is a biennial to perennial forb in the mustard family. The species occurs within the shrub-steppe zone on moderate to steep, unstable, generally southerly facing slopes of rocky, gravelly to cindery substrate derived from Challis volcanic and metamorphic rock with extensive bare ground and sparse vegetation (5 to 20% cover). Wavy-leaf thelypody is documented from elevations of 4,900-7,000 ft. Approximately half of the known occurrences are located adjacent to roads. Roadside populations are particularly vulnerable to the threats that have been identified for wavy-leaf thelypody, which include road maintenance, weed control, mining activities, and off road vehicle use.

Trichophorum cespitosum (Tufted club-rush)

Status

Tufted club-rush is an R1 sensitive species that is considered globally secure (G5) but imperiled in Montana (S2).

Distribution

Tufted club-rush has a circumboreal distribution that includes 19 of the United States. In the western United States, tufted club-rush extends as far south as Oregon, Idaho, Montana, and Utah. On the Beaverhead-Deerlodge NF, the species is documented from the Wise River RD.

Habitat Associations/Natural History

Tufted club-rush is a perennial graminoid that occurs in montane to alpine zones in wet meadows and sphagnum-dominated fens. The elevation range of tufted club-rush in Montana is 2,500-9,500 ft.



Trifolium eriocephalum (Woolly-head clover)

Status

Woolly-head clover is an R1 sensitive species that is considered globally secure (G5) but imperiled in Montana (S2).

Distribution

Woolly-head clover is documented from California, Idaho, Montana, Nevada, Oregon, Utah, and Washington. In Montana, the species is known from the Bitterroot NF and has the potential to occur on the Beaverhead-Deerlodge NF.

Habitat Associations/Natural History and Threats

Woolly-head clover is a perennial forb in the pea family. In Montana, the species typically flowers in May and June. Woolly-head clover occurs in dry meadows, woods, and margins in the foothill and lower montane zones. The elevation range of the species is 4,500-5,500 ft. in Montana. Threats to woolly-head clover include invasive species, particularly spotted knapweed, and timber harvest and related road-building activities.

Trifolium gymnocarpon (Holly-leaf clover)

Status

Holly-leaf clover is an R1 sensitive species that is considered globally secure (G5) but imperiled in Montana (S2).

Distribution

Holly-leaf clover is documented from Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, and Wyoming. On the Bitterroot NF, the species has the potential to occur on the Pintler RD.

Habitat Associations/Natural History and Threats

Holly leaf clover is a perennial forb to subshrub in the pea family. In Montana, the species typically flowers from May to June. Holly-leaf clover occurs in open woods and slopes, usually in dry soil of sagebrush steppe to ponderosa pine forest in the foothills to lower montane zone. In Montana, the elevation range of holly-leaf clover is approximately 4,800-6,300 ft. Non-native species, particularly spotted knapweed, have been identified as a threat to this species.

Xanthoparmelia idahoensis (Idaho range lichen)

Status

Idaho range lichen is an R4 sensitive species that is considered critically imperiled globally (G1) and in Idaho (S1).

Distribution

Idaho range lichen is documented from widely disjunct localities in Colorado, Idaho, and Alberta. Within Idaho, occurrences are recorded in the Middle Salmon-Panther and Lemhi

HUC 4 watersheds. Occurrences are documented on BLM lands adjacent to the Salmon-Challis NF, but none have been found on the forest.

Habitat Associations/Natural History and Threats

Idaho range lichen occurs on calcareous badlands within sagebrush in the mountain rangelands of central Idaho. Idaho range lichen grows embedded in the substrate and is particularly vulnerable to ground-disturbing activities. Threats to this species include off-road vehicle use, livestock trampling, overgrazing, road maintenance and construction, conversion of shrub steppe to exotic annual grasslands, and increased fire frequency.

Alternative A - No Action

Infrastructure

Direct and Indirect Effects

Under Alternative A, management of infrastructure would continue to follow existing land use plans and no changes would occur to the current National Forest System infrastructure, including power lines, wind turbines, solar panels, communications towers, fences, or roads. Although mitigation is typically developed under the NEPA process and most right of way and surface developments are subject to limited operation periods or other stipulations in local GRSG conservation strategies, permitted right-of-ways (ROWs) or special use authorities (SUAs) would continue to allow construction, maintenance, and operation activities that could result in habitat loss, fragmentation, or degradation of GRSG habitat. Construction, maintenance, and use of infrastructure and ancillary facilities would continue to lead to higher short-term concentrations of disturbance in GRSG habitat. Land tenure adjustments would be subject to current disposal, exchange, and acquisition criteria, which include retaining lands with threatened or endangered species, high quality riparian habitat, and plant and animal populations or natural communities of high interest.

Impacts on sensitive plants could result from construction and maintenance of infrastructure, such as power lines, communication towers, fences, and roads. Within the footprint of permanent impacts, effects on sensitive plants could include direct mortality of individual plants or occurrences, loss of habitat, and reduction or loss of pollinators. Impacts on sensitive plants also could result from temporary ground disturbance associated with the construction of temporary access routes, the establishment of laydown areas, and vegetation clearing, which could alter vegetation assemblages, compact soils, alter hydrology, alter sunlight penetration, impact pollinators, and promote the establishment and spread of invasive non-native plants. Construction and maintenance of infrastructure would comply with land use plans and environmental laws and regulations, including the National Environmental Policy Act (NEPA), which would result in the implementation of measures to avoid, minimize, or mitigate impacts on sensitive plants, as appropriate.

Although land tenure adjustments or withdrawals made in GRSG habitat could reduce the habitat available to sustain GRSG populations, unless provisions were made to ensure that GRSG conservation remained a priority under the new land management regime, land tenure adjustments would likely include retention of areas with GRSG, and would thus

retain occupied habitats under BLM or FS management. This would reduce the likelihood of habitat conversion to agriculture, urbanization, or other uses that would remove sagebrush habitat and potentially impact sensitive plants that occur there.

Although infrastructure-related impacts could occur to any of the sensitive plants in Table 2, those for which infrastructure development and/or maintenance, particularly road construction and/or maintenance, has been identified as a primary threat include Cusick's horse-mint, Goose Creek milkvetch, Lemhi milkvetch, Bitterroot milkvetch, dainty moonwort, western moonwort, slender moonwort, little grape fern, beautiful bryum, road construction, Idaho pennycress, Lemhi penstemon, least phacelia, Austin's knotweed, bugleg goldenweed, wavy-leaf thelypody, woolly-head clover, Idaho range lichen.

Cumulative Effects

Current infrastructure management would continue under Alternative A. ROW exclusion or avoidance areas would not be instituted as they would be in Alternatives B, C, D, or F. Therefore, under Alternative A, the direct and indirect effects of infrastructure management, in conjunction with the past, present and reasonably foreseeable future actions may increase loss and fragmentation of the existing sagebrush habitat in Management Zone IV (refer to Chapter 5 of the DEIS) and contribute to negative cumulative impacts on sensitive plants.

Fire and Fuels

Direct and Indirect Effects

Wildfire, prescribed burns, and fuels management would continue to follow current direction under Alternative A, which would impose fewer restrictions on these actions than the other alternatives. Prescribed burns and other fuels treatments involving vegetation thinning or removal (such as lop-and-scatter or mastication) could occur within a variety of vegetation types, including sagebrush. Associated impacts on plant species could include direct mortality to individuals as a result of fire or crushing by equipment or cut vegetation. Fire-adapted plant species and plant species that favor early successional habitats could benefit. For example, Lemhi penstemon, which grows within mountain big sagebrush vegetation, has been shown to respond favorably to prescribed fire under certain conditions (Heidel and Shelly 2001). However, species dependent on mature sagebrush could be negatively affected by fire and associated changes in vegetation. Additional impacts on sensitive plant species could result from the direct and indirect effects of fire suppression. The creation of fire lines could result in direct mortality to individual plants or negative impacts associated with alteration of their habitat through soil disturbance, alteration of hydrology, and promotion of the establishment or spread of invasive non-native species. The application of fire retardant can negatively impact some plant species by killing entire plants, burning shoots and leaves, and reducing germination rates (Bell et al. 2005). Fire retardant also can have fertilizing effects and promote the spread of invasive non-native species (Bell et al. 2005). Longer term impacts on plant species could occur from fire suppression. Fire suppression may initially result in higher rates of pinyon-juniper encroachment in some areas. In the initial stages of encroachment (Phase I), fuel loadings remain consistent with the sagebrush understory. As pinyon-juniper encroachment advances (Phases II and III) and the understory begins to thin, the depleted understory causes the

stands to become resistant to wildfire and further alters fire return intervals. During years of high fire danger, the resulting heavy fuel loadings in these stands can contribute to larger-scale wildfire events and confound control efforts due to extreme fire behavior. Such high-severity fires can negatively impact native plant species by promoting the establishment of exotics (Hunter et al. 2006).

Although impacts from fire and fuels management could occur to any of the sensitive plants in Table 2, fire has been identified as a major potential threat to primrose monkeyflower, Idaho pennycress, bugleg goldenweed, and Idaho range lichen, fuels management has been identified as a potential major threat to little grape fern, and fire suppression has been identified as a major threat to Lemhi penstemon.

Cumulative Effects

Current wildfire suppression operations and fuels management activities would continue under Alternative A. The limitation or prohibition of the use of prescribed fire in sagebrush habitats and the sagebrush protection emphasis during wildland fire operations would not be instituted as they would be in Alternatives B, C, D, E or F. Under Alternative A, the direct and indirect effects in conjunction with the past, present and reasonably foreseeable future actions and the likelihood of increasing future fires from annual weed invasions and predicted climate change may increase loss and fragmentation of the existing sagebrush habitat from wildfire in Management Zone IV and V (refer to Chapter 5 of the DEIS), which could contribute to negative cumulative impacts on sensitive plants.

Invasive Plants

Direct and Indirect Effects

Invasive non-native plants have been identified as a significant threat to over half of the sensitive plant species in Table 2. Under Alternative A, land use and management would continue in compliance with existing land use plans, and the introduction, spread, and treatment of invasive non-native plants would be expected to follow current trends. New infestations would be expected to be highest along roads and in areas of heaviest use or ground disturbance (such as in campgrounds, energy development sites, and areas of concentrated recreation). Sensitive plants would continue to be impacted through direct competition with invasive species for water, light, and nutrients, and by alteration of fire frequency and severity. Invasive species treatments would reduce these impacts, but the scale of invasive species infestations in the analysis area and the difficulty effectively eradicating them are such that impacts on sensitive plants from invasive species infestations could not be completely avoided. Treatment of invasive species using herbicide could impact sensitive plant species that occur in treatment areas. This is most likely for sensitive species that grow in disturbed areas such as roadsides. Herbicide use has been identified as a threat to Lemhi milkvetch, sapphire rockcress, dainty moonwort, western moonwort, Idaho pennycress, Lemhi penstemon, least phacelia, salmon twin bladderpod, bugleg goldenweed, and wavy-leaf thelypody.



Cumulative Effects

Under Alternative A, current invasive species treatments, including mechanical, manual, chemical, and biological control, would continue within Management Zones IV (refer to Chapter 5 of the DEIS), and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. Therefore, the direct and indirect effects of invasive species management on sensitive plants in Management Zone IV under Alternative A when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Conifer Encroachment

Direct and Indirect Effects

Under Alternative A, conifer encroachment into sagebrush would be expected to follow existing trends. Conifer encroachment into sagebrush ecosystems is common and widespread in the Intermountain West. Sagebrush vegetation types susceptible to encroachment include Wyoming sagebrush, mountain big sagebrush, and black sagebrush. The encroachment of pinyon and juniper trees into sagebrush types located within their thermal zones is well documented. Douglas fir trees are known to encroach into high elevation sagebrush types. Increasing tree cover in sagebrush communities reduces or eliminates sagebrush and reduces the herbaceous understory. Conifer encroachment into sagebrush and other shrub types that would be expected to continue under Alternative A would likely result in a loss of individuals or occurrences of sensitive plants found in the affected sagebrush types.

National Forests have implemented and continue to implement vegetation treatments that curtail conifer encroachment into vegetation communities, including sagebrush. Treatments include but are not limited to prescribed fire, lop-and-scatter, and mechanical methods (such as mastication). These actions often coincide with Forest Service land use plans that contain objectives to maintain, restore, and/or improve sagebrush and other valued plant communities. Under Alternative A, impacts on sensitive plant species from treatments that involved prescribed fire and impacts on sensitive plant species from other vegetation treatments that involved hand or mechanical methods would be as described above for *Fire and Fuels*.

Although conifer encroachment has not been specifically identified as a primary threat to the species in Table 2, impacts could occur to any species that occurs within areas of conifer encroachment.

Cumulative Effects

Under Alternative A, conifer encroachment and its management would continue within Management Zone IV (refer to Chapter 5 of the DEIS), and the overall acreage occupied by conifers would be expected to continue to increase over time. Therefore, under Alternative A, the direct and indirect effects of conifer encroachment when combined with past, present, and reasonably foreseeable future actions could contribute to negative cumulative

impacts on sensitive plants in that occur within habitats subject to encroachment in Management Zone IV.

Livestock Grazing

Direct and Indirect Effects

Under Alternative A, livestock grazing would continue under current management with no expected change in AUMs, season-of-use, or other terms, conditions, or directives delineated within grazing permits or AMPs, although administrative actions may be implemented on a case-by-case basis to attain desired rangeland conditions. Desired rangeland conditions would be managed according to existing standards and guidelines designed to maintain healthy, sustainable rangeland resources and allow for the recovery of degraded rangelands.

Effects of grazing on sensitive plants include the following: trampling, which can result in direct mortality of individuals and loss of entire occurrences; herbivory, which can result in direct mortality or reduced vitality and reproduction of individuals; alteration of habitat through soil compaction, which can reduce water infiltration and change hydrology and may render areas less suitable or unsuitable for sensitive plants; and increased competition for light, nutrients and water through introduction or spread of non-native invasive species, which may reduce sensitive plant species abundance or result in the loss of occurrences.

The nature and extent of the impacts of livestock grazing on individuals, populations, and habitat quality of sensitive plants depend on the palatability of the species, the grazing and trampling tolerance of the species, grazing intensity, timing of grazing, forage preferences of ungulates, soil conditions, and hydrology. Any of the sensitive plants in Table 2 could be impacted by livestock grazing; however, livestock grazing has been identified as a primary threat to Cusick's horse-mint, pink agoseris, Goose Creek milkvetch, Lemhi milkvetch, meadow milkvetch, Bitterroot milkvetch, sapphire rockcress, slender moonwort, peculiar moonwort, little grape fern, beautiful bryum, Idaho sedge, Giant helleborine, Welsh buckwheat, Idaho pennycress, Lemhi penstemon, least phacelia, alkali primrose, mealy primrose, bugleg goldenweed, alpine meadowrue, and Idaho range lichen.

Cumulative Effects

Under Alternative A, livestock grazing would continue to be managed in Management Zone IV through existing grazing plans, and methods and guidelines from the existing plans would be followed to maintain ecological conditions according to Standards for Rangeland Health, which include maintaining healthy, productive and diverse populations of native plants and animals. Therefore, the direct and indirect effects of livestock grazing on sensitive plants in Management Zones IV when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Energy Development

Direct and Indirect Effects

Under Alternative A, mineral leasing and development would continue to be managed under current direction, with no additional provisions to conserve GRSG habitat. As such, this



alternative would be expected to cause the greatest amount of direct and indirect impacts on sensitive plant species and their habitats. Impacts on sensitive plants from energy development would be similar to those for infrastructure development and maintenance and could include direct mortality of individual plants or occurrences, loss of habitat within the disturbance footprint of new infrastructure, and reduction or loss of pollinators. Impacts on sensitive plants also could result from temporary ground disturbance (including the construction of temporary access routes, the establishment of laydown areas, vegetation clearing, etc.), which could alter vegetation assemblages, compact soils, alter hydrology, alter sunlight penetration, impact pollinators, and promote the establishment and spread of invasive non-native plants. Energy development would comply with land use plans and environmental laws and regulations, including the National Environmental Policy Act (NEPA), which would result in the implementation of measures to avoid, minimize, or mitigate impacts on sensitive plants, as appropriate. Although energy development has not been specifically identified as a primary threat to any of the plant species in Table 2, impacts could occur to any species that occurs within areas developed for energy.

Cumulative Effects

Current energy and development activities would continue under Alternative A. The closure of areas to fluid minerals and other energy development and withdrawal of areas from mineral entry would not be instituted as they would be in Alternatives B, C, D and F. Therefore, under Alternative A, the direct and indirect effects of energy and development in conjunction with the past, present and reasonably foreseeable future actions may increase loss and fragmentation of the existing sagebrush habitat in Management Zone IV (refer to Chapter 5 of the DEIS) and contribute to negative cumulative impacts on sensitive plants.

Recreation

Direct and Indirect Effects

Under Alternative A, recreation would continue to be managed according to current direction, and associated impacts on sensitive plant species would be expected to follow existing trends. Recreation encompasses a wide range of activities that result in a variety of impacts on sensitive plants. Most recreation involves overland travel and/or the use of roads and/or trails, and associated impacts on sensitive plants could include direct mortality from trampling or crushing, reduced vitality and interference with reproduction from dust generation, habitat degradation associated with soil compaction and changes in hydrology, and reduction in abundance or loss of occurrences from the spread of invasive non-native species. Impacts on sensitive plants from development of infrastructure to support concentrated recreation activities would be as discussed above under infrastructure. Expansion or development of infrastructure to support recreation would follow existing direction and would comply with land use plans and environmental laws and regulations, including the National Environmental Policy Act (NEPA), which would result in the implementation of measures to avoid, minimize, or mitigate impacts on sensitive plants, as appropriate.

Of the sensitive plant species in Table 2, recreation has been identified as a primary threat to Lemhi milkvetch, peculiar moonwort, little grape fern, beautiful bryum, giant helleborine,

primrose monkeyflower, Idaho pennycress, least phacelia, salmon twin bladderpod, bugleg goldenweed, wavy-leaf thelypody, and Idaho range lichen; however, under Alternative A, recreation could impact any of the plant species in the table.

Cumulative Effects

Current recreation management would continue under Alternative A. The limitation on permitting recreational SUAs only if they were neutral or beneficial to sage-grouse would not be instituted, nor would other measures that focus on conserving GRSG habitat be instituted as they would under Alternatives B, C, D and F. Under Alternative A, the direct and indirect effects from recreation management in conjunction with the past, present and reasonably foreseeable future actions may increase loss and fragmentation of the existing sagebrush habitat in Management Zone IV (refer to Chapter 5 of the DEIS) and contribute to negative cumulative impacts on sensitive plants.

Alternative B – National Technical Team (NTT)

Infrastructure

Direct and Indirect Effects

Under Alternative B, all PPH would be managed as exclusion areas, PGH would be managed as an avoidance area for new ROW and SUA projects, and co-location of new ROWs or SUAs with existing infrastructure would occur in PPH and PGH. Alternative B also would entail the following within PPH: co-location of new ROWs or SUAs with existing infrastructure; removal, burying, or modification of existing power lines; co-location of new facilities with existing facilities, where possible; use of existing roads, or realignments to access valid existing rights that are not yet developed, or constructing new roads to the absolute minimum standard necessary if valid existing rights could not be accessed via existing roads; and the establishment of a 3% threshold on anthropogenic disturbance (including, but not limited to, highways, roads, geothermal wells, wind turbines, and associated facilities). In addition, Alternative B would contain provisions to retain public ownership of priority sage-grouse habitat and to acquire state and private lands with intact subsurface mineral estate where suitable conservation actions for GRSG could not otherwise be achieved.

Under Alternative B, infrastructure related impacts on sensitive plant species could include direct mortality, loss or degradation of habitat, and loss or reduction of pollinators. Although the types of infrastructure related impacts would be similar to those under Alternative A, the 3% threshold that Alternative B would place on anthropogenic disturbance within PPH would likely reduce the extent of those impacts in PPH. As a result, limitations on disturbances could benefit individuals and occurrences of sensitive plants within PPH. Sensitive plants outside PPH would likely experience little change in direct or indirect effects. However, if the 3% development threshold ended up concentrating new infrastructure development outside PPH rather than just reducing it within PPH, the extent of impacts on sensitive plants outside PPH could increase under Alternative B relative to Alternative A. The proposal under Alternative B to potentially bury some existing power



lines that cross PPH could impact sensitive plant species through direct mortality and/or degradation of habitat; however, because such actions would undergo site specific environmental review, including NEPA, measures to avoid, minimize, or mitigate impacts on sensitive plants would be incorporated, as appropriate.

Cumulative Effects

Under Alternative B, management actions associated with infrastructure in Management Zone IV would increase protection of Greater Sage-Grouse habitat (refer to Chapter 5 of the DEIS) and would likely provide an overall benefit to sensitive plants that occur within it. Therefore, the direct and indirect effects of infrastructure management on sensitive plants in Management Zone IV under Alternative B when combined with the past, present and reasonably foreseeable future actions, would not substantially increase negative impacts on sensitive plants.

Fire and Fuels

Direct and Indirect Effects

Under Alternative B, fire suppression would be prioritized in PPH to protect mature sagebrush habitat. Suppression would be prioritized in PGH only where fires threatened PPH. Alternative B does not include any other specific wildland fire management actions in PGH. Under Alternative B, fuels treatments would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, carefully evaluating the need for fuel breaks against additional sagebrush losses, applying seasonal restrictions for implementing management treatments, limiting fuels treatments in winter range, and emphasizing the use of native seed in restoration. Post-fuels treatments in PPH would be designed to ensure long-term persistence of seeded areas and native plants and maintain 15 percent canopy cover. Fuels treatments in PPH would include monitoring and control of invasive non-native plants species, and fuels management BMPs in PPH would incorporate invasive plant prevention measures.

The types of impacts on sensitive plants associated with fire and fuels under Alternative B would be similar to those under Alternative A; however the extent of those impacts and their distribution across the landscape would change. Under Alternative B, sensitive plant species requiring mature sagebrush would be expected to benefit from fire and fuels activities, and sagebrush species that require early successional sagebrush and those that are fire adapted or fire dependent may experience a reduction in suitable habitat over time. With its emphasis on minimizing fire in mature sagebrush, impacts on sensitive plants from suppression would be higher under Alternative B relative to Alternative A. Because reseeding efforts would prioritize use of native seed in PPH over other areas in years of short seed supplies, sensitive plants in areas outside PPH could be more susceptible to habitat degradation from wildfire if limited seed availability reduces revegetation success outside PPH.

Cumulative Effects

Under Alternative B, management actions associated with fire and fuels would increase protection of GRSG habitat, primarily within PPH. Though such management could result in some negative impacts to sensitive plants, overall their effects would be expected to be

neutral or beneficial. Therefore, the direct and indirect effects of fire and fuels management on GRSG habitat in Management Zone IV under Alternative B when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Invasive Plants

Direct and Indirect Effects

Under Alternative B, weed control efforts would follow current direction, and the types of direct and indirect impacts expected to sensitive plants would be the same as those discussed under Alternative A. However, vegetation management conservation measures under Alternative B would prioritize restoration efforts, including treatment of invasive non-native plants, in GRSG habitats, which would be expected to provide a long term benefit to sensitive plants that occur in those habitats. Short term impacts of invasive plant treatments and other restoration actions, particularly those that involve mechanized equipment or the use of herbicides, could negatively impact individual sensitive plants (for example, by crushing or herbicide drift). Such impacts would be expected to be minimal as project level environmental review would be done and appropriate avoidance or minimization measures would be incorporated.

Under Alternative B, the use of native seed would be favored in restoration efforts, though non-native seed could be used under certain circumstances. Current FS policy (FSM 2070.3) already restricts the use of non-native seed in restoration and prohibits the use of invasive species, so the impact of the native seed emphasis for restoration in Alternative B would be unlikely to result in any additional benefit to sensitive plant species relative to Alternative A. Monitoring and invasive species control after fuels treatments and at existing range improvements incorporated into Alternative B could benefit sensitive plant species by minimizing habitat degradation caused by invasive species. Overall, Alternative B would be likely to reduce impacts of invasive non-native plants on sensitive plants relative to Alternative A.

Cumulative Effects

Under Alternative B, current invasive non-native plant treatments within Management Zone IV (refer to Chapter 5 of the DEIS) (including mechanical, manual, chemical, and biological control of invasive plants) would continue, and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. Additional measures to conserve existing sagebrush habitat under Alternative B would provide further long-term benefits to sensitive plants within GRSG habitat. Therefore, the direct and indirect effects of invasive species management on sensitive plants in Management Zone IV under Alternative B when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.



Conifer Encroachment

Direct and Indirect Effects

Like Alternative A, Alternative B does not directly address conifer encroachment. The types of impacts of conifer encroachment and associated management actions on sensitive plants under Alternative B would be expected to be the same as those under Alternative A. Although the types of impacts would be the same, the conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would likely reduce the magnitude of the impacts on sensitive plants associated with conifer encroachment. Impacts associated with managing conifer encroachment under Alternative B would be expected to decrease relative to Alternative A.

Cumulative Effects

Under Alternative B, current management of conifer encroachment within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, though the alternative also would incorporate conservation measures protective of GRSG habitat. Management of conifer encroachment and associated conservation measures would be expected to have an overall neutral or beneficial effect on sensitive plants. Therefore, the direct and indirect effects of conifer encroachment management on sensitive plants in Management Zone IV under Alternative B when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Livestock Grazing

Direct and Indirect Effects

Alternative B would incorporate sage grouse habitat objectives and sage grouse management considerations into livestock grazing management in PPH. Actions would include completion of range condition assessments, consideration of grazing methods and systems to reduce impacts on sage grouse habitat, modification of grazing systems to meet seasonal sage grouse habitat requirements, improved management of riparian areas and wet meadows, evaluation of existing introduced perennial grass seedings, authorization of new water developments and structural range improvements only when beneficial to GRSG, incorporation of BMPs for West Nile Virus, and fence removal, modification or marking. Although the types of impacts on sensitive plants would be expected to be the same under Alternatives A and B, the level and extent of negative impacts would be expected to be reduced in Alternative B. Sensitive plants that occur in PPH would likely benefit from improving habitat conditions in uplands, riparian areas, meadows, and other wetlands. Almost half of the sensitive plant species in Table 2 occur in riparian areas, meadows, seeps, springs, and other wetland areas, which tend to be used more intensively by livestock than upland areas. Because of these factors and the focus of Alternative B on improving riparian, meadow, and other wetland habitat, sensitive wetland plant species may benefit from Alternative B more than upland species.

Cumulative Effects

Under Alternative B, livestock grazing would continue to be managed through existing grazing plans within Management Zone IV (refer to Chapter 5 of the DEIS). Additional

measures to conserve existing sagebrush habitat under Alternative B would further minimize negative impacts on sensitive plants that occurred within GRSG habitat. Therefore, the direct and indirect effects of livestock grazing on sensitive plants in Management Zone IV under Alternative B when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Energy Development

Direct and Indirect Effects

Alternative B addresses energy development directly through its inclusion of provisions for fluid energy development. Actions within Alternative B relevant to the analysis of impacts on sensitive plants include the following: closing PPH to fluid mineral leasing with possible exceptions; allowing geophysical operations in PPH only to obtain information about areas outside and adjacent to PPH; requiring exploratory operations within PPH to be done using helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other restrictions that may apply; in PPH prohibiting new surface occupancy on federal leases; for existing leases entirely within PPH, applying NSO buffers around leks, and if the entire lease falls within this buffer, limiting disturbances within sections to the 3% threshold; applying BMPs to limit the impact of operations on PPH; and applying BMPs to improve reclamation standards and successfully restore PPH. All of these actions would be likely to reduce the level of impacts of fluid mineral development on sensitive plants relative to Alternative A.

Although Alternative B does not directly address wind energy development or industrial solar development, its 3% threshold for anthropogenic disturbances would apply to energy development and would limit the extent of all types of energy development in PPH. Impacts on sensitive plants would be as discussed above for Infrastructure under Alternative B.

Cumulative Effects

Under Alternative B, some of the current energy development would continue within Management Zone IV; however, additional measures would conserve existing sagebrush habitat by adding all PPH to existing closures and proposing it for withdrawal. Therefore, the direct and indirect effects on sensitive plants in GRSG habitat in Management Zone IV from the management actions associated with energy development under Alternative B, which would minimize negative impacts to sensitive plants in GRSG habitat, when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Recreation

Direct and Indirect Effects

Under Alternative B, only Recreation Special Use Authorizations (RSUAs) that are neutral or beneficial to sage-grouse would be permitted in PPH. In addition, opportunities for road construction in PPH would be limited, minimum standards would be applied, and upgrading of existing roads in PPH would be limited. Although the types of impacts on sensitive



plants would be similar under Alternatives A and B, the degree and extent of impacts within PPH would be reduced under Alternative B. The types of impacts that would be expected to decrease would include direct mortality from crushing or trampling individuals, negative impacts associated with dust generation, habitat degradation associated with soil compaction and changes in hydrology, and negative impacts associated with spread of invasive non-native species.

Cumulative Effects

Management actions associated with recreation under Alternative B would increase protection of Greater Sage-Grouse habitat, primarily within PPH, and minimize the negative impacts of recreation on sensitive plants that occur in those areas. As a result, recreation management under Alternative B when combined with the past, present and reasonably foreseeable future actions this alternative would not substantially increase negative impacts on sensitive plant species in Management Zone IV.

Alternative C – Conservation Groups

Infrastructure

Direct and Indirect Effects

As with Alternative A, infrastructure related impacts on sensitive plant species under Alternative C could include direct mortality, loss or degradation of habitat, and loss or reduction of pollinators. The extent of these impacts would be expected to be less overall than under Alternatives A and B. Under Alternative C, new transmission corridors, new ROWs for corridors, and new communication towers would be prohibited in occupied GRSG habitat and would be sited outside occupied GRSG habitat and bundled with existing corridors to the maximum extent possible. As for Alternative B, the proposal under Alternative C to potentially bury some existing power lines in occupied GRSG habitat could impact sensitive plant species through direct mortality and/or degradation of habitat. Because the undergrounding of power lines could occur within a larger area than under Alternative B, which focuses on PPH, more sensitive plant species or occurrences could be impacted. However, such impacts would be minimized or avoided because the burial of power lines would undergo site specific environmental review, including NEPA, and conservation measures or design features would be applied for sensitive plants.

In addition to the above measures, which focus on specific types of infrastructure, Alternative C is similar to Alternative B in placing a 3% threshold on anthropogenic disturbance. However, Alternative C would apply that threshold throughout occupied GRSG habitat rather than limiting it to PPH, as Alternative B would. Although under Alternative C the types of infrastructure related impacts would be similar to those under Alternative A, the 3% threshold that Alternative C would place on anthropogenic disturbance within GRSG habitat would likely reduce the extent of those impacts in those areas. As a result, limitations on disturbances could benefit individuals and occurrences of sensitive plants within occupied GRSG habitat. Sensitive plants outside occupied GRSG habitat would likely experience little change in direct or indirect effects. However, if the 3% development threshold ended up concentrating new infrastructure development outside

occupied GRSG habitat rather than just reducing it within such habitat, the extent of impacts on sensitive plants outside occupied GRSG habitat could increase under Alternative C relative to Alternative A.

Cumulative Effects

Under Alternative C, some of the current infrastructure management would continue within Management Zone IV (refer to Chapter 5 of the DEIS); however, measures would be added to conserve existing sagebrush habitat. Management actions associated with infrastructure under Alternative C would increase protection of Greater Sage-Grouse habitat and provide an overall long-term benefit to the sensitive plants that occur there. Therefore, the direct and indirect effects of infrastructure on sensitive plants in Management Zones IV under Alternative C when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Fire and Fuels

Direct and Indirect Effects

The types of fire and fuels related impacts of Alternative C on sensitive plants would be similar to those discussed for Alternative B; however because Alternative C expands most GRSG conservation elements to all occupied habitat rather than limiting them to PPH, the area over which those impacts could occur would be larger. Elements of Alternative C that would be the most likely change the extent of direct and indirect beneficial and negative impacts on sensitive plants relative to Alternative B include prioritizing suppression in all occupied habitat rather than limiting it to PPH and applying fuels management treatment provisions (including post-fire revegetation and invasive species control) to all occupied GRSG habitat rather than limiting them to PPH. Additional fire and fuels related impacts on sensitive plant species could result from the increased fire risk associated with the elimination of grazing. Those impacts are discussed below under Livestock Grazing.

Cumulative Effects

The cumulative effects of management actions related to fire and fuels under Alternative C when combined with the past, present and reasonably foreseeable future actions would be similar to those described for Alternative B and would not be expected to substantially increase negative impacts on sensitive plants within Management Zone IV (refer to Chapter 5 of the DEIS).

Invasive Plants

Direct and Indirect Effects

Under Alternative C, invasive non-native plant control efforts would follow current direction, and the types of direct and indirect impacts expected to sensitive plants would be the same as those discussed under Alternative A. Like Alternative B, vegetation management conservation measures under Alternative C would prioritize restoration efforts, including treatment of invasive non-native plants, in GRSG habitats, which would be expected to provide a long-term benefit to sensitive plants that occur in those habitats. Unlike Alternative B, Alternative C would extend this focus beyond PPH to all occupied



GRSG habitat. As a result, sensitive plants outside PPH but within occupied GRSG could experience a long-term benefit under Alternative C that they would not under Alternative B. Under Alternative C, short-term impacts of invasive plant treatments and other restoration actions, particularly those that involve mechanized equipment or the use of herbicides, could negatively impact individual sensitive plants (for example, by crushing or herbicide drift). Such impacts would be expected to be minimal as project level environmental review would be done and appropriate avoidance or minimization measures would be incorporated. The use of native seed would be favored in restoration under Alternative C, as it would be under Alternative B. Current FS policy (FSM 2070.3) already restricts the use of non-native seed in restoration and prohibits the use of invasive species, so the impact of the native seed emphasis for restoration in Alternative C is unlikely to result in a measurable additional benefit to sensitive plant species over Alternatives A or B. Monitoring and invasive species control after fuels treatments under Alternative C could benefit sensitive plant species by minimizing habitat degradation caused by invasive species. Overall, Alternative C would be likely to reduce impacts of invasive non-native plants on sensitive plants relative to Alternative A and may provide a marginal benefit over Alternative B.

Cumulative Effects

Under Alternative C, current invasive plant management would continue within Management Zone IV (refer to Chapter 5 of the DEIS), and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. However, additional emphasis on protecting existing sagebrush habitat under Alternative C would provide an additional long-term benefit to sensitive plants within GRSG habitat. Therefore, the direct and indirect effects of invasive species management on sensitive plants in Management Zone IV under Alternative C when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Conifer Encroachment

Direct and Indirect Effects

Like Alternatives A and B, Alternative C does not directly address conifer encroachment. The types of impacts of conifer encroachment and associated management actions on sensitive plants under Alternative C would be expected to be the same as those under Alternative A; however, the conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would likely reduce the magnitude of the impacts of conifer encroachment on sensitive plants relative to Alternative A. Because those measures generally would apply throughout occupied GRSG under Alternative C whereas they would be limited to PPH under Alternative B, Alternative C could provide an additional reduction in the magnitude of impacts on sensitive plants from conifer encroachment relative to Alternative B. Because conifer encroachment measures would be applied over a larger area under Alternative C, negative impacts to sensitive plants from encroachment management discussed under Alternative A would be expected to be higher under Alternative C than under Alternatives A or B.

Cumulative Effects

Under Alternative C, current management of conifer encroachment within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, though the alternative also would incorporate conservation measures protective of GRSG habitat. Management of conifer encroachment and associated conservation measures would be expected to have an overall neutral or beneficial effect on sensitive plants. Therefore, the direct and indirect effects of conifer encroachment management on sensitive plants in Management Zone IV under Alternative C when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Livestock Grazing

Direct and Indirect Effects

Alternative C would prohibit grazing in all occupied GRSG habitat and remove all livestock water troughs, pipelines, and wells from occupied GRSG habitat. Sensitive plants that occur in occupied GRSG habitat could benefit from improving habitat conditions in uplands, riparian areas, meadows, and other wetlands by the elimination of negative impacts discussed under Livestock Grazing for Alternative A. Sensitive species in Table 2 for which livestock grazing was identified as a major threat might be expected to benefit most from Alternative C. These species include Cusick's horse-mint, pink agoseris, Goose Creek milkvetch, Lemhi milkvetch, meadow milkvetch, Bitterroot milkvetch, sapphire rockcress, slender moonwort, peculiar moonwort, little grape fern, beautiful bryum, Idaho sedge, Giant helleborine, Welsh buckwheat, Idaho pennycress, Lemhi penstemon, least phacelia, alkali primrose, mealy primrose, bugleg goldenweed, alpine meadowrue, and Idaho range lichen. As indicated in Table 2, almost half of these species occur in riparian areas, meadows, seeps, springs, and other wetland areas, which tend to be used more intensively by livestock than upland areas. As a result, the greatest benefit to sensitive plants from the elimination of grazing in occupied GRSG habitat may be to these wetland species.

Total elimination of grazing from occupied GRSG habitat may result in additional indirect impacts on occupied GRSG habitats, surrounding areas, and the sensitive plants that occupy them. Moderate grazing reduces herbaceous fuel loads on sagebrush steppe rangelands and is considered likely to reduce the probability and severity of wildfires and the continuity and size of burned areas (Davies et al. 2010). Thus the elimination of grazing could benefit fire adapted, fire dependent, and early successional sensitive plants that occur in currently grazed occupied GRSG habitats and adjacent areas. For sensitive plants that are not fire tolerant and/or require mature sagebrush habitat, negative impacts associated with the elimination of grazing could occur from wildfire in occupied sagebrush habitats and adjacent areas. The types of beneficial and negative impacts on sensitive plants would be as described under Fire and Fuels for Alternative A, though their extent and distribution across the landscape would likely differ.

Cumulative Effects

Under Alternative C, livestock grazing within Management Zone IV (refer to Chapter 5 of the DEIS) would be eliminated within all occupied GRSG habitat, which would be likely to

provide an overall benefit to sensitive species that occur there. Therefore, the direct and indirect effects of livestock grazing on sensitive plant species in Management Zone IV under Alternative C when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Energy Development

Direct and Indirect Effects

The types of impacts on sensitive plants from energy development under Alternative C would be the same as described above under Alternatives A and B, though their magnitude and spatial distribution would differ. Alternative C would extend some of Alternative B's provisions to all occupied GRSG habitat rather than limiting them to PPH. Actions within Alternative C relevant to the analysis of impacts on sensitive plants include the following: closing occupied GRSG habitat to fluid mineral leasing, with possible exceptions; allowing geophysical operations in occupied GRSG habitat only to obtain information about areas outside and adjacent to PPH; requiring exploratory operations within occupied GRSG habitat to be done using helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other applicable restrictions; in occupied GRSG habitat prohibiting new surface occupancy on federal leases; and for existing leases entirely within occupied GRSG habitat, applying NSO buffers around leks, and if the entire lease falls within this buffer, limiting disturbances within sections to the 3% threshold. All of these actions would be likely to reduce the level of impacts of fluid mineral development on sensitive plants relative to Alternative A. Since these actions would apply to all occupied GRSG habitat rather than just PPH, they also could reduce the level of impacts of fluid mineral development on sensitive plants relative to Alternative B.

Unlike Alternative B, Alternative C would directly address solar energy development by prohibiting it in occupied GRSG habitat and requiring it to be sited at least five miles from active sage grouse leks. These actions could reduce negative impacts associated with energy development on sensitive plants that occur in occupied GRSG habitat relative to Alternative A. They also could reduce negative impacts associated with energy development in occupied GRSG outside PPH relative to Alternative B.

In addition to provisions in Alternative C that specifically address energy development, the 3% threshold for anthropogenic disturbances would limit the extent of all types of energy development in occupied GRSG habitat. Impacts on sensitive plants would be as discussed above for Infrastructure under Alternative C.

Cumulative Effects

Under Alternative C, measures to conserve occupied sagebrush habitat would be applied to energy development within Management Zone IV, which would provide an overall benefit to sensitive plant species that occur there. As a result, the direct and indirect effects of energy development on sensitive plants in Management Zone IV under Alternative C when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants (refer to Chapter 5 of the DEIS).

Recreation

Direct and Indirect Effects

Similar to Alternative B, Alternative C would allow Recreation Special Use Authorizations (RSUAs) that are neutral or beneficial to GRSG, but Alternative C would extend this provision to all occupied habitat rather than restricting it to PPH. Opportunities for road construction in occupied GRSG habitat would be limited, minimum standards would be applied, existing roads could not be upgraded, and cross country driving would be prohibited in occupied GRSG habitat. Although the types of impacts on sensitive plants would be similar under Alternatives A, B, and C, the degree and extent of impacts within occupied GRSG habitat would be reduced under Alternative C relative to Alternative A. The degree and extent of impacts within occupied GRSG habitat outside PPH would be reduced under Alternative C relative to Alternative B. The types of impacts that would be expected to decrease would include direct mortality from crushing or trampling individuals, negative impacts associated with dust generation, habitat degradation associated with soil compaction and changes in hydrology, and negative impacts associated with spread of invasive non-native species.

Cumulative Effects

Under Alternative C, some of the current travel, transportation and recreation management direction would continue within Management Zone IV (refer to Chapter 5 of the DEIS); however, measures would be added to conserve existing sagebrush habitat, which would provide an overall long-term benefit to sensitive plants that occur there. Therefore, management of recreation under Alternative C when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plant species in Management Zone IV.

Alternative D – Idaho and SW Montana Sub-Regional

Infrastructure

Direct and Indirect Effects

Although the types of infrastructure related impacts on sensitive plants under Alternative D would be similar to those discussed above for Alternative A, Alternative D would include actions that could change the extent of those impacts and their distribution across the landscape. This analysis focuses on elements of Alternative D that would be most relevant to impacts on sensitive plants. In priority, Medial, and general habitats, ROW avoidance areas would be designated and the following types of new development would be prohibited: transmission facilities greater than 50 kV, wind energy testing and development, commercial solar developments, commercial geothermal development, nuclear development, gas or oil developments, airports, paved or gravel roads, or landfills. In priority, Medial, and general habitats, new authorizations or amendments to existing ROW and land use authorizations would be sited substantially within existing disturbances where feasible, and new ROW and land use authorizations would be sited outside 3-km (1.86-mile) occupied lek avoidance areas. These conservation measures would reduce the level of negative impacts from



infrastructure relative to Alternative A, and may provide some additional reduction in impacts over Alternative B.

Some infrastructure related elements of Alternative D could increase negative impacts to sensitive plants relative to Alternatives A and B. Alternative D would require new power and communication lines in priority, Medial, and general habitats outside existing ROWs to be buried where physically feasible. Burying of utilities could impact sensitive plant species through direct mortality and/or degradation of habitat. Because the undergrounding of power lines could occur within a larger area than under Alternative B, which focuses on PPH, more sensitive plant species or occurrences could be impacted. However, such impacts would be minimized or avoided because the burial of power lines would undergo site specific environmental review, including NEPA, and conservation measures or design features would be applied for sensitive plants.

Cumulative Effects

Under Alternative D, management actions associated with infrastructure in Management Zone IV would increase protection of Greater Sage-Grouse habitat (refer to Chapter 5 of the DEIS) and would likely provide an overall benefit to sensitive plants that occur within in it. Therefore, the direct and indirect effects of lands and realty management on sensitive plants in Management Zone IV under Alternative D when combined with the past, present and reasonably foreseeable future actions, would not substantially increase negative impacts on sensitive plants.

Fire and Fuels

Direct and Indirect Effects

Like Alternative B, Alternative D would prioritize fire suppression and restoration in sagebrush areas using native plants. In addition, Alternative D would include pre-planning and firefighter training to prepare for fire outbreaks in priority, Medial, and general habitats, utilize fuels reduction and green strips in priority, Medial, and general habitats to strategically reduce fire effects, and delineate conifer encroachment areas in priority, Medial, and general habitats as areas to manage wildfire for resource benefit. The types of impacts on sensitive plants associated with fire and fuels would be similar to those discussed under Alternative A, but their extent and distribution across the landscape would differ. Efforts to exclude fire from priority, Medial, and general habitats would be expected to have similar impacts on sensitive plants to those discussed under Alternative B, though measures that expand sagebrush habitat conservation efforts to priority, Medial, and general habitats could provide an additional benefit to sensitive plants that occur in those areas and require mature sagebrush habitat.

Cumulative Effects

Under Alternative D, management actions associated with fire and fuels would increase protection of priority, Medial, and general habitats. Though such management could result in some negative impacts to sensitive plants, overall their effects would be expected to be neutral or beneficial. Therefore, the direct and indirect effects of fire and fuels management on GRSG habitat in Management Zone IV under Alternative D when combined with the

past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Invasive Plants

Direct and Indirect Effects

Under Alternative D, invasive non-native plant control efforts would follow current direction, and the types of direct and indirect impacts expected to sensitive plants would be the same as those discussed under Alternative A. Like Alternative B, vegetation management conservation measures under Alternative D would prioritize restoration efforts, including treatment of invasive non-native plants, in GRSG habitats, which would be expected to provide a long-term benefit to sensitive plants that occur in those habitats. Alternative D would apply this to priority, Medial, and general habitats. Alternative D would emphasize restoration within the following priority, general and medial habitat areas: sites with favorable environmental variables; seasonal habitats that are thought to be limiting GRSG distribution and/or abundance; sites otherwise suitable for GRSG but lacking adequate sagebrush cover; and sagebrush areas lacking adequate desirable understory vegetation. As a result, sensitive plants within and adjacent to areas restored could experience a long-term benefit.

Under Alternative D, short-term impacts of invasive plant treatments and other restoration actions, particularly those that involve mechanized equipment or the use of herbicides, could negatively impact individual sensitive plants (for example, by crushing or herbicide drift). Such impacts would be expected to be minimal as project level environmental review would be done and appropriate avoidance or minimization measures would be incorporated. The use of native seed would be favored in restoration under Alternative D, as it would be under Alternative B. Current FS policy (FSM 2070.3) already restricts the use of non-native seed in restoration and prohibits the use of invasive species, so the impact of the native seed emphasis for restoration in Alternative D is unlikely to result in a measurable additional benefit to sensitive plant species over Alternatives A or B. As under Alternative B, monitoring and invasive species control after fuels treatments under Alternative D could benefit sensitive plant species by minimizing habitat degradation caused by invasive species. Overall, Alternative D would be likely to reduce impacts of invasive non-native plants on sensitive plants relative to Alternative A similar to Alternative B.

Cumulative Effects

Under Alternative D, current invasive species management within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. Additional measures to conserve existing sagebrush habitat and restore degraded sagebrush habitat under Alternative D would provide a further net benefit to sensitive plants within priority, Medial, and general habitats. Therefore, the direct and indirect effects of invasive species management to Greater Sage-Grouse in Management Zone IV under Alternative D when combined with the past, present and



reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Conifer Encroachment

Direct and Indirect Effects

Alternative D would address conifer encroachment more directly than Alternatives A, B, or C by emphasizing vegetation rehabilitation projects that reduced conifer encroachment into important GRSG habitat. In addition, vegetation management tools described above for *Invasive Plants* and *Fire and Fuels* would help to reduce encroachment in priority, Medial, and general habitats. The types of impacts on sensitive plants from conifer encroachment and associated management actions under Alternative D would be expected to be the same as those described under Alternative A. Collectively, elements of Alternative D that address conifer encroachment would likely reduce the magnitude of the negative impacts on sensitive plants from conifer encroachment relative to Alternative A. Negative impacts associated with managing conifer encroachment under Alternative D would be expected to increase relative to Alternatives A, B, and C because Alternative D would take a more direct approach at managing conifer encroachment.

Cumulative Effects

Under Alternative D, current management of conifer encroachment within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, though the alternative also would incorporate GRSG habitat conservation measures that directly addressed conifer encroachment. Management of conifer encroachment and associated conservation measures would be expected to have an overall neutral or beneficial effect on sensitive plants. Therefore, the direct and indirect effects of conifer encroachment management on sensitive plants in Management Zone IV under Alternative D when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Livestock Grazing

Direct and Indirect Effects

Alternative D would include most of the same measures as Alternative B to address livestock grazing, although in many cases Alternative D would extend those measures beyond priority habitat to medial and general habitats. Like Alternative B, Alternative D would manage for vegetation composition (including riparian and lentic areas) and structure consistent with appropriate sage-grouse seasonal habitat objectives relative to site potential. In addition, Alternative D would include consideration of retiring grazing in priority, Medial, and general habitats if grazing privileges were relinquished or an allotment became vacant. Although the types of impacts on sensitive plants would be expected to be the same as under Alternative A, the level and extent of negative impacts would likely be reduced under Alternative D. Sensitive plants that occur in priority, medial, and general habitats would likely benefit from improving habitat conditions in uplands, riparian areas, meadows, and other wetlands. Almost half of the sensitive plant species in Table 2 occur in riparian areas, meadows, seeps, springs, and other wetland areas, which tend to be used more intensively by livestock than

upland areas. Because of these factors and the inclusion of measures to improve riparian, meadow, and other wetland habitat, sensitive wetland plant species may benefit from Alternative D more than upland species.

Cumulative Effects

Under Alternative D, livestock grazing would continue to be managed through existing grazing plans within Management Zone IV (refer to Chapter 5 of the DEIS). Additional measures to conserve existing sagebrush habitat under Alternative D would further minimize negative impacts on sensitive plants that occurred within GRSG habitat. Therefore, the direct and indirect effects of livestock grazing on sensitive plants in Management Zone IV under Alternative D when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Energy Development

Direct and Indirect Effects

The types of impacts on sensitive plants from energy development under Alternative D would be the same as described above under Alternatives A and B, though their magnitude and spatial distribution would differ. Like Alternative B, Alternative D would include provisions to conserve GRSG habitat. Actions within Alternative D that would be particularly relevant to the analysis of impacts on sensitive plants include the following: closing most priority and medial habitats to future fluid mineral leasing and development, placing additional stipulations and seasonal restrictions on existing fluid mineral leases in priority, medial, and general habitats to minimize potential impacts, and stipulating a maximum 3% surface disturbance per section for future fluid mineral leases in priority and medial habitats. These actions would be likely to reduce the impacts of fluid mineral development on sensitive plants relative to Alternative A to a level similar to that of Alternative B.

Unlike Alternative B, Alternative D would directly address solar and wind energy development. In priority habitat, Alternative D would prohibit new wind and solar energy development. In medial habitat, Alternative D would restrict wind and solar energy development where adverse effects could not be mitigated, though ancillary facilities, such as roads and power lines, could be authorized if the action resulted in no net loss of GRSG after mitigation. Alternative D would make general habitat an avoidance area for wind and solar development. These actions would be likely to reduce negative impacts associated with energy development on sensitive plants that occur in priority, Medial, and general habitats relative to Alternatives A and B.

Cumulative Effects

Under Alternative D, some of the current energy development would continue within Management Zone IV; however, additional measures would conserve existing sagebrush habitat and provide an overall long-term benefit to the sensitive plant species that occur there. Therefore, the direct and indirect effects on sensitive plants in GRSG habitat in Management Zone IV from the management actions associated with energy development under Alternative D, which would minimize negative impacts to sensitive plants in GRSG



habitat, when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Recreation

Direct and Indirect Effects

Alternative D would apply measures to reduce the potential negative impacts of recreation on GRSG. The measures that are most relevant to impacts on sensitive plants include the following: analyzing Special Recreation Permits on a case-by-case basis and directing use away from sensitive seasons and/or areas in priority, medial and general habitats; designating or designing developed recreation sites and associated facilities to direct use away from sensitive areas in priority, Medial, and general habitats; and incorporating seasonal restrictions for authorized activities to minimize impacts to GRSG habitat in priority, Medial, and general habitats. Under Alternative D, these measures would reduce the general impacts of recreation on sage-grouse that were described under Alternative A. Although the types of impacts on sensitive plants would be similar under Alternatives A, B, and D, the degree and extent of impacts within sage-grouse habitat would be expected to be lower under Alternative D due to its inclusion of additional measures focused on minimizing recreation impacts and the application of those measures to priority, Medial, and general habitats. The types of impacts that would be likely to decrease under Alternative D would include direct mortality from crushing or trampling individuals, negative impacts associated with dust generation, habitat degradation associated with soil compaction and changes in hydrology, and negative impacts associated with spread of invasive non-native species.

Cumulative Effects

Management actions associated with recreation under Alternative D would increase protection of priority, Medial, and general habitats in Management Zone IV and minimize the negative impacts of recreation on sensitive plants that occur in those areas. Therefore, when combined with the past, present and reasonably foreseeable future actions, and recreation management in Management Zone IV under Alternative D would not substantially increase negative impacts on sensitive plant species.

Alternative E1 – Idaho Governor’s Alternative

Infrastructure

Direct and Indirect Effects

The types of infrastructure related impacts on sensitive plants under Alternative E1 would be similar to those discussed above for Alternative A and could include direct mortality, loss or degradation of habitat, and loss or reduction of pollinators. Like Alternative B, Alternative E1 would include actions to minimize the impact of infrastructure on sage-grouse. Under Alternative E1, Core habitat would be identified as a ROW avoidance area, with limited exceptions. Important habitat also would be identified as a ROW avoidance area, but new ROWs and infrastructure would be permissible under certain criteria. Within Core habitat, new infrastructure would be co-located with existing infrastructure to the maximum extent practicable. In many instances, mitigation would be required for

unavoidable infrastructure impacts in GRSG habitats. Within Core and Important habitats, linear facilities would be co-located within one kilometer of existing linear facilities to the extent possible. These actions would likely reduce the negative impacts of infrastructure development and operations on sensitive plants under Alternative E1 relative to Alternative A. Because Alternative E1 would include fewer limitations on infrastructure within sage-grouse habitat than Alternative B, the potential for some infrastructure related impacts on sensitive plants may be higher under Alternative E1. However, unlike Alternative B, Alternative E1 would not promote the undergrounding of utilities and eliminates potential associated impacts on sensitive plants. Because project-level environmental review would be done under all alternatives, including Alternatives B and E1, and measures to minimize or avoid impacts to sensitive plants would be implemented, the difference in infrastructure related impacts to sensitive plants under Alternatives B and E1 would be negligible.

Cumulative Effects

Under Alternative E1, management actions associated with infrastructure in Management Zone IV would increase protection of Greater Sage-Grouse habitat (refer to Chapter 5 of the DEIS) and would likely provide an overall benefit to sensitive plants that occur within it. Therefore, the direct and indirect effects of infrastructure on sensitive plants in Management Zone IV under Alternative E1 when combined with the past, present and reasonably foreseeable future actions, would not substantially increase negative impacts on sensitive plants.

Fire and Fuels

Direct and Indirect Effects

Alternative E1 would focus resources to reduce wildfire in sagebrush areas, prioritize fire suppression in Core, Important and general habitat, and maintain fuel breaks in Core and Important habitat. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to Core and Important habitat areas would be reduced to limit fire damage. This alternative is unique compared with the others in that adaptive management would be used to account for acres of habitat lost to fire in Core and Important habitats. These measures would reduce the threat of wildfire to sagebrush and reduce damage to GRSG habitat, but the types short-term and long-term impacts of fire suppression and fuels treatments on sensitive plants would be similar to those under Alternative A, and the long-term impacts of fire exclusion from focal sagebrush habitats on sensitive plants would be similar to those of Alternative B.

Cumulative Effects

Under Alternative E1, management actions associated with fire and fuels would increase protection of GRSG habitat. Though such management could result in some negative impacts to sensitive plants, their overall effects would be expected to be neutral or beneficial. Therefore, the direct and indirect effects of fire and fuels management on GRSG habitat in Management Zone IV under Alternative E1 when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.



Invasive Plants

Direct and Indirect Effects

Alternative E1 would maintain the policies described under Alternative A and would have the same type of impacts on sensitive plants as Alternative A. In addition, Alternative E1 would include the following measures to minimize the impact of invasive non-native plants on Core, Important, and general habitats: actively managing Core, Important and general habitats to prevent invasion; attempting to eradicate or control invasive non-native plants that threaten Core and Important habitats; and monitoring invasive non-native plants for three years following a fire in Core and Important habitats. The actions under Alternative E1 would significantly reduce the level of impacts of invasive non-native plants on sensitive plants relative to Alternative A. Under Alternative E1, short-term impacts of invasive plant treatments and other restoration actions, particularly those that involved mechanized equipment or the use of herbicides, could negatively impact individual sensitive plants (for example, by crushing or herbicide drift). Such impacts would be expected to be minimal as project-level environmental review would be done and appropriate avoidance or minimization measures would be incorporated.

Cumulative Effects

Under Alternative E1, current invasive non-native plant treatments within Management Zone IV (refer to Chapter 5 of the DEIS) (including mechanical, manual, chemical, and biological control of invasive plants) would continue, and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. Additional measures to conserve existing sagebrush habitat under Alternative E1 would provide further long-term benefits to sensitive plants within GRSG habitat. Therefore, the direct and indirect effects of invasive species management on sensitive plants in Management Zone IV under Alternative E1 when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Conifer Encroachment

Direct and Indirect Effects

Like Alternative D, Alternative E1 would include measures to directly address conifer encroachment. Alternative E1 would prioritize conifer removal in Core and Important habitat using methods that would minimize disturbance to the extent possible. Conifer encroachment projects would focus on areas with highest restoration potential, as evidenced by low canopy cover, existing sagebrush understory, and adjacent sage-grouse populations, and would not be conducted in juniper stands older than one hundred years. As described above *Invasive Plants*, Core, Important and general habitat would be actively managed to prevent invasion by non-native plants. The types of impacts on sensitive plants from conifer encroachment and associated management actions under Alternative E1 would be similar to those described under Alternative A. Collectively, elements of Alternative E1 that address conifer encroachment would likely reduce the magnitude of the negative impacts of conifer encroachment on sensitive plants relative to Alternative A. However, negative impacts associated with conifer encroachment management actions under Alternative E1 would be

expected to increase relative to Alternatives A, B, and C because Alternative E1 would prioritize conifer removal. The negative impacts of conifer encroachment management on sensitive plants would be minimized by project-specific NEPA review and the incorporation of avoidance and/or minimization measures.

Cumulative Effects

Under Alternative E1, current management of conifer encroachment within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, though the alternative also would incorporate conservation measures protective of GRSG habitat. Management of conifer encroachment and associated conservation measures would be expected to have an overall neutral or beneficial long-term effect on sensitive plants. Therefore, the direct and indirect effects of conifer encroachment management on sensitive plants in Management Zone IV under Alternative E1 when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Livestock Grazing

Direct and Indirect Effects

Management under Alternative E1 would add sage-grouse guidelines to grazing management plans in Core and Important habitats. Rangeland health assessments using published characteristics of sage-grouse habitat and the Ecological Site Descriptions would be conducted in Core and Important habitats. Allotments within Core habitat that had declining sage-grouse populations would be prioritized, followed by allotments within Important habitat that contained breeding habitats with decreasing lek counts. If assessments determined that livestock grazing were limiting the achievement of desired habitat characteristics, grazing permits would be adjusted during the renewal process to include measures to achieve desired conditions.

Although the types of impacts on sensitive plants would be expected to be the same under Alternative E1 as described under Alternative A, the level and extent of negative impacts would likely be reduced under Alternative E1. Sensitive plants that occur within Core and Important habitats would likely benefit from improving habitat conditions. Relative to Alternative B, Alternative E1 would focus less management on riparian areas, meadows, and other wetlands, so sensitive plant species in those habitats would be expected to experience fewer beneficial effects under Alternative E1 than under Alternative B.

Cumulative Effects

Under Alternative E1, livestock grazing would continue to be managed through existing grazing plans within Management Zone IV (refer to Chapter 5 of the DEIS) and additional measures to conserve existing sagebrush habitat under Alternative E1 would further minimize negative impacts on sensitive plants that occurred within GRSG habitat. Therefore, the direct and indirect effects of livestock grazing on sensitive plants in Management Zone IV under Alternative E1 when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.



Energy Development

Direct and Indirect Effects

Alternative E1 would follow much of the current guidance on leasing and development of mineral resources but would add measures to minimize impacts to sage-grouse. Under Alternative E1, limitations on energy development that are relevant to the analysis of impacts on sensitive plants would include the following: (1) in Core and Important habitats, exploration activities associated with oil and gas development that used temporary roads would be permissible if site disturbance were minimized; (2) in Core and Important habitat, surface occupancy associated with oil and gas development would not be allowed unless the surface development would not accelerate and/or cause declines in sage-grouse populations; (3) surface disturbance from roads associated with fluid mineral development would be limited to three percent and five percent of suitable habitat per an average of 640 acres in Core and Important habitats, respectively; and (4) wind energy development projects would comply with all infrastructure development best management practices and the 2012 U.S. Fish and Wildlife Service Wind Energy Guidelines.

The types of impacts on sensitive plants from energy development under Alternative E1 would be the same as described above under Alternatives A and B, though their magnitude and spatial distribution would differ. Measures associated with energy development under Alternative E1 would be likely to reduce the impacts of fluid mineral development and wind energy on sensitive plants relative to Alternative A. Under Alternative E1, measures limiting the impacts of energy development on sage-grouse habitat would be less restrictive overall than under Alternative B, so impacts to sensitive plants may be higher than under Alternative B.

Cumulative Effects

Under Alternative E1, some of the current energy development would continue within Management Zone IV; however, additional measures would conserve existing sagebrush habitat. Therefore, the direct and indirect effects on sensitive plants in GRSG habitat in Management Zone IV from the management actions associated with energy development under Alternative E1, which would minimize negative impacts to sensitive plants in GRSG habitat, when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Recreation

Direct and Indirect Effects

Alternative E1 would apply measures to reduce the potential negative impacts of recreation on GRSG. The measures that are most relevant to impacts on sensitive plants include the following, which would apply in Core and Important habitat areas: (1) restricting vehicle use to existing routes until completion of comprehensive travel management plans; and (2) re-routing existing routes during travel management planning, where appropriate, to reduce impacts to sage-grouse.

The types of recreation-related impacts under Alternative E1 would be the same as described above for Alternative A; however, measures incorporated under Alternative E1 would reduce impacts associated with transportation relative to Alternative A. Because Alternative E1 would address recreation mainly through travel management whereas Alternative B would include measures to address recreation more broadly, impacts of recreation on sensitive plants under Alternative E1 would be expected to be higher than under Alternative B.

Cumulative Effects

Under Alternative E1, some of the current recreation management direction would continue within Management Zone IV; however, additional measures would increase protection of Greater Sage-Grouse habitat and minimize the negative impacts of recreation on sensitive plants that occur in those areas. As a result, recreation management in Management Zone IV under Alternative E1 when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plant species.

Alternative E2 – Utah Governor's Alternative

Infrastructure

Direct and Indirect Effects

For all ROWs/SUAs in priority habitat, management stipulations and conditions would focus on mitigating direct disturbance to GRSG during construction. priority habitat would be designated as an avoidance area for new ROWs/SUAs, which would be less protective of GRSG habitat than Alternatives B, C, or F but similar to Alternatives D and E1. Similar to Alternatives B, C, and F, Alternative E2 would include a disturbance cap. However, Alternative E2 would apply a 5% disturbance cap as opposed to a 3% disturbance cap and the areas over which the caps would apply and the types of disturbances that contribute toward the caps would differ. Similar to Alternative D, Alternative E2 directly addresses siting of wind energy facilities; however, Alternative E2 would be less restrictive than Alternative D by avoiding rather than excluding siting of wind energy developments in priority habitat and applying BMPs and industry, state and federal stipulations in cases where siting in priority habitat could not be avoided. Similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities. Electrical transmission lines, and where feasible and consistent with federally required electrical separation standards, new linear transmission features would be sited in existing corridors, or at a minimum, in concert with existing linear features in GRSG habitat. No specific management actions would be provided for GRSG outside priority habitat.

The types of infrastructure related impacts on sensitive plants under Alternative E2 would be similar to those discussed above for Alternative A and could include direct mortality, loss or degradation of habitat, and loss or reduction of pollinators. However, measures to minimize infrastructure impacts in priority habitat under Alternative E2 would likely reduce the negative impacts on sensitive plants relative to Alternative A. Because Alternative E2 would include fewer limitations on infrastructure within sage-grouse habitat than Alternative



B, the potential for some infrastructure related impacts on sensitive plants may be higher under Alternative E2. However, unlike Alternative B but similar to Alternative E1, Alternative E2 would not promote the undergrounding of utilities and therefore would eliminate potential associated impacts on sensitive plants. Because project-level environmental review would be done under all alternatives, including Alternatives B and E2, and measures to minimize or avoid impacts to sensitive plants would be implemented, the difference in infrastructure related impacts to sensitive plants under Alternatives B and E2 would be negligible.

Cumulative Effects

Under Alternative E2, management actions associated with infrastructure in Management Zone IV would increase protection of Greater Sage-Grouse habitat (refer to Chapter 5 of the DEIS) and would likely provide an overall long-term benefit to sensitive plants that occur within in it. Therefore, the direct and indirect effects of infrastructure on sensitive plants in Management Zone IV under Alternative E2 when combined with the past, present and reasonably foreseeable future actions, would not substantially increase negative impacts on sensitive plants.

Fire and Fuels

Direct and Indirect Effects

Alternative E2 would implement the following unique strategies to address response to fire and reduce the general effects of fire on GRSG habitat: create and implement a statewide fire agency agreement(s) that would eliminate jurisdictional boundaries and allow for immediate response to natural fire in priority habitat; allow the use of fire-retardant vegetation that would buffer areas of high quality GRSG habitat from catastrophic fire; use prescriptive fire with caution in sagebrush habitat and only at higher elevations and in a manner designed prescriptively to benefit GRSG; conduct effective research into controlling fire size and protecting remaining GRSG areas that are adjacent to high-risk cheatgrass areas; focus research efforts on effective reclamation and restoration of landscapes altered by wildfire; manage winter habitat to maintain maximum amount of sagebrush, especially tall sagebrush (80%), which would be available to GRSG above snow during a severe winter; and coordinate the needs and efforts related to GRSG with the State of Utah committee that was formed to develop a collaborative process to protect the health and welfare by reducing the size and frequency of catastrophic fires. Similar to Alternative B, Alternative E2 would consider the use of prescriptive grazing to specifically reduce fire size and intensity on all types of landownership, where appropriate.

Measures implemented under Alternative E2 would reduce the threat of wildfire to sagebrush and reduce damage to GRSG habitat, but the types short-term and long-term impacts of fire suppression and fuels treatments on sensitive plants would be similar to those under Alternative A, and the long-term impacts of fire exclusion from focal sagebrush habitats on sensitive plants would be similar to those of Alternative B.

Cumulative Effects

Under Alternative E2, management actions associated with fire and fuels would increase protection of GRSG habitat. Though such management could result in some negative impacts to sensitive plants, their overall effects would be expected to be neutral or beneficial. Therefore, the direct and indirect effects of fire and fuels management on GRSG habitat in Management Zone IV under Alternative E2 when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Invasive Plants

Direct and Indirect Effects

Like most of the other alternatives, Alternative E2 would include conservation measures to address invasive plants. Under Alternative E2, land managers would respond aggressively to new infestations to keep invasive species from spreading. Every effort would be made to identify and treat new infestations before they became larger problems. Additionally, containment of known infestations in or near sagebrush habitats would be a high priority for all land management, and vegetation management tools described above for *Fire and Fuels* and below for *Livestock Grazing* would help to reduce the general impacts of invasive plants on sensitive plants within GRSG habitat as described under Alternative A.

The actions under Alternative E2 would significantly reduce the level of impacts of invasive non-native plants on sensitive plants relative to Alternative A to levels similar to those under Alternative E1. Under Alternative E2, short-term impacts of invasive plant treatments and other restoration actions, particularly those that involved mechanized equipment or the use of herbicides, could negatively impact individual sensitive plants (for example, by crushing or herbicide drift). Such impacts would be expected to be minimal as project-level environmental review would be done and appropriate avoidance or minimization measures would be incorporated.

Cumulative Effects

Under Alternative E2, current invasive non-native plant treatments within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. Additional measures to conserve existing sagebrush habitat under Alternative E2 would provide further long-term benefits to sensitive plants within GRSG habitat. Therefore, the direct and indirect effects of invasive species management on sensitive plants in Management Zone IV under Alternative E2 when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Conifer Encroachment

Direct and Indirect Effects

Similar to Alternative E1, Alternative E2 includes a habitat restoration and vegetation management conservation measure specific to conifer encroachment that would aggressively



remove encroaching conifers and other plant species to expand GRSG habitat where possible. In comparison, however, Alternative D would address conifer encroachment as part of several restoration and fire suppression conservation measures and over a larger area. The types of impacts on sensitive plants from conifer encroachment and associated management actions under Alternative E2 would be similar to those described under Alternative A. Collectively, elements of Alternative E2 that address conifer encroachment would likely reduce the magnitude of the negative impacts of conifer encroachment on sensitive plants relative to Alternative A. In contrast, negative impacts associated with conifer encroachment management actions under Alternative E2 would be expected to increase relative to Alternatives A, B, and C because Alternative E2 would prioritize conifer removal. However, the negative impacts of conifer encroachment management on sensitive plants would be minimized by project-specific NEPA review and the incorporation of avoidance and/or minimization measures.

Cumulative Effects

Under Alternative E2, current management of conifer encroachment within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, though the alternative also would incorporate conservation measures protective of GRSG habitat. Management of conifer encroachment and associated conservation measures would be expected to have an overall neutral or beneficial long-term effect on sensitive plants. Therefore, the direct and indirect effects of conifer encroachment management on sensitive plants in Management Zone IV under Alternative E2 when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Livestock Grazing

Direct and Indirect Effects

Alternative E2 would continue to make GRSG priority and general habitat available for livestock grazing. Should site-specific concerns be raised about the effect of grazing upon GRSG habitat, and such effects be documented over a sufficiently long time-frame, corrective management actions would be addressed through the application of BMPs. Incompatible grazing strategies would be addressed through established rangeland management practices consistent with the maintenance or enhancement of habitat. GRSG seasonal habitat requirements would be considered when managing sagebrush rangelands. Water developments would be designed to enhance mesic habitat for use by GRSG and maintain adequate vegetation in wet meadows. Within priority habitat, GRSG stipulations would take precedence over stipulations for other species if conflicts occurred, if otherwise allowable by law. New infestations of invasive exotic plants would be responded to aggressively to prevent their spread. Overall, measures associated with livestock grazing under Alternative E2 would probably be less protective of GRSG and GRSG habitat than those under Alternatives B, C, D or F.

Although the types of impacts on sensitive plants would be expected to be the same under Alternative E2 as described under Alternative A, the level and extent of negative impacts would likely be slightly reduced under Alternative E2. Sensitive plants that occur within GRSG habitat could benefit from improving habitat conditions. Relative to Alternative B,

Alternative E2 would focus less management on riparian areas, meadows, and other wetlands, so sensitive plant species in those habitats would be expected to experience fewer beneficial effects under Alternative E2 than under Alternative B.

Cumulative Effects

Under Alternative E2, livestock grazing would continue to be managed through existing grazing plans within Management Zone IV (refer to Chapter 5 of the DEIS), and additional measures to conserve existing sagebrush habitat under Alternative E2 could reduce negative impacts on sensitive plants that occurred within GRSG habitat. Therefore, the direct and indirect effects of livestock grazing on sensitive plants in Management Zone IV under Alternative E2 when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Energy Development

Direct and Indirect Effects

Under Alternative E2, priority habitat would be considered suitable for further coal leasing and the extraction of coal through underground mining. priority and general habitat that is not already withdrawn or proposed for withdrawal would be available for locatable mineral entry. priority habitat would be open to mineral materials and oil and gas leasing and would be an avoidance area for wind energy development, although it would not be precluded. All of the aforementioned forms of energy development, as well as non-energy leasable mineral lands, solid mineral exploration and geophysical exploration activities, would be subject to the following stipulations, as well as BMPs accepted by industry and state and federal agencies: new permanent disturbance, including structures, fences, and buildings should not be located within the occupied lek itself; permanent disturbance should not be allowed within 1 mile of an occupied lek, unless it is not visible to the GRSG using the lek; time-of-day (when the lek is active) and seasonal stipulations applying to specific habitats would be applied and based on site-specific conditions, in coordination with the local UDWR biologist; disturbance in priority habitat would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance in priority habitat were not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided.

All existing fluid mineral uses are explicitly recognized by this alternative and would not be affected by the implementation of this alternative. The GRSG conservation measures identified in the associated NEPA documents for each of these projects would continue to be implemented to protect GRSG and its habitat. Provisions of this alternative would not be added to the measures identified each specific project.

GRSG habitat outside priority habitat would not be managed for the conservation of the species as no specific management actions would be provided for this habitat. Similar to Alternative E1, impacts on GRSG from energy development activities under Alternative E2 would essentially continue as described in Alternative A, although somewhat reduced by the application of BMPs.



The types of impacts on sensitive plants from energy development under Alternative E2 would be the same as described above under Alternatives A and B, though their magnitude and spatial distribution would differ. Measures associated with energy development under Alternative E2 would be likely to reduce the impacts of energy development on sensitive plants relative to Alternative A, but would not reduce them as much as other alternatives.

Cumulative Effects

Under Alternative E2, some of the current energy development would continue within Management Zone IV; however, additional measures would conserve existing sagebrush habitat. Therefore, the direct and indirect effects on sensitive plants in GRSG habitat in Management Zone IV from the management actions associated with energy development under Alternative E2, which would minimize negative impacts to sensitive plants in priority habitat, when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Recreation

Direct and Indirect Effects

Alternative E2 would limit or reduce impacts from recreational activities by preventing new permanent disturbance, including structures, fences, and buildings, within occupied leks or within 1 mile of an occupied lek, unless it were not visible to the GRSG using the lek. Within priority habitat the following measures would be implemented: disturbance would be avoided, if possible, or minimized by locating development in habitat of the least importance if avoidance were not possible, and project proponents would have to demonstrate why avoidance would not be possible; cumulative new permanent disturbance would not be allowed to exceed 5% of surface area; and barriers to migration, if applicable, would be avoided. Alternative E2 has the potential to be more protective of GRSG and GRSG habitat than any of the other alternatives because measures to reduce impacts would apply to all recreational activities as opposed to only SUAs or camping.

The types of recreation-related impacts under Alternative E2 would be the same as described above for Alternative A; however, measures incorporated under Alternative E2 would reduce the level of impacts relative to Alternative A and all other alternatives.

Cumulative Effects

Under Alternative E2, some of the current recreation management direction would continue within Management Zone IV; however, additional measures would increase protection of Greater Sage-Grouse habitat and minimize the negative impacts of recreation on sensitive plants that occur in those areas. As a result, recreation management in Management Zone IV under Alternative E2 when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plant species.

Alternative F

Infrastructure

Direct and Indirect Effects

Alternative F would be similar to Alternative B with regard to infrastructure. Alternative F would treat PPH as an exclusion area for new ROWs, with some exceptions. Within existing ROWs, new ROWs could be authorized if the entire footprint of the proposed project could be contained within the disturbance associated with the existing ROW. If existing roads could not be used to access current rights that are not yet developed, new road construction would be permitted if the associated disturbance combined with the total disturbance in the priority habitat area did not exceed 3%. Like Alternative B, Alternative F would promote the burial of utility lines in PPH.

Under Alternative F, infrastructure related impacts on sensitive plant species could include direct mortality, loss or degradation of habitat, and loss or reduction of pollinators. The extent of these impacts would be expected to be less overall than under Alternative A and similar to those under Alternative B. Such impacts would be avoided or minimized because infrastructure projects would undergo site specific environmental review, including NEPA, and conservation measures or design features would be applied for sensitive plants. Under Alternative F, sensitive plants within PPH would likely experience a net benefit and sensitive plants outside PPH would likely experience little change in direct or indirect effects.

Cumulative Effects

The cumulative effects of infrastructure management actions under Alternative F when combined with the past, present and reasonably foreseeable future actions would be similar to those described for Alternative B and would not be expected to substantially increase negative impacts on sensitive plants within Management Zone IV. (Please refer to *Infrastructure* under Alternative B above and Chapter 5 of the DEIS.)

Fire and Fuels

Direct and Indirect Effects

Because fire and fuels management under Alternative F would be essentially the same as under Alternative B, the types of fire and fuels related impacts of Alternative F on sensitive plants would be the same as those discussed above for Alternative B. Under Alternative F, sensitive plant species requiring mature sagebrush would be expected to benefit from fire and fuels activities, and sagebrush species that require early successional sagebrush and those that are fire adapted or fire dependent may experience a reduction in suitable habitat over time. With its emphasis on minimizing fire in mature sagebrush, impacts on sensitive plants from suppression would be higher under Alternative F than under Alternative A. Because reseeding efforts would prioritize use of native seed in GRSG habitat over other areas in years of short seed supplies, sensitive plants in areas outside GRSG habitat could be more susceptible to habitat degradation from wildfire if limited seed availability reduced revegetation success outside GRSG habitat.



Elements of Alternative F that differ from those of Alternative B and could lead to differences in the extent of direct and indirect beneficial and negative impacts on sensitive plants between the two alternatives include the following: (1) excluding livestock grazing from burned areas in GRSG occupied habitat until woody and herbaceous plants achieve GRSG habitat objectives; and (2) applying fuels management provisions (including post-fire revegetation and invasive species control) to all occupied habitat rather than limiting them to PPH. These differences would decrease the negative effects of grazing on sensitive plants in burned areas and increase the impacts on sensitive plants in treatment areas. As discussed in the previous paragraph, impacts to sensitive plants in treatment areas could be positive or negative, depending on their habitat requirements. Overall, the difference in impacts on sensitive plants between Alternatives B and F would likely be negligible because the differences between fire and fuels management under the two alternatives would be minimal.

Cumulative Effects

The cumulative effects of fire and fuels management actions under Alternative F when combined with the past, present and reasonably foreseeable future actions would be similar to those described for Alternative B and would not be expected to substantially increase negative impacts on sensitive plants within Management Zone IV. (Please refer to *Fire and Fuels* under Alternative B above and Chapter 5 of the DEIS.)

Invasive Plants

Direct and Indirect Effects

Like Alternative B, Alternative F generally would follow existing direction for invasive species control. However, Alternative F would include the following additional measures: (1) monitor and control invasive vegetation in treated, burned, or restored sagebrush steppe; (2) restrict activities in GRSG habitat that facilitate the spread of invasive plants; (3) in GRSG habitat, ensure that soil cover and native herbaceous plants are at their ecological potential to help protect against invasive plants; and (4) develop and implement methods for prioritizing and restoring sagebrush steppe invaded by non-native plants. Like Alternative B, vegetation management under Alternative F would prioritize restoration of GRSG habitats, which would be expected to provide a long-term benefit to sensitive plants that occur in those habitats. Under Alternative F, short-term impacts of invasive plant treatments and other restoration actions, particularly those that involve mechanized equipment or the use of herbicides, could negatively impact individual sensitive plants (for example, by crushing or herbicide drift). Such impacts would be expected to be minimal as project level environmental review would be done and appropriate avoidance or minimization measures would be incorporated.

Under Alternative F, the use of native seed would be required for reseeded of closed roads, primitive roads, and trails. The use of native seed would be favored in other types of restoration under Alternative F, as it would be under Alternative B. Current FS policy (FSM 2070.3) already restricts the use of non-native seed in restoration and prohibits the use of invasive species, so the impact of the native seed emphasis for restoration in Alternative F is unlikely to result in a measurable additional benefit to sensitive plant species over Alternatives A or B. Monitoring and invasive species control after fuels treatments and at

existing range improvements incorporated into Alternative F could benefit sensitive plant species by minimizing habitat degradation caused by invasive species. Overall, Alternative F would be likely to reduce impacts of invasive non-native plants on sensitive plants relative to Alternative A and may provide a marginal benefit over Alternative B.

Cumulative Effects

Under Alternative F, current invasive species management within Management Zones IV (refer to Chapter 5 of the DEIS) would continue, and the long-term beneficial impacts of improved habitat conditions would continue to outweigh the short-term negative impacts of these activities on sensitive plants. Additional measures to conserve existing sagebrush habitat under Alternative F would provide a further net benefit to sensitive plants within GRSG habitat. Therefore, the direct and indirect effects of invasive species management to Greater Sage-Grouse in Management Zone IV under Alternative F when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Conifer Encroachment

Direct and Indirect Effects

Like Alternatives A and B, Alternative F does not directly address conifer encroachment. The types of impacts of conifer encroachment on sensitive plants under Alternative F would be expected to be the same as those under Alternative A. Although the types of impacts would be the same, the conservation measures described above in *Invasive Plants* and the fuels treatments described above in *Fire and Fuels* would likely reduce the magnitude of the impacts on sensitive plants associated with conifer encroachment relative to Alternative A and could provide an additional reduction in the magnitude of impacts on sensitive plants from conifer encroachment relative to Alternative B.

Cumulative Effects

Under Alternative F, current management of conifer encroachment within Management Zone IV (refer to Chapter 5 of the DEIS) would continue, though the alternative also would incorporate conservation measures protective of GRSG habitat. Management of conifer encroachment and associated conservation measures would be expected to have an overall neutral or beneficial effect on sensitive plants. Therefore, the direct and indirect effects of conifer encroachment management on sensitive plants in Management Zone IV under Alternative F when combined with past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Livestock Grazing

Direct and Indirect Effects

Like Alternative B, Alternative F would incorporate sage grouse habitat objectives and sage grouse management considerations into livestock grazing management, but Alternative F would extend those to all occupied habitat rather than limiting them to PPH. Actions that would be expected to directly or indirectly impact sensitive plants include completion of range condition assessments, consideration of grazing methods and systems to reduce

impacts on occupied GRSG habitat, modification of grazing systems in occupied GRSG habitat to meet seasonal sage grouse habitat requirements, improved management of riparian areas and wet meadows in occupied GRSG habitat, evaluation of existing introduced perennial grass seedings in occupied GRSG habitat, prohibiting new water developments in occupied GRSG, avoiding new structural range improvements in occupied GRSG habitat unless studies show they benefit GRSG, incorporation of BMPs for West Nile Virus, and fence removal. Additional actions in Alternative F that entail more than an extension of Alternative B actions to all occupied habitat include excluding livestock grazing from burned areas until woody and herbaceous plants achieve GRSG habitat objectives, closing the entire allotment if burned GRSG habitat could not be fenced from unburned habitat, and increasing monitoring of vegetation treatments.

The types of impacts on sensitive plants from livestock grazing management under Alternative F would be expected to be the same as under Alternatives A, B, and F. Overall, the level and extent of negative impacts would be expected to be reduced in Alternative F. Sensitive plants that occur in occupied GRSG would likely benefit from improving habitat conditions in uplands, riparian areas, meadows, and other wetlands. Almost half of the sensitive plant species in Table 2 occur in riparian areas, meadows, seeps, springs, and other wetland areas, which tend to be used more intensively by livestock than upland areas. Because of these factors and the focus of Alternative F on improving riparian, meadow, and other wetland habitat throughout occupied GRSG habitat, sensitive wetland plant species may benefit from Alternative B more than upland species.

Cumulative Effects

Under Alternative F, livestock grazing would continue to be managed through existing grazing plans within Management Zone IV (refer to Chapter 5 of the DEIS), and wild horse and burro territories would be managed for Appropriate Management Level. Additional measures to conserve existing sagebrush habitat under Alternative F would further minimize potential negative impacts of grazing on sensitive plants within GRSG habitat. Therefore, the direct and indirect effects of livestock grazing on sensitive plants in Management Zone IV under Alternative F when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants.

Energy Development

Direct and Indirect Effects

Alternative F would be similar to Alternative B with regard to energy development. The types of impacts on sensitive plants under Alternative F would be the same as described above under Alternatives A and B, though their magnitude and spatial distribution would differ. Actions under Alternative F relevant to the analysis of impacts on sensitive plants include the following: closing PPH to new fluid mineral leasing with possible exceptions; allowing geophysical operations only to obtain information about areas outside and adjacent to PPH; requiring exploratory operations within PPH to be done using helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other applicable restrictions; prohibiting new surface occupancy on federal leases within PPH; for existing leases entirely within PPH, applying NSO buffers around leks, and if the entire lease falls

within this buffer, limiting disturbances within sections to a 3% disturbance threshold; applying BMPs to limit the impact of operations; and applying BMPs to improve reclamation standards and successfully restore PPH. All of these actions would be likely to reduce the level of impacts of fluid mineral development on sensitive plants relative to Alternative A.

Unlike Alternative B, Alternative F directly addresses wind energy development by prohibiting it in PPH and requiring it to be sited at least five miles from active sage grouse leks. This could reduce negative impacts associated with wind energy development on sensitive plants that occur in PPH relative to Alternatives A and B.

Cumulative Effects

Under Alternative F, measures to conserve occupied sagebrush habitat would be applied to energy development within Management Zone IV, which would provide an overall benefit to sensitive plant species that occur there. As a result, the direct and indirect effects of energy development on sensitive plants in Management Zone IV under Alternative F when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants (refer to Chapter 5 of the DEIS).

Recreation

Direct and Indirect Effects

Alternative F would take a similar approach to recreation management as Alternative B. Within PPH, Alternative F would allow Recreation Special Use Authorizations (RSUAs) that were neutral or beneficial to GRSG, limit opportunities for road construction, apply minimum standards to roads, and limit the upgrading of existing roads. In addition, Alternative F would seasonally close camping and other non-motorized recreation within 4 miles of active GRSG leks. Although the types of impacts on sensitive plants would be similar under Alternatives A, B, and F, the degree and extent of impacts would be reduced under Alternatives F and B relative to Alternative A. The types of impacts that would be expected to decrease would include direct mortality from crushing or trampling individuals, negative impacts associated with dust generation, habitat degradation associated with soil compaction and changes in hydrology, and negative impacts associated with spread of invasive non-native species.

Cumulative Effects

Management actions associated with recreation under Alternative F would increase conservation of Greater Sage-Grouse habitat in Management Zone IV within PPH and, in some instances, PGH and PPH, and minimize the negative impacts of recreation on sensitive plants that occur in those areas. As a result, the direct and indirect effects of recreation on sensitive plants in Management Zone IV under Alternative F when combined with the past, present and reasonably foreseeable future actions would not substantially increase negative impacts on sensitive plants (refer to Chapter 5 of the DEIS).



N.8 Recommended Conservation Measures to Avoid, Minimize, or Mitigate Adverse Effects

No additional conservation measures have been identified at this time.

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Appendix O

List of Wildlife Species within the BLM Dillon Field Office, Montana



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List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Birds							
American Dipper	<i>Cinclus mexicanus</i>	G5	S5		Native	Resident Year Round	Riparian conifer forest
American Kestrel	<i>Falco sparverius</i>	G5	S5		Native	Resident Year Round	Grasslands
American Redstart	<i>Setophaga ruticilla</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian forest
Bald Eagle	<i>Haliaeetus leucocephalus</i>	G5	S4	SSS	Native	Resident Year Round	Riparian forest
Bank Swallow	<i>Riparia riparia</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian / stream banks
Barn Owl	<i>Tyto alba</i>	G5	S4		Native	Resident Year Round	Sagebrush grassland
Barred Owl	<i>Strix varia</i>	G5	S4		Native	Resident Year Round	Conifer forest
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Riparian forest
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	G5	S4B		Native	Migratory Summer Breeder	Riparian forest
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian forest
Blackpoll Warbler	<i>Setophaga striata</i>	G5	SNA		Native	Common Migrant	Riparian shrub
Bobolink	<i>Dolichonyx oryzivorus</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Moist grasslands
Bohemian Waxwing	<i>Bombycilla garrulus</i>	G5	S5N		Native	Migratory Winter Resident	Open conifer forest
Boreal Owl	<i>Aegolius funereus</i>	G5	S3S4	PSOC	Native	Resident Year Round	Conifer forest
Brewer's Sparrow	<i>Spizella breweri</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Sagebrush
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	G5	S4B	PSOC	Native	Migratory Summer Breeder	Montane shrublands / woodlands
Broad-winged Hawk	<i>Buteo platypterus</i>	G5	SNA		Native	Uncommon Migrant	Riparian forest
Brown-headed Cowbird	<i>Molothrus ater</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands

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Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Bullock's Oriole	<i>Icterus bullockii</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian forest
Burrowing Owl	<i>Athene cunicularia</i>	G4	S3B	SOC	Native	Migratory Summer Breeder	Grasslands
Calliope Hummingbird	<i>Selasphorus calliope</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
Cape May Warbler	<i>Setophaga tigrina</i>	G5	SNA		Native	Uncommon Migrant	Conifer forest
Cassin's Finch	<i>Haemorhous cassinii</i>	G5	S3	SOC	Native	Resident Year Round	Drier conifer forest
Cassin's Vireo	<i>Vireo cassinii</i>	G5	S4B		Native	Migratory Summer Breeder	Conifer forest
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	G5	S2B	SOC	Native	Migratory Summer Breeder	Grasslands
Chipping Sparrow	<i>Spizella passerina</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
Chukar	<i>Alectoris chukar</i>	G5	SNA		Exotic	Resident Year Round	Shrub grassland
Clark's Nutcracker	<i>Nucifraga columbiana</i>	G5	S3	SOC	Native	Resident Year Round	Conifer forest
Clay-colored Sparrow	<i>Spizella pallida</i>	G5	S4B		Native	Migratory Summer Breeder	Shrubland / riparian edge
Common Nighthawk	<i>Chordeiles minor</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	G5	S4B	PSOC	Native	Migratory Summer Breeder	Shrub grassland
Common Yellowthroat	<i>Geothlypis trichas</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian shrub
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	G5	S4B		Native	Migratory Summer Breeder	Riparian forest
Downy Woodpecker	<i>Picoides pubescens</i>	G5	S5		Native	Resident Year Round	Riparian forest
Dusky Flycatcher	<i>Empidonax oberholseri</i>	G5	S5B		Native	Migratory Summer Breeder	Shrubland
Dusky Grouse	<i>Dendragapus obscurus</i>	G5	S4		Native	Resident Year Round	Dry conifer forest

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Eastern Kingbird	<i>Tyrannus tyrannus</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	G5	S3	SOC	Native	Resident Year Round	Conifer forest
Ferruginous Hawk	<i>Buteo regalis</i>	G4	S3B	SOC	Native	Migratory Summer Breeder	Sagebrush grassland
Flammulated Owl	<i>Otus flammeolus</i>	G4	S3B	SOC	Native	Migratory Summer Breeder	Dry conifer forest
Golden Eagle	<i>Aquila chrysaetos</i>	G5	S3	SOC	Native	Resident Year Round	Grasslands
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	G5	S4B		Native	Migratory Summer Breeder	Grasslands
Gray Catbird	<i>Dumetella carolinensis</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian shrub
Gray Flycatcher	<i>Empidonax wrightii</i>	G5	S4B		Native	Migratory Summer Breeder	Sagebrush
Gray Jay	<i>Perisoreus canadensis</i>	G5	S5		Native	Resident Year Round	Conifer forest
Gray Partridge	<i>Perdix perdix</i>	G5	SNA		Exotic	Resident Year Round	Grasslands
Great Blue Heron	<i>Ardea herodias</i>	G5	S3	SOC	Native	Resident Year Round	Riparian forest
Great Gray Owl	<i>Strix nebulosa</i>	G5	S3	SOC	Native	Resident Year Round	Conifer forest
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>	G3G4	S2	SOC	Native	Resident Year Round	Sagebrush
Green-tailed Towhee	<i>Pipilo chlorurus</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Shrub woodland
Hammond's Flycatcher	<i>Empidonax hammondi</i>	G5	S4B		Native	Migratory Summer Breeder	Riparian conifer forest
Harris's Sparrow	<i>Zonotrichia querula</i>	G5	SNA		Native	Common Migrant	Conifer shrub
Hermit Thrush	<i>Catharus guttatus</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
Horned Lark	<i>Eremophila alpestris</i>	G5	S5		Native	Resident Year Round	Grasslands
Killdeer	<i>Charadrius vociferus</i>	G5	S5B		Native	Resident Year Round	Riparian forest
Lapland Longspur	<i>Calcarius lapponicus</i>	G5	SNA		Native	Migratory Winter Resident	Open fields

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Lark Bunting	<i>Calamospiza melanocorys</i>	G5	S4B		Native	Migratory Summer Breeder	Sagebrush grassland
Lark Sparrow	<i>Chondestes grammacus</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Lazuli Bunting	<i>Passerina amoena</i>	G5	S4B		Native	Migratory Summer Breeder	Riparian shrub
Least Flycatcher	<i>Empidonax minimus</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian forest
Lewis's Woodpecker	<i>Melanerpes lewis</i>	G4	S2B	SOC	Native	Migratory Summer Breeder	Riparian forest
Loggerhead Shrike	<i>Lanius ludovicianus</i>	G4	S3B	SOC	Native	Migratory Summer Breeder	Shrubland
Long-billed Curlew	<i>Numenius americanus</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Grasslands
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	G5	S5B		Native	Migratory Summer Breeder	Shrub woodland
Magnolia Warbler	<i>Setophaga magnolia</i>	G5	SNA		Native	Uncommon Migrant	Conifer forest
Marbled Godwit	<i>Limosa fedoa</i>	G5	S4B		Native	Migratory Summer Breeder	Grasslands
McCown's Longspur	<i>Rhynchophanes mccownii</i>	G4	S3B	SOC	Native	Migratory Summer Breeder	Grasslands
Mountain Plover	<i>Charadrius montanus</i>	G3	S2B	SOC	Native	Migratory Summer Breeder	Grasslands
Northern Harrier	<i>Circus cyaneus</i>	G5	S4B		Native	Resident Year Round	Grasslands
Northern Hawk Owl	<i>Surnia ulula</i>	G5	S3	SOC	Native	Resident Year Round	Conifer forest
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	G4G5	S4		Native	Resident Year Round	Conifer forest
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	G5	S4		Native	Resident Year Round	Conifer forest
Northern Shrike	<i>Lanius excubitor</i>	G5	S5N		Native	Migratory Winter Resident	Open shrubland

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Olive-sided Flycatcher	<i>Contopus cooperi</i>	G4	S4B		Native	Migratory Summer Breeder	Early seral forest / shrub patches
Pine Grosbeak	<i>Pinicola enucleator</i>	G5	S5		Native	Resident Year Round	Conifer forest
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	G5	S3	SOC	Native	Resident Year Round	Open conifer forest
Prairie Falcon	<i>Falco mexicanus</i>	G5	S4		Native	Resident Year Round	Grasslands
Purple Finch	<i>Haemorhous purpureus</i>	G5	SNA		Native	Uncommon Migrant	Conifer forest
Purple Martin	<i>Progne subis</i>	G5	SNA		Native	Migratory Rare Summer Breeder	Open grasslands
Pygmy Nuthatch	<i>Sitta pygmaea</i>	G5	S4		Native	Resident Year Round	Conifer forest
Red Crossbill	<i>Loxia curvirostra</i>	G5	S5		Native	Resident Year Round	Conifer forest
Red-eyed Vireo	<i>Vireo olivaceus</i>	G5	S4B		Native	Migratory Summer Breeder	Riparian forest
Ring-necked Pheasant	<i>Phasianus colchicus</i>	G5	SNA		Exotic	Resident Year Round	Shrub grassland
Ruby-crowned Kinglet	<i>Regulus calendula</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
Rufous Hummingbird	<i>Selasphorus rufus</i>	G5	S4B	PSOC	Native	Migratory Summer Breeder	Riparian shrub
Sage Sparrow	<i>Artemisiospiza belli</i>	G5	S3B	SOC	Native	Migratory Rare Summer Breeder	Sagebrush
Sage Thrasher	<i>Oreoscoptes montanus</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Sagebrush
Sandhill Crane	<i>Grus canadensis</i>	G5	S5B,S2N		Native	Migratory Summer Breeder	Wet meadows
Savannah Sparrow	<i>Passerculus sandwichensis</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	G5	S1,S4	SOC	Native	Resident Year Round	Shrub grassland
Short-eared Owl	<i>Asio flammeus</i>	G5	S4	PSOC	Native	Resident Year Round	Grasslands
Snow Bunting	<i>Plectrophenax nivalis</i>	G5	S5N		Native	Migratory Winter Resident	Open fields

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Song Sparrow	<i>Melospiza melodia</i>	G5	S5B		Native	Resident Year Round	Riparian shrub
Spotted Towhee	<i>Pipilo maculatus</i>	G5	S5B		Native	Migratory Summer Breeder	Shrubland / riparian edge
Sprague's Pipit	<i>Anthus spragueii</i>	G4	S3B	SOC	Native	Migratory Summer Breeder	Grasslands
Spruce Grouse	<i>Falcapennis canadensis</i>	G5	S4		Native	Resident Year Round	Conifer forest
Steller's Jay	<i>Cyanocitta stelleri</i>	G5	S5		Native	Resident Year Round	Conifer forest
Swainson's Hawk	<i>Buteo swainsoni</i>	G5	S4B		Native	Migratory Summer Breeder	Sagebrush grassland
Townsend's Solitaire	<i>Myadestes townsendi</i>	G5	S5		Native	Resident Year Round	Open conifer forest
Veery	<i>Catharus fuscescens</i>	G5	S3B	SOC	Native	Migratory Summer Breeder	Riparian forest
Vesper Sparrow	<i>Poocetes gramineus</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Violet-green Swallow	<i>Tachycineta thalassina</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
Warbling Vireo	<i>Vireo gilvus</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian shrub
Western Bluebird	<i>Sialia mexicana</i>	G5	S4B		Native	Migratory Summer Breeder	Shrub woodland
Western Kingbird	<i>Tyrannus verticalis</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Western Meadowlark	<i>Sturnella neglecta</i>	G5	S5B		Native	Migratory Summer Breeder	Grasslands
Western Screech-Owl	<i>Megascops kennicottii</i>	G5	S3S4	PSOC	Native	Resident Year Round	Riparian forest
Western Tanager	<i>Piranga ludoviciana</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
White-throated Sparrow	<i>Zonotrichia albicollis</i>	G5	SNA		Native	Common Migrant	Conifer forest
White-winged Crossbill	<i>Loxia leucoptera</i>	G5	S4		Native	Resident Year Round	Conifer forest

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Willet	<i>Tringa semipalmata</i>	G5	S4B		Native	Migratory Summer Breeder	Grasslands
Willow Flycatcher	<i>Empidonax traillii</i>	G5	S4B		Native	Migratory Summer Breeder	Riparian shrub
Wilson's Snipe	<i>Gallinago delicata</i>	G5	S5		Native	Migratory Summer Breeder	Wet meadows
Wilson's Warbler	<i>Cardellina pusilla</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian shrub
Yellow Warbler	<i>Setophaga petechia</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian shrub
Yellow-breasted Chat	<i>Icteria virens</i>	G5	S5B		Native	Migratory Summer Breeder	Riparian shrub
Yellow-rumped Warbler	<i>Setophaga coronata</i>	G5	S5B		Native	Migratory Summer Breeder	Conifer forest
Yellow-rumped Warbler (Audubon's)	<i>Setophaga coronata auduboni</i>	G5T5	S5B		Native	Now under Yellow-rumped Warbler at species level	Conifer forest
Mammals							
American Mink	<i>Mustela vison</i>	G5	S5		Native	Resident Year Round	Riparian forest
Badger	<i>Taxidea taxus</i>	G5	S4		Native	Resident Year Round	Sagebrush grassland
Black Bear	<i>Ursus americanus</i>	G5	S5		Native	Resident Year Round	Conifer forest
Black-tailed Jack Rabbit	<i>Lepus californicus</i>	G5	SU	PSOC	Native	Resident Year Round	Sagebrush grassland
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	G4	S3	SOC	Native	Resident Year Round	Grasslands
Fringed Myotis	<i>Myotis thysanodes</i>	G4	S3	SOC	Native	Migratory Summer Breeder	Riparian and dry mixed conifer forests
Great Basin Pocket Mouse	<i>Perognathus parvus</i>	G5	S3	SOC	Native	Resident Year Round	Sagebrush grassland
Grizzly Bear	<i>Ursus arctos</i>	G4	S2S3	SOC	Native	Resident Year Round	Conifer forest
Heather Vole	<i>Phenacomys intermedius</i>	G5	S4		Native	Resident Year Round	Open conifer forest

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Hoary Bat	<i>Lasiurus cinereus</i>	G5	S3	SOC	Native	Migratory Summer Breeder	Riparian and forest
Long-legged Myotis	<i>Myotis volans</i>	G5	S4		Native	Resident Year Round	Conifer forest
Meadow Vole	<i>Microtus pennsylvanicus</i>	G5	S5		Native	Resident Year Round	Wet meadows
Merriam's Shrew	<i>Sorex merriami</i>	G5	S3	SOC	Native	Resident Year Round	Sagebrush grassland
Mountain Cottontail	<i>Sylvilagus nuttallii</i>	G5	S4		Native	Resident Year Round	Sagebrush / willow / riparian
Mule Deer	<i>Odocoileus hemionus</i>	G5	S5		Native	Resident Year Round	Montane shrublands / woodlands
Northern Bog Lemming	<i>Synaptomys borealis</i>	G5	S2	SOC	Native	Resident Year Round	Conifer forest wetland
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	G5	S4		Native	Resident Year Round	Conifer forest
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>	G5	S4		Native	Resident Year Round	Sagebrush grassland
Preble's Shrew	<i>Sorex preblei</i>	G4	S3	SOC	Native	Resident Year Round	Sagebrush grassland
Pronghorn	<i>Antilocapra americana</i>	G5	S5		Native	Resident Year Round	Grasslands
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	G4	S3	SOC	Native	Resident Year Round	Sagebrush
Richardson's Ground Squirrel	<i>Urocitellus richardsonii</i>	G5	S5		Native	Resident Year Round	Grasslands
Sagebrush Vole	<i>Lemmyscus curtatus</i>	G5	S4		Native	Resident Year Round	Sagebrush
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	G5	S4	PSOC	Native	Migratory Summer Breeder	Riparian and forest
Snowshoe Hare	<i>Lepus americanus</i>	G5	S4		Native	Resident Year Round	Conifer forest
Western Spotted Skunk	<i>Spilogale gracilis</i>	G5	SU	PSOC	Native	Resident Year Round	Riparian shrub
White-tailed Jack Rabbit	<i>Lepus townsendii</i>	G5	S4		Native	Resident Year Round	Grasslands

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
Wyoming Ground Squirrel	<i>Urocitellus elegans</i>	G5	S3S4	PSOC	Native	Resident Year Round	Open habitat / sage grasslands / montane meadows
Yellow-pine Chipmunk	<i>Tamias amoenus</i>	G5	S5		Native	Resident Year Round	Dry conifer shrub
Amphibian/Reptiles							
Boreal Chorus Frog	<i>Pseudacris maculata</i>	G5	S4		Native	Resident Year Round	Marshes, ponds, small lakes, wet meadows
Eastern Racer	<i>Coluber constrictor</i>	G5	S5		Native	Resident Year Round	Sagebrush grassland
Gophersnake	<i>Pituophis catenifer</i>	G5	S5		Native	Resident Year Round	Sagebrush grassland
Prairie Rattlesnake	<i>Crotalus viridis</i>	G5	S4		Native	Resident Year Round	Sagebrush grassland
Invertebrates							
Gillette's Checkerspot	<i>Euphydryas gillettii</i>	G3	S2	SOC	Native	Resident Year Round	Wet meadows
Mormon Metalmark	<i>Apodemia mormo</i>	G5	S3S5	PSOC	Native	Resident Year Round	Sagebrush / grasslands

Source: MTNHP (Montana Natural Heritage Program). 2013. Species Survey Status Summary. April 8, 2013.

¹ G Rank: Global Rank

² S Rank: State Rank

Definitions:

G1/S1 -- At high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.

G2/S2 -- At risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state.

G3/S3 -- Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.

G4/S4 -- Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining.

G5/S5 -- Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.

GX/SX -- Presumed Extinct or Extirpated - Species is believed to be extinct throughout its range or extirpated in Montana. Not located despite intensive searches of historical sites and other appropriate habitat, and small likelihood that it will ever be rediscovered.

GH/SH -- Historical, known only from records usually 40 or more years old; may be rediscovered.

GNR/SNR -- Not Ranked as of yet.

GU/SU -- Unrankable - Species currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

GNA/SNA -- A conservation status rank is not applicable for one of the following reasons: 1) The taxa is of Hybrid Origin; is Exotic or Introduced; is Accidental or 2) is Not Confidently Present in the state.

³ SOC: Species of concern

List of Wildlife Species within the BLM Dillon Field Office, Montana

Common Name	Scientific Name	G Rank ¹	S Rank ²	SOC ³	Origin	Distribution Status	Habitat
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Definitions:

SOC – Species of Concern

PSOC – Potential Species of Concern

SSS – Special Status Species

Appendix P

Special Status Species List



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Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Mammals					
Northern Idaho Ground Squirrel <i>Spermophilus brunneus brunneus</i>	ESA Threatened	X	X	N	Occurs outside the range of greater sage grouse.
Grizzly Bear <i>Ursus arctos horribilis</i>	ESA Threatened	X	X	Y	Uses sagebrush habitat.
Canada Lynx <i>Lynx canadensis</i>	ESA Threatened	X	X	Y	Sagebrush habitat provides connectivity between the primary habitats.
Wolverine <i>Gulo gulo luscus</i>	ESA Proposed	X	X	N	Uses forest and high elevation habitat.
Southern Idaho Ground Squirrel <i>Spermophilus brunneus endemicus</i>	ESA Candidate	X	X	Y	Uses sagebrush habitat.
Gray wolf <i>Canis lupus</i>	BLM & FS Sensitive	X	X	Y	Uses sagebrush habitat.
Pygmy rabbit <i>Brachylagus idahoensis</i>	BLM & FS Sensitive	X	X	Y	Uses sagebrush habitat.
Fringed myotis <i>Myotis thysanodes</i>	BLM Sensitive	X		N	Dependent primarily on cave and water habitat which will not be affected by the proposed action.
California myotis <i>Myotis californicus</i>	BLM Sensitive	X		N	Dependent primarily on cave and water habitat which will not be affected by the proposed action.
Long-eared myotis <i>Myotis evotis</i>	BLM Sensitive	X		N	Dependent primarily on forest habitat which will not be affected by the proposed action.
Long-legged myotis <i>Myotis volans</i>	BLM Sensitive	X		N	Dependent primarily on forest habitat which will not be affected by the proposed action.
Spotted bat <i>Euderma maculatum</i>	BLM Sensitive	X		N	Dependent primarily on cave and water habitat which will not be affected by the proposed action.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	BLM & FS Sensitive	X	X	N	Dependent primarily on cave and water habitat which will not be affected by the proposed action.
Piute ground squirrel <i>Spermophilus mollis artemisiae</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Fisher <i>Martes pennanti</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
California bighorn sheep <i>Ovis canadensis californiana</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Rocky Mountain bighorn sheep <i>Ovis canadensis</i>	FS Sensitive		X	Y	Uses sagebrush habitat.
Coast mole <i>Scapanus orarius</i>	BLM Sensitive	X		N	Occurs outside the range of greater sage grouse.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Cliff chipmunk <i>Tamias dorsalis</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Uinta chipmunk <i>Tamias umbrinus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Merriam's ground squirrel <i>Spermophilus canus vigilis</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Wyoming ground squirrel <i>Spermophilus elegans nevadensis</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Great Basin pocket mouse <i>Perognathus parvus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Little pocket mouse <i>Perognathus longimembris</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Dark kangaroo mouse <i>Microdipodops megacephalus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Northern bog lemming <i>Synaptomys borealis</i>	BLM Sensitive	X		N	Occurs outside the range of greater sage grouse.
Kit fox <i>Vulpes velox</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Black-footed ferret <i>Mustela nigripes</i>	FS Sensitive		X	N	Occurs outside the planning area boundary.
Birds					
Whooping crane <i>Grus americana</i>	ESA Endangered		X	N	Dependent on riparian habitat which will not be affected by the proposed action.
Yellow-billed cuckoo <i>Coccyzus americanus</i>	ESA Proposed	X	X	N	Dependent on riparian habitat which will not be affected by the proposed action.
Greater sage-grouse <i>Centrocercus urophasianus</i>	ESA Candidate	X	X	Y	Uses sagebrush habitat.
Bald eagle <i>Haliaeetus leucocephalus</i>	BLM & FS Sensitive	X	X	Y	Feeds on carrion found in sagebrush habitat.
Golden eagle <i>Aquila chrysaetos</i>	BLM Sensitive	X		Y	Forages in sagebrush habitat.
Upland sandpiper <i>Bartramia longicauda</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Long-billed curlew <i>Numenius americanus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Marbled godwit <i>Limosa fedoa</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
American white pelican <i>Pelecanus erythrorhynchos</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Harlequin duck <i>Histrionicus histrionicus</i>	BLM & FS Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Trumpeter swan <i>Cygnus buccinator</i>	BLM & FS Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Black-crowned night heron <i>Nycticorax nycticorax</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Franklin's gull <i>Larus pipixcan</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
White-faced ibis <i>Plegadis chibi</i>	BLM Sensitive	X		N	Dependent on riparian habitat which will not be affected by the proposed action.
Peregrine falcon <i>Falco peregrinus anatum</i>	BLM & FS Sensitive	X	X	Y	Uses sagebrush habitat.
Prairie falcon <i>Falco mexicanus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Northern goshawk <i>Accipiter gentilis</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Ferruginous hawk <i>Buteo regalis</i>	BLM Sensitive	X		Y	Uses sagebrush habitat. Also nests in areas of scattered juniper.
Swainson's hawk <i>Buteo swainsoni</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Columbia sharp-tailed grouse <i>Tympanuchus phasianellus columbianus</i>	BLM & FS Sensitive	X		Y	Uses sagebrush habitat.
Mountain quail <i>Oreortyx pictus</i>	BLM & FS Sensitive	X	X	Y	Uses sagebrush habitat.
Black tern <i>Chlidonias niger</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Flammulated owl <i>Otus flammeolus</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Boreal owl <i>Aegolius funereus</i>	FS Sensitive		X	N	Forest-dependent species.
Great gray owl <i>Strix nebulosa</i>	BLM Sensitive	X		N	Forest-dependent species.
Calliope hummingbird <i>Stellula calliope</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Lewis woodpecker <i>Melanerpes lewis</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Black-backed woodpecker <i>Picoides arcticus</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Pileated woodpecker <i>Dryocopus pileatus</i>	FS Sensitive		X	N	Forest-dependent species.
Williamson's sapsucker <i>Sphyrapicus throideus</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Willow flycatcher <i>Empidonax trailii</i>	BLM Sensitive	X		N	Dependent on riparian habitat which will not be affected by the proposed action.
Hammond's flycatcher <i>Empidonax hammondii</i>	BLM Sensitive	X		N	Forest-dependent species.
Olive-sided flycatcher <i>Contopus borealis</i>	BLM Sensitive	X		N	Forest-dependent species.
Loggerhead shrike <i>Lanius ludovicianus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
McCown's longspur <i>Calcarius mcconnii</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Sage sparrow <i>Amphispiza belli</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Brewer's sparrow <i>Spizella breweri</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Sage thrasher <i>Oreoscoptes montanus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Sedge wren <i>Cistothorus platensis</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Virginia's warbler <i>Vermivora virginiae</i>	BLM Sensitive	X		N	Forest-dependent species, including pinyon-juniper
Black-throated sparrow <i>Amphispiza bilineata</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Black swift <i>Cypseloides niger</i>	BLM Sensitive	X		N	Occurs outside the range of greater sage grouse.
Bobolink <i>Dolichonyx oryzivorus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat
Burrowing owl <i>Athene cucularia</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
White-headed woodpecker <i>Picoides albolarvatus</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Common Loon <i>Gavia immer</i>	BLM & FS Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Three-toed woodpecker <i>Picoides tridactylus</i>	BLM & FS Sensitive	X	X	N	Forest-dependent species.
Downy woodpecker <i>Picoides pubescens</i>	FS Sensitive		X	N	Forest-dependent species.
Hairy woodpecker <i>Picoides villosus</i>	FS Sensitive		X	N	Forest-dependent species.
Northern flicker <i>Colaptes auratus</i>	FS Sensitive		X	N	Forest-dependent species.
Red-naped sapsucker <i>Sphyrapicus nuchalis</i>	FS Sensitive		X	N	Forest-dependent species.
Reptiles					
Mojave black-collared lizard <i>Crotaphytus bicinctores</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Longnose snake <i>Rhinocheilus lecontei</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Western ground snake <i>Sonora semiannulata</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Common garter snake <i>Thamnophis sirtalis</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.

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Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Amphibians					
Columbia spotted frog – Great Basin population <i>Rana luteiventris</i>	ESA Candidate	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Coeur d’Alene salamander <i>Plethodon idaboensis</i>	BLM Sensitive	X		N	Occurs outside the range of greater sage grouse.
Idaho giant salamander <i>Dicamptodon aterrimus</i>	BLM Sensitive	X		N	Occurs outside the range of greater sage grouse.
Northern leopard frog <i>Rana pipiens</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Western toad <i>Bufo boreas</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Boreal toad – SE ID population <i>Bufo boreas boreas</i>	BLM & FS Sensitive	X	X	N	Prefers high elevation wet habitats.
Woodhouse toad <i>Bufo woodhousii</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Plains spadefoot <i>Spea bombifrons</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
Fish					
White Sturgeon - Kootenai River <i>Acipenser transmontanus</i>	ESA Endangered	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Sockeye Salmon <i>Oncorhynchus nerka</i>	ESA Endangered	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Humpback chub <i>Gila cypha</i>	ESA Endangered		X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Razorback sucker <i>Xyrauchen texanus</i>	ESA Endangered		X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Colorado pikeminnow <i>Ptychocheilus lucius</i>	ESA Endangered		X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bonytail chub <i>Gila elegans</i>	ESA Endangered		X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Chinook Salmon – Snake River spring/summer-run <i>Oncorhynchus tshawytscha</i>	ESA Threatened	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Chinook Salmon – Snake River fall-run <i>Oncorhynchus tshawytscha</i>	ESA Threatened	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Steelhead <i>Oncorhynchus mykiss</i>	ESA Threatened	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bull trout <i>Salvelinus confluentus</i>	ESA Threatened	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Pacific lamprey <i>Lampetra tridentata</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Redband trout <i>Oncorhynchus mykiss gairdneri</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Westslope cutthroat <i>Oncorhynchus clarki lewisi</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Yellowstone cutthroat <i>Oncorhynchus clarki bouvieri</i>	BLM & FS Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bonneville cutthroat <i>Oncorhynchus clarki utah</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bear Lake whitefish <i>Prosopium abyssiicola</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bonneville whitefish <i>Prosopium pilonotus</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bonneville cisco <i>Prosopium gemmiferum</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
White sturgeon – Snake River above Hells Canyon Dam <i>Acipenser transmontanus</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bear Lake sculpin <i>Cottus extensis</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Shoshone sculpin <i>Cottus greenei</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Wood River sculpin <i>Cottus leiopomus</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Northern leatherside chub <i>Lepidomeda copei</i>	BLM & FS Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Burbot <i>Lota lota</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action.
Big Lost River whitefish <i>Prosopium williamsoni</i>	FS Sensitive		X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Invertebrates					
Bliss Rapids snail <i>Taylorconcha serpenticola</i>	ESA Threatened	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Idaho springsnail <i>Pyrgulopsis idahoensis</i>		X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Banbury Springs limpet <i>Lanx spp.</i>	ESA Endangered	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Snake River physa snail <i>Physa natricina</i>	ESA Endangered	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Bruneau hot springsnail <i>Pyrgulopsis bruneauensis</i>	ESA Endangered	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Utah valvata snail <i>Valvata utahensis</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Shortface lanx <i>Fisberola nuttalli</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.

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Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Marbled disc <i>Discus marmorensis</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action, and occurs outside the range of greater sage grouse.
Mission Creek Oregonian <i>Cryptomastix magnidentata</i>	BLM Sensitive	X		N	Dependent on aquatic habitat which will not be affected by the proposed action, and occurs outside the range of greater sage grouse.
Striate mountainsnail <i>Oreobelix strigosa goniogyra</i>	BLM Sensitive	X		N	Occurs outside the range of the greater sage grouse.
Idaho banded mountainsnail <i>Oreobelix idaboensis idaboensis</i>	BLM Sensitive	X		N	Occurs outside the range of the greater sage grouse.
Lava rock mountainsnail <i>Oreobelix waltoni</i>	BLM Sensitive	X		N	Occurs outside the range of the greater sage grouse.
Whorled mountainsnail <i>Oreobelix vortex</i>	BLM Sensitive	X		N	Occurs outside the range of the greater sage grouse.
Boulder pile mountainsnail <i>Oreobelix jugalis</i>		X		N	Occurs outside the range of the greater sage grouse.
Idaho point-headed grasshopper <i>Acrolophitus pulchellus</i>	BLM Sensitive	X		Y	Uses sagebrush habitat.
St. Anthony sand dunes tiger beetle <i>Cicindela arenicola</i>	BLM Sensitive	X	X	Y	Uses sagebrush habitat.
Columbia River tiger beetle <i>Cicindela columbica</i>	BLM Sensitive	X		N	Occurs outside the range of greater sage grouse.
Bruneau Dunes tiger beetle <i>Cicindela waynei waynei</i>	BLM Sensitive	X	X	Y	Uses sagebrush habitat.
Blind cave leiodid beetle <i>Glacicanicola bathyscooides</i>	BLM Sensitive	X	X	N	Obligate cave inhabitant.
California floater <i>Anodonta californiensis</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Columbia pebblesnail <i>Fluminicola fuscus</i>	BLM Sensitive	X	X	N	Dependent on aquatic habitat which will not be affected by the proposed action.
Plants					
Whitebark pine <i>Pinus albicaulis</i>	ESA Candidate	X	X	N	High elevation.
Goose Creek milkvetch <i>(Astragalus anserinus)</i>	ESA Candidate	X		Y	Occurs in sagebrush habitat.
Packard's milkvetch (<i>Astragalus cusickii</i> var. <i>packardiae</i>)	ESA Proposed	X		Y	Occurs in sagebrush habitat.
Christ's Indian Paintbrush <i>(Castilleja christii)</i>	ESA Threatened		X	Y	Occurs in sagebrush habitat.
Water howellia <i>Howellia aquatilis</i>	ESA Threatened	X		N	Occurs outside the range of greater sage grouse.

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Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Slickspot peppergrass (<i>Lepidium papilliferum</i>)	ESA Proposed	X		Y	Occurs in sagebrush habitat.
Macfarlane's Four-O-Clock <i>Mirabilis macfarlanei</i>	ESA Threatened	X		N	Occurs outside the range of greater sage grouse.
Blowout penstemon <i>Penstemon haydenii</i>	ESA Endangered		X	N	Does not occur within the planning unit.
Spalding's Catchfly <i>Silene spaldingii</i>	ESA Threatened	X		N	Occurs outside the range of greater sage grouse.
Ute ladiee's tresses (<i>Spiranthes diluvialis</i>)	ESA Threatened	X	X	N	Occurs in riparian habitat.
Cusick's horse-mint (<i>Agastache cusickii</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Western boneset (<i>Agertina occidentalis</i> = <i>Eupatorium occidentale</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Pink agoseris, Mill Creek agoseris (<i>Agoseris lackschewitzii</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Aase's onion (<i>Allium aaseae</i>)	BLM Sensitive	X	X	Y	Occurs in sagebrush habitat.
Tapertip onion (<i>Allium acuminatum</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Two-headed onion (<i>Allium anceps</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
King's angelica, Great Basin angelica (<i>Angelica kingii</i>)	BLM & FS Sensitive	X		Y	Occurs in sagebrush habitat.
Narrow leaf milkweed <i>Asclepias stenophylla</i>	BLM Sensitive	X		N	Occurs in Great Plains habitat.
Coral lichen (<i>Aspicilia rogerii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Challis milkvetch (<i>Astragalus amblytropis</i>)	BLM & FS Sensitive	X		Y	Occurs in sagebrush habitat.
Lemhi milkvetch (<i>Astragalus aquilonius</i>)	BLM Sensitive	X	X	Y	Occurs in sagebrush habitat.
Sweetwater milkvetch <i>Astragalus aretioides</i> = <i>Orophaca aretioides</i>	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Mourning milkvetch (<i>Astragalus astratus</i> var. <i>inseptus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Barr's milkvetch (<i>Astragalus barrii</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Painted milkvetch <i>Astragalus ceramicus</i> var. <i>apus</i>	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Lesser rushy milkvetch <i>Astragalus convallarius</i> var. <i>convallarius</i> = <i>A. junciformis</i>	BLM Sensitive	X		Y	Occurs in sagebrush habitat.

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Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Stiff milkvetch, Idaho milkvetch (<i>Astragalus conjunctus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Lesser rushy milkvetch (<i>Astragalus convallarius</i> var. <i>convallarius</i> = <i>A. junciformis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Barren milkvetch (<i>Astragalus cusickii</i> var. <i>sterilis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Meadow milkvetch (<i>Astragalus diversifolius</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Geyer's milkvetch (<i>Astragalus geyeri</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Tufted milkvetch, Plains milkvetch (<i>Astragalus gilviflorus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Starveling milkvetch (<i>Astragalus jejunus</i> var. <i>jejunus</i>)	BLM Sensitive	X	X	Y	Occurs in sagebrush habitat.
Mulford's milkvetch (<i>Astragalus mulfordiae</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Newberry's milkvetch (<i>Astragalus newberry</i> var. <i>castoreus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Picabo milkvetch (<i>Astragalus oniciformis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Wind River Astragalus (<i>Astragalus oregonus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Payson's milkvetch (<i>Astragalus paysonii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Snake River milkvetch (<i>Astragalus purshii</i> var. <i>ophiogenes</i> = <i>A. ophiogenes</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Bitterroot milkvetch (<i>Astragalus scaphoides</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Four-wing milkvetch (<i>Astragalus tetrapterus</i> = <i>A. cinerascens</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Railhead milkvetch (<i>Astragalus terminalis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Mudflat milkvetch (<i>Astragalus yoder-williamsii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Large-leaved balsamroot (<i>Balsamorhiza macrophylla</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
King's desert grass (<i>Blepharidachne kingii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Daggett rock cress (<i>Boechera demissa</i> = <i>Arabis demissa</i> var. <i>languida</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.

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		BLM	Forest Service		
Sapphire rockcress (<i>Boebera fecunda</i> = <i>Arabis fecunda</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Blue gramma (<i>Bouteloua gracilis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Peculiar moonwort (<i>Botrychium paradoxum</i>)	BLM & FS Sensitive	X	X	Y	Occurs in meadows within sagebrush habitat.
Low northern rockcress (<i>Braya humilis</i>)	BLM Sensitive	X		N	Occurs in alpine habitat.
Mohave brickellbush (<i>Brickellia oblongifolia</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Beautiful bryum (<i>Bryum calobryooides</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Fringed redmaids (<i>Calandrinia ciliata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Cusick's camas (<i>Camassia cusickii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Obscure evening primrose (<i>Camissonia andina</i> = <i>Oenothera andina</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Small camissonia (<i>Camissonia parvula</i> = <i>Oenothera parvula</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Winged-seed evening primrose (<i>Camissonia pterosperma</i> = <i>Oenothera pterosperma</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Crawe's sedge (<i>Carex crawei</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Idaho sedge (<i>Carex idahoensis</i> = <i>C. parryana</i> ssp. <i>Idahoensis</i>)	BLM & FS Sensitive	X	X	Y	Occurs in meadows within sagebrush habitat.
Small-winged sedge (<i>Carex stenoptila</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Annual Indian painbrush (<i>Castilleja exilis</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Earth lichen (<i>Catapyrenium congestum</i> = <i>Heteroplacidium congested</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Mahala mat (<i>Ceanothus prostratus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Birchleaf mountain-mahogany (<i>Cercocarpus montanus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Cusick's false yarrow (<i>Chaenactis cusickii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Desert pincushion (<i>Chaenactis stevioides</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Lanceleaf springbeauty (<i>Claytonia multiscapa</i> var. <i>flava</i> = <i>C. lanceolata</i> var. <i>multiscapa</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Yellow bee plant (<i>Cleome lutea</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.

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Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Twisted/Alkali cleomella (<i>Cleomella plocasperma</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Short-spored jelly lichen (<i>Collema curtisporum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Sepal-tooth dodder (<i>Cuscuta denticulata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Uinta Basin cryptantha (<i>Cryptantha breviflora</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Tufted cryptantha (<i>Cryptantha caespitosa</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Fendler's cat's-eye (<i>Cryptantha fendleri</i>)	BLM Sensitive	X		N	Occurs in Great Plains Sand Prairie habitat.
Malheur cryptantha (<i>Cryptantha propria</i> = <i>Oreocarya propria</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Miner's candle (<i>Cryptantha scoparia</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Silky cryptantha (<i>Cryptantha sericea</i> = <i>Oreocarya sericea</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Greeley's wavewing (<i>Cymopterus acaulis</i> , var. <i>greeleyorum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Schwinitz' flatsedge (<i>Cyperus schweinitzii</i>)	BLM Sensitive	X		N	Occurs in Great Plains Sand Prairie habitat.
Ibapah springparsley (<i>Cymopterus ibapensis</i> = <i>Epallageiton ibapensis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
California damasonium (<i>Damasonium californicum</i> = <i>Machaerocarpus californicus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Silver-skin lichen (<i>Dermatocarpon lorenzianum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Scribner's panic grass (<i>Dichanthelium oligosanthes</i> var. <i>scribnerianum</i>)	BLM Sensitive	X		N	Great Plains Ponderosa Pine Woodland and Savanna habitats.
Doublet (<i>Dimeresia howellii</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat
Bacigalupi's downingia (<i>Downingia bacigalupii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Harlequin calicoflower, Particolor Downingia (<i>Downingia insignis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Pointed draba, Beavertip draba, Rockcress draba (<i>Draba globosa</i> = <i>D. apiculata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Wind River draba (<i>Draba ventosa</i>)	BLM Sensitive	X		N	Occurs in Alpine Bedrock and Scree habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
White false tickhead (<i>Eatonella nivea</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Long sheath waterweed (<i>Elodea bifoliata</i> = <i>longivaginata</i>)	BLM Sensitive	X		N	Occurs in riparian, open water habitat.
Beaked spikerush (<i>Eleocharis rostellata</i>)	BLM & FS Sensitive	X	X	N	Occurs in hot spring/fen habitat.
Swamp willow-herb (<i>Epilobium palustre</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Windward's goldenbush (<i>Ericameria discoidea</i> var. <i>winwardii</i> = <i>Ericameria winwardii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Rabbitbrush goldenweed, Bloomer's goldenweed (<i>Ericameria bloomeri</i> = <i>Haplopappus bloomeri</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Idaho fleabane (<i>Erigeron asperugineus</i>)	BLM & FS Sensitive	X	X	N	Occurs in alpine habitat.
Linearleaf fleabane (<i>Erigeron linearis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Matted buckwheat (<i>Eriogonum caespitosum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Welsh's buckwheat (<i>Eriogonum capistratum</i> var. <i>welshii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Great Basin desert buckwheat (<i>Eriogonum desertorum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Hooker's buckwheat (<i>Eriogonum hookeri</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Calcareous buckwheat (<i>Eriogonum ochrocephalum</i> var. <i>calcareum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Packard's buckwheat (<i>Eriogonum shockleyi</i> var. <i>packardiae</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Shockley's matted buckwheat (<i>Eriogonum shockleyi</i> var. <i>shockleyi</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Railroad Canyon wild buckwheat (<i>Eriogonum soliceps</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Visher's buckwheat (<i>Eriogonum visherii</i>)	BLM Sensitive	X		N	Occurs in Great Plains Badlands habitat.
Cushion cactus/spinystar (<i>Escobaria vivipara</i> var. <i>vivipara</i> = <i>Coryphantha vivipara</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Hiker's gentian (<i>Gentianopsis simplex</i>)	BLM & FS Sensitive	X	X	N	Occurs in sub-alpine fen and meadow habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
White-margined wax plant (<i>Glyptopleura marginata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Spiny hopsage (<i>Grayia spinosa</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Howell's gumweed (<i>Grindelia bonellii</i>)	BLM & FS Sensitive	X	X	N	Occurs in valley and foothill grassland habitat.
Cronquist's forget-me-not (<i>Hackelia cronquistii</i> = <i>H. patens</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Bug-leg goldenweed (<i>Haplopappus insecticuriis</i> = <i>H. integrifolius</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Showy goldeneye (<i>Heliomeris multiflora</i> var. <i>multiflora</i> = <i>Viguiera multiflora</i>)	BLM Sensitive	X		N	Occurs Aspen and mixed conifer habitat.
Prostate huchensia (<i>Hornungia procumbens</i> = <i>Hutchinsia procumbens</i>)	BLM Sensitive	X		Y	Occurs in vernal moist sagebrush habitat.
Cooper's rubber-plant (<i>Hymenoxys cooperi</i> var. <i>canescens</i> = <i>Actinea canescens</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Large Canadian St. John's wort (<i>Hypericum majus</i> = <i>H. canadense</i> var. <i>majus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Ballhead ipomopsis (<i>Ipomopsis congesta</i> ssp. <i>crebrifolia</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Spreading gilia (<i>Ipomopsis polycladon</i> = <i>Gilia polycladon</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Simple bog sedge (<i>Kobresia simpliciuscula</i>)	BLM Sensitive	X		N	Occurs in alpine habitat.
Green molly (<i>Kochia Americana</i>)	BLM Sensitive	X		N	Occurs in greasewood habitat.
Davis' peppergrass (<i>Lepidium davisii</i> = <i>L. montanum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Thick-leaf pepperweed (<i>Lepidium integrifolium</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Mat prickly phlox (<i>Leptodactylon caespitosum</i>)	BLM Sensitive	X		N	Occurs in limber pine and rock outcrop habitat
Pryor Mountain bladderpod (<i>Lesquerella lesicii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Beautiful pulchella (<i>Lesquerella pulchella</i>)	BLM & FS Sensitive	X		N	Occurs in alpine habitat.
Middle Butte bladderpod (<i>Lesquerella obdeltata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Sacajawea's bitterroot (<i>Lewisia sacajaweanana</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Sand wildrye (<i>Leymus flavescens</i> = <i>Elymus flavescens</i>)	BLM Sensitive	X		N	Occurs in sand dune habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Pale-spiked lobelia (<i>Lobelia spicata</i>)	BLM Sensitive	X		N	Occurs in meadows within Great Plains Prairie habitat.
Taper-tip desert-parsley (<i>Lomatium attenuatum</i>)	BLM Sensitive	X		N	Occurs in steep, rocky limber pine habitat
Nuttall desert-parsley (<i>Lomatium nuttallii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Packard's desert parsley (<i>Lomatium packardiae</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Marsh felwort (<i>Lomatogonium rotatum</i>)	BLM Sensitive	X		N	Occurs in alpine habitat.
Inch-high lupine (<i>Lupinus uncialis</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Torrey's desert dandelion (<i>Malacothrix torreyi</i> = <i>M. sonchoides</i> var. <i>torreyi</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
United blazingstar (<i>Mentzelia congesta</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Bractless mentzelia (<i>Mentzelia nuda</i>)	BLM Sensitive	X		N	Occurs on open hillsides within Great Plains Prairie habitat.
Smooth stickleaf (<i>Mentzelia mollis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Dwarf mentzelia (<i>Mentzelia pumila</i>)	BLM Sensitive	X		N	Occurs in sandy soil in desert shrubland and woodland valley and foothill habitats.
Dwarf purple monkeyflower (<i>Mimulus nanus</i>)	BLM&FS Sensitive	X	X	N	Occurs in valley and foothill grassland habitat.
Primrose monkey flower (<i>Mimulus primulooides</i>)	BLM & FS Sensitive	X	X	N	Occurs in fens and wet meadows in montane and subalpine habitats.
Square-stem monkeyflower (<i>Mimulus ringens</i>)	BLM & FS Sensitive	X	X	N	Occurs in riparian habitat.
Leafy nama (<i>Nama densum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Green needlegrass (<i>Nassella viridula</i> = <i>Stipa viridula</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Rigid threadbush (<i>Nemacladus rigidus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Meadow lousewort (<i>Nuttallanthus texanus</i>)	BLM Sensitive	X		N	Occurs in Great Plains grassland and woodland habitats.
Saint Anthony evening-primrose (<i>Oenothera psammophila</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Challis crazyweed (<i>Oxytropis besseyi</i> var. <i>salmonensis</i> = <i>O. nana</i> var. <i>salmonensis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Creeping nailwort (<i>Paronychia sessiliflora</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Simpson's hedgehog cactus (<i>Pediocactus simpsonii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Indian breadroot (<i>Pediomelum hypogaeum</i>)	BLM Sensitive	X		N	Occurs in sandy soil of grasslands, plains and open pine woodland habitats.
Meadow lousewort (<i>Pedicularis crenulata</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Narrowleaf penstemon (<i>Penstemon angustifolius</i>)	BLM Sensitive	X		N	Occurs in Great Plains Sand Prairie habitat.
Idaho penstemon (<i>Penstemon idahoensis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Janish's penstemon (<i>Penstemon janishiae</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Lemhi beardtongue (<i>Penstemon lemhiensis</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Whipple's beardtongue (<i>Penstemon whippleanus</i>)	BLM Sensitive	X		N	Occurs in alpine habitat.
Short-lobed penstemon (<i>Penstemon seorsus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Indian apple, Wild Crab apple (<i>Peraphyllum ramosissimum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Spine-noded milkvech (<i>Peteria thompsoniae</i> = <i>P. nevadensis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Hoary phacelia (<i>Phacelia incana</i>)	BLM Sensitive	X		N	Occurs in Mahogany Woodland habitat.
Obscure Phacelia (<i>Phacelia inconspicua</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Malheur Yellow Phacelia (<i>Phacelia lutea</i> var. <i>calva</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Least phacelia, Small-flower phacelia (<i>Phacelia minutissima</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Hot spring phacelia (<i>Phacelia thermalis</i>)	BLM Sensitive	X		N	Occurs in openings of forested (Douglas fir) habitat.
Plains phlox (<i>Phlox andicola</i>)	BLM Sensitive	X		N	Occurs Great Plains Ponderosa Pine Woodland and Savanna
Missoula phlox (<i>Phlox missoulensis</i>)	BLM & FS Sensitive	X	X	N	Occurs in sub-alpine habitats.
Double badderpod (<i>Physaria brassicoides</i>)	BLM Sensitive	X		N	Occurs in rocky Great Plains Badlands habitat.
Common twinpod (<i>Physaria didymocarpa</i> var. <i>lanata</i>)	BLM Sensitive	X		N	Occurs in sandy, often calcareous soils of open Prairie Grassland habitat.
Idaho twinpod, Salmon Twin bladderpod (<i>Physaria didymocarpa</i> var. <i>lyrata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Small-flowered ricegrass (<i>Piptatherum micranthum</i> = <i>Oryzopsis micrantha</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Short-leaved blugrass (<i>Poa arnowiae</i> = <i>P. curta</i>)	BLM Sensitive	X		N	Occurs in Montane, Douglas fir habitat.
Idaho bladderpod (<i>Physaria carinata</i> = <i>Lesquerella carinata</i> var. <i>languida</i>)	BLM & FS Sensitive	X	X	N	Occurs in valley and foothill grassland habitats.
Slender-branched popcorn flower (<i>Plagiobothrys leptocladus</i>)	BLM Sensitive	X		N	Occurs in riparian habitats and ephemerally wet depression in grassland habitats.
Thorn skeleton weed (<i>Pleiaranthus spinosa</i> = <i>Stephanomeria spinosa</i> = <i>Lygodesmia spinosa</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Austin's knotweed (<i>Polygonum douglasii</i> ssp. <i>Austinae</i>)	BLM & FS Sensitive	X	X	N	Occurs on steep, shale slopes in montane habitat.
Platte cinquefoil (<i>Potentilla plattensis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Alkali primrose (<i>Primula alcalina</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Cusick's primrose (<i>Primula cusickiana</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Mealy primrose (<i>Primula incana</i>)	BLM & FS Sensitive	X	X	N	Occurs in alpine habitat.
Turtleback, Annual Brittlebrush (<i>Psathyrotes annua</i> = <i>Bulbostylis annua</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Dwarf woolly-heads (<i>Psilocarphus brevissimus</i>)	BLM & FS Sensitive	X	X	Y	Occurs in vernal moist ponds and depressions in sagebrush and plains habitats.
James stitchwort (<i>Psuedostellaria jamesiana</i> = <i>Stellaria jamesiana</i>)	BLM Sensitive	X		N	Occurs in forested montane habitat.
Lemmon's alkaligrass (<i>Puccinellia lemmonii</i>)	BLM Sensitive	X		N	Occurs in alkaline meadow habitat.
Beartooth large-flowered goldenweed (<i>Pyrrocoma carthamoides</i> var. <i>subsquarrosa</i> = <i>Haplopappus carthamoides</i> var. <i>subsquarrosus</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Thinleaf goldenhead (<i>Pyrrocoma linearis</i> = <i>Haplopappus uniflorus</i> var. <i>howellii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Snake River goldenweed, Radiate goldenweed (<i>Pyrrocoma radiata</i> = <i>Haplopappus ruidatus</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Bur oak (<i>Quercus macrocarpa</i>)	BLM Sensitive	X		N	Occurs in ponderosa pine and grassland habitats.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Northern buttercup (<i>Ranunculus pedatifidus</i>)	BLM Sensitive	X		N	Occurs in alpine habitats.
White grouse pellet lichen (<i>Rhizoplaca idahoensis</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Persistent-sepal yellow-cress (<i>Rorippa calycina</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Least snapdragon (<i>Sairocarpus kingii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Slender bulrush (<i>Schoenoplectus heterochaetus</i> = <i>Scirpus heterochaetus</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Shoshonea (<i>Shoshonea pulvinata</i>)	BLM & FS Sensitive	X	X	N	Occurs in alpine habitat.
Lost River silene (<i>Silene scaposa</i> var. <i>lobata</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Basin goldenrod (<i>Solidago spectabilis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Few-flowered goldenrod (<i>Solidago velutina</i> = <i>S. sparsifolia</i>)	BLM Sensitive	X		Y	Occurs in meadows associated with sagebrush habitat.
White-stemmed globe-mallow (<i>Sphaeralcea munroana</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Silver chicken sage (<i>Sphaeromeria argentea</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Tall dropseed (<i>Sporobolus compositus</i> var. <i>compositus</i> = <i>Sporobolus asper</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Malheur princesplume (<i>Stanleya confertiflora</i> = <i>S. annua</i> , <i>S. rara</i> , <i>S. viridiflora</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Smooth buckwheat (<i>Stenogonum salsuginosum</i> = <i>Eriogonum salsuginosum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Poison suckleya (<i>Suckleya suckleyana</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Rush aster (<i>Symphyotrichum boreale</i> = <i>Aster junciiformis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
American wood sage (<i>Teucrium canadense</i> var. <i>occidentale</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Woven-spore lichen (<i>Texosporium sancti-jacobi</i> = <i>Cyphellium sancti-jacobi</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat
Alpine meadowrue (<i>Thalictrum alpinum</i>)	BLM & FS Sensitive	X	X	N	Occurs in alpine habitat.
Wavy-leaf thelypody (<i>Thelypodium repandum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Arrow thelypody (<i>Thelypodium sagittatum</i>)	BLM Sensitive	X		N	Occurs in greasewood habitat.
Meadow pennycress (<i>Thlaspi parviflorum</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Showy townsendia (<i>Townsendia florifera</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Scapose townsendia (<i>Townsendia scapigera</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Douglas's clover (<i>Trifolium douglasii</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Owyhee clover (<i>Trifolium owyheense</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Plumed clover (<i>Trifolium plumosum</i> var. <i>amplifolium</i>)	BLM & FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
Nannyberry (<i>Viburnum lentago</i>)	BLM Sensitive	X		N	Occurs in riparian habitat.
Idaho range lichen (<i>Xanthoparmelia idahoensis</i>)	BLM Sensitive	X		Y	Occurs in sagebrush habitat.
Swamp onion <i>Allium madidum</i>	FS Sensitive		X	N	Occurs in riparian habitat.
Sweet-flowered rock jasmine <i>Androsace chamaejasme</i> spp. <i>Carinata</i>	FS Sensitive		X	N	Occurs in rocks.
Sitka columbine <i>Aquilegia formosa</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat
Lost River milkvetch <i>Astragalus amnis-amissi</i>	FS Sensitive	X	X	Y	Occurs in sagebrush habitat.
White Cloud milkvetch <i>Astragalus vexilliflexus</i> var. <i>nubilus</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Dainty moonwort <i>Botrychium crenulatum</i>	FS Sensitive		X	N	Occurs in riparian habitat.
Slender moonwort <i>Botrychium lineare</i>	FS Sensitive		X	N	Occurs in riparian habitat.
Least moonwort grapefern, Little grape fern <i>Botrychium simplex</i>	FS Sensitive		X	N	Occurs in riparian habitat.
Beautiful bryum <i>Bryum calobryoides</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Seaside sedge <i>Carex incurviformis</i>	FS Sensitive		X	N	Occurs in riparian habitat.
Centennial rabbitbrush <i>Chrysothamnus parryi</i> ssp. <i>montanus</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Flexible alpine collomia <i>Collomia debilis</i> var. <i>camporum</i>	FS Sensitive		X	N	High elevation species.

Table P-1
Comprehensive list of special status species, lands where the designation applies, level of analysis, and rationale for level of analysis.

Scientific Name	Status*	Federal Land		Analyze Effects in EIS?	Rationale for Level of Effects Analysis
		BLM	Forest Service		
Davis' wavewing <i>Cymopterus davisii</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Douglas' biscuitroot <i>Cymopterus douglasii</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Idaho douglasia <i>Douglasia idaboensis</i>	FS Sensitive		X	N	High elevation species
Serpentine draba <i>Draba oreibata var. serpentine</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Stanley's whitlow-grass <i>Draba trichocarpa</i>	FS Sensitive		X	N	High elevation species.
Guardian buckwheat <i>Eriogonum meledonum</i>	FS Sensitive		X	N	High elevation species – scree slopes
Puzzling halimolobos <i>Halimolobos perplexa var. perplexa</i>	FS Sensitive	X	X	N	Occurs outside range of greater sage grouse
Payson bladderpod <i>Lesquerella paysonii</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Sacajawea's bitterroot <i>Lewisia sacajaweanana</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Idaho pennycress, Stanley thlaspi <i>Noccaea idaboensis var. aileeniae</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Cache beardtongue <i>Penstemon compactus</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Marsh's bluegrass <i>Poa abbreviate ssp. marshii</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Cottam cinquefoil <i>Potentilla acottamii</i>	FS Sensitive		X	N	High elevation species.
Barton's blackberry <i>Rubus bartonianus</i>	FS Sensitive		X	N	Occurs in riparian habitat.
Short-slyle tofieldia <i>Triantha occidentalis ssp. brevistyla</i>	FS Sensitive		X	N	Occurs in riparian habitat
Tobias' saxifrage <i>Saxifraga bryophora var. tobiasiae</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.
Tolmie's saxifrage <i>Saxifraga tomiei var. ledifolia</i>	FS Sensitive		X	Y	Occurs in sagebrush habitat.

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Appendix Q

Detailed Employment and Earnings Data



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Appendix Q. Detailed Employment and Earnings Data

Table 1. Employment Levels by Industry Sector and County in 2010^{1,2}

	Adams, ID	Bear Lake, ID	Bingham, ID	Blaine, ID	Bonneville , ID	Butte, ID	Camas, ID	Caribou, ID	Cassia, ID	Clark, ID	Custer, ID
Farm	255	496	2,217	290	1,212	269	137	548	1,773	140	297
Forestry, fishing, & related activities ³	139	(D)	(D)	122	(D)	(D)	(D)	(D)	442	(D)	(D)
Mining (including oil and gas)	35	(D)	(D)	88	(D)	38	(L)	336	109	38	(D)
Utilities	(D)	(D)	69	31	50	(L)	0	38	51	(L)	35
Construction	184	142	1,494	1,979	4,335	51	(D)	(D)	618	(D)	195
Manufacturing	70	77	2,416	521	2,450	56	(D)	(D)	1,288	(D)	48
Wholesale trade	28	80	1,391	256	3,616	(D)	(D)	104	477	(D)	37
Retail trade	313	442	1,973	1,839	8,484	157	(D)	405	1,779	(D)	272
Transportation and warehousing	(D)	(D)	609	244	1,814	(D)	11	104	875	(D)	42
Information	22	37	96	452	1,388	(D)	16	39	102	(D)	47
Finance and insurance	73	93	737	897	2,839	69	(D)	127	449	75	87
Real estate and rental and leasing	132	97	591	2,098	2,812	43	34	180	436	64	102
Professional and technical services	93	(D)	(D)	1,591	3,697	8,064	23	162	370	(D)	95
Management of companies and enterprises	0	0	(D)	(D)	131	(D)	(D)	(D)	(D)	0	(D)
Administrative and waste services	79	(D)	603	(D)	3,183	(D)	(D)	(D)	(D)	(D)	(D)
Educational services	(D)	(D)	190	323	553	(D)	(D)	(D)	(D)	(D)	15
Health care and social assistance	(D)	(D)	1,877	1,025	8,579	(D)	(D)	(D)	(D)	(D)	95
Arts, entertainment, and recreation	138	58	191	863	956	29	(D)	49	159	10	91
Accommodation and food services	89	199	775	2,772	4,256	88	(D)	175	478	(D)	301
Other services, except public administration	111	149	1,200	1,369	3,394	(D)	(D)	200	659	24	111
Federal government	119	89	428	203	1,225	140	27	84	272	42	183
State government	(D)	25	361	41	710	13	(D)	20	168	(D)	44
Local government	(D)	577	3,332	1,337	4,334	155	(D)	613	1,343	(D)	263
Categories for which data were not disclosed	402	538	1,230	1,193	558	450	568	1,460	1,867	541	602
Total Employment	2,282	3,099	21,780	19,534	60,576	9,622	816	4,644	13,715	934	2,962

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

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² (L) Less than 10 jobs, but the estimates for this item are included in the totals.

³ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 1. Employment Levels by Industry Sector and County in 2010 (continued)^{1,2}

	Elmore, ID	Fremont, ID ³	Gem, ID	Gooding, ID	Jefferson, ID	Jerome, ID	Lemhi, ID	Lincoln, ID	Madison, ID	Minidoka, ID	Oneida, ID
Farm	866	698	886	2,118	1,335	1,888	402	524	663	1,403	476
Forestry, fishing, & related activities ⁴	(D)	(D)	(D)	(D)	546	348	(D)	(D)	(D)	(D)	(D)
Mining (including oil and gas)	(D)	(D)	(D)	(D)	38	38	(D)	(L)	(D)	(D)	(D)
Utilities	32	(D)	(L)	42	25	(D)	(D)	(D)	(D)	58	(L)
Construction	499	493	508	340	1,015	595	392	(D)	919	556	69
Manufacturing	459	100	253	814	877	1,460	142	(D)	808	962	30
Wholesale trade	110	(D)	145	218	346	(D)	64	(D)	1,364	580	34
Retail trade	1,197	465	620	588	962	1,169	442	147	1,867	732	219
Transportation and warehousing	301	180	211	351	411	1,159	(D)	60	(D)	370	110
Information	125	(D)	37	43	58	101	50	(D)	125	128	23
Finance and insurance	289	175	211	162	371	241	141	(D)	667	205	(D)
Real estate and rental and leasing	448	299	290	222	333	363	206	(D)	611	268	(D)
Professional and technical services	245	151	206	284	(D)	230	227	(D)	1,296	232	(D)
Management of companies and enterprises	(L)	0	(D)	12	(D)	(L)	16	0	(D)	(L)	0
Administrative and waste services	412	117	(D)	132	301	314	158	(D)	(D)	125	(D)
Educational services	172	(D)	(D)	15	(D)	95	20	(D)	(D)	(D)	(L)
Health care and social assistance	581	(D)	(D)	(D)	(D)	608	336	(D)	(D)	(D)	90
Arts, entertainment, and recreation	92	62	71	116	268	167	108	(D)	291	79	(D)
Accommodation and food services	814	308	253	298	305	401	307	(D)	1,014	538	(D)
Other services, except public administration	577	337	415	456	612	577	377	(D)	728	567	109
Federal government	4,832	147	153	139	164	146	268	117	209	147	41
State government	68	324	25	111	139	75	96	93	45	49	10
Local government	1,324	697	749	923	1,173	906	496	314	1,886	1,348	421
Categories for which data were not disclosed	161	742	1,288	891	937	511	211	1,071	5,183	912	472
Total Employment	13,604	5,295	6,321	8,275	10,216	11,392	4,459	2,326	17,676	9,259	2,104

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

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² (L) Less than 10 jobs, but the estimates for this item are included in the totals.

³ Fremont County includes Yellowstone Park.

⁴ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 1. Employment Levels by Industry Sector and County in 2010 (continued)^{1,2}

	Owyhee, ID	Payette, ID	Power, ID	Twin Falls, ID	Washington, ID	Beaverhead, MT	Madison, MT
Farm	1,079	957	748	2,118	696	534	614
Forestry, fishing, & related activities ³	(D)	(D)	165	828	196	(D)	146
Mining (including oil and gas)	(D)	(D)	38	73	38	(D)	95
Utilities	(D)	96	(D)	222	(D)	(D)	13
Construction	234	605	104	2,404	208	370	628
Manufacturing	233	1,171	1,080	3,285	488	118	148
Wholesale trade	122	297	(D)	1,443	177	179	42
Retail trade	345	744	273	5,848	387	588	407
Transportation and warehousing	(D)	333	304	1,732	(D)	(D)	141
Information	39	(D)	(D)	659	108	46	16
Finance and insurance	(D)	405	88	1,728	105	193	161
Real estate and rental and leasing	(D)	369	62	2,023	156	407	311
Professional and technical services	(D)	(D)	65	2,029	123	193	(D)
Management of companies and enterprises	(D)	(D)	(D)	202	(D)	0	(D)
Administrative and waste services	126	462	(D)	3,022	(D)	135	182
Educational services	(D)	(D)	(D)	380	(D)	(D)	26
Health care and social assistance	(D)	(D)	78	5,761	(D)	(D)	210
Arts, entertainment, and recreation	61	95	(D)	556	59	170	499
Accommodation and food services	192	320	(D)	2,811	182	538	1,010
Other services, except public administration	210	720	192	2,512	214	317	300
Federal government	103	129	61	736	98	260	108
State government	28	75	48	430	24	396	13
Local government	632	980	599	3,886	647	374	450
Categories for which data were not disclosed	868	1,700	443	0	634	1,013	205
Total Employment	4,272	9,458	4,348	44,688	4,540	5,831	5,725

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

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³ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 1. Employment Levels by Industry Sector and County in 2010 (continued)^{1,2}

	Ada, ID ³	Bannock, ID	Boise, ID	Canyon, ID	Gallatin, MT	Silver Bow, MT
Farm	1,762	959	116	3,242	1,120	150
Forestry, fishing, & related activities ⁴	529	(D)	(D)	1,135	557	(D)
Mining (including oil and gas)	326	(D)	(D)	77	393	444
Utilities	921	127	(D)	158	111	(D)
Construction	14,651	2,727	183	5,492	5,647	936
Manufacturing	15,646	2,190	39	8,044	2,727	638
Wholesale trade	9,550	1,147	(D)	2,481	1,686	446
Retail trade	29,193	5,382	166	9,378	8,221	2,631
Transportation and warehousing	5,902	1,347	116	2,998	1,234	(D)
Information	4,751	542	(D)	854	824	348
Finance and insurance	15,166	2,202	(D)	3,021	2,361	580
Real estate and rental and leasing	15,093	1,614	(D)	3,258	4,317	815
Professional and technical services	18,078	1,769	(D)	2,911	5,605	1,101
Management of companies and enterprises	4,232	287	(D)	370	190	(D)
Administrative and waste services	23,463	2,529	112	3,708	2,286	(D)
Educational services	4,757	505	25	2,178	1,114	248
Health care and social assistance	31,615	5,868	83	8,518	5,039	3,278
Arts, entertainment, and recreation	5,459	857	430	880	2,481	655
Accommodation and food services	16,728	3,330	174	3,574	5,887	1,924
Other services, except public administration	12,539	2,374	112	4,270	3,525	1,266
Federal government	7,030	895	206	1,169	1,121	474
State government	11,944	4,139	20	963	5,956	1,150
Local government	14,365	3,190	340	7,545	2,881	1,167
Categories for which data were not disclosed	0	135	402	0	0	1,949
Total Employment	263,700	44,115	2,524	76,224	65,283	20,200

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

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³ Ada, Bannock, Boise, and Canyon Counties in Idaho and Gallatin and Silver Bow Counties in Montana constitute a secondary study area, as documented in the Chapter 3 text.

⁴ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 2. Employment Percentages by Industry Sector and County in 2010^{1,2}

	Adams, ID	Bear Lake, ID	Bingham, ID	Blaine, ID	Bonneville, ID	Butte, ID	Camas, ID	Caribou, ID	Cassia, ID	Clark, ID	Custer, ID
Farm	11.2%	16.0%	10.2%	1.5%	2.0%	2.8%	16.8%	11.8%	12.9%	15.0%	10.0%
Forestry, fishing, & related activities ³	6.1%	(D)	(D)	0.6%	(D)	(D)	(D)	(D)	3.2%	(D)	(D)
Mining (including oil and gas)	1.5%	(D)	(D)	0.5%	(D)	0.4%	(L)	7.2%	0.8%	4.1%	(D)
Utilities	(D)	(D)	0.3%	0.2%	0.1%	(L)	0.0%	0.8%	0.4%	(L)	1.2%
Construction	8.1%	4.6%	6.9%	10.1%	7.2%	0.5%	(D)	(D)	4.5%	(D)	6.6%
Manufacturing	3.1%	2.5%	11.1%	2.7%	4.0%	0.6%	(D)	(D)	9.4%	(D)	1.6%
Wholesale trade	1.2%	2.6%	6.4%	1.3%	6.0%	(D)	(D)	2.2%	3.5%	(D)	1.2%
Retail trade	13.7%	14.3%	9.1%	9.4%	14.0%	1.6%	(D)	8.7%	13.0%	(D)	9.2%
Transportation and warehousing	(D)	(D)	2.8%	1.2%	3.0%	(D)	1.3%	2.2%	6.4%	(D)	1.4%
Information	1.0%	1.2%	0.4%	2.3%	2.3%	(D)	2.0%	0.8%	0.7%	(D)	1.6%
Finance and insurance	3.2%	3.0%	3.4%	4.6%	4.7%	0.7%	(D)	2.7%	3.3%	8.0%	2.9%
Real estate and rental and leasing	5.8%	3.1%	2.7%	10.7%	4.6%	0.4%	4.2%	3.9%	3.2%	6.9%	3.4%
Professional and technical services	4.1%	(D)	(D)	8.1%	6.1%	83.8%	2.8%	3.5%	2.7%	(D)	3.2%
Management of companies and enterprises	0.0%	0.0%	(D)	(D)	0.2%	(D)	(D)	(D)	(D)	0.0%	(D)
Administrative and waste services	3.5%	(D)	2.8%	(D)	5.3%	(D)	(D)	(D)	(D)	(D)	(D)
Educational services	(D)	(D)	0.9%	1.7%	0.9%	(D)	(D)	(D)	(D)	(D)	0.5%
Health care and social assistance	(D)	(D)	8.6%	5.2%	14.2%	(D)	(D)	(D)	(D)	(D)	3.2%
Arts, entertainment, and recreation	6.0%	1.9%	0.9%	4.4%	1.6%	0.3%	(D)	1.1%	1.2%	1.1%	3.1%
Accommodation and food services	3.9%	6.4%	3.6%	14.2%	7.0%	0.9%	(D)	3.8%	3.5%	(D)	10.2%
Other services, except public administration	4.9%	4.8%	5.5%	7.0%	5.6%	(D)	(D)	4.3%	4.8%	2.6%	3.7%
Federal government	5.2%	2.9%	2.0%	1.0%	2.0%	1.5%	3.3%	1.8%	2.0%	4.5%	6.2%
State government	(D)	0.8%	1.7%	0.2%	1.2%	0.1%	(D)	0.4%	1.2%	(D)	1.5%
Local government	(D)	18.6%	15.3%	6.8%	7.2%	1.6%	(D)	13.2%	9.8%	(D)	8.9%
Categories for which data were not disclosed	17.6%	17.4%	5.6%	6.1%	0.9%	4.7%	69.6%	31.4%	13.6%	57.9%	20.3%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

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³ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 2. Employment Percentages by Industry Sector and County in 2010 (continued)^{1,2}

	Elmore, ID	Fremont, ID ³	Gem, ID	Gooding, ID	Jefferson, ID	Jerome, ID	Lemhi, ID	Lincoln, ID	Madison, ID	Minidoka, ID	Oneida, ID
Farm	6.4%	13.2%	14.0%	25.6%	13.1%	16.6%	9.0%	22.5%	3.8%	15.2%	22.6%
Forestry, fishing, & related activities ⁴	(D)	(D)	(D)	(D)	5.3%	3.1%	(D)	(D)	(D)	(D)	(D)
Mining (including oil and gas)	(D)	(D)	(D)	(D)	0.4%	0.3%	(D)	(L)	(D)	(D)	(D)
Utilities	0.2%	(D)	(L)	0.5%	0.2%	(D)	(D)	(D)	(D)	0.6%	(L)
Construction	3.7%	9.3%	8.0%	4.1%	9.9%	5.2%	8.8%	(D)	5.2%	6.0%	3.3%
Manufacturing	3.4%	1.9%	4.0%	9.8%	8.6%	12.8%	3.2%	(D)	4.6%	10.4%	1.4%
Wholesale trade	0.8%	(D)	2.3%	2.6%	3.4%	(D)	1.4%	(D)	7.7%	6.3%	1.6%
Retail trade	8.8%	8.8%	9.8%	7.1%	9.4%	10.3%	9.9%	6.3%	10.6%	7.9%	10.4%
Transportation and warehousing	2.2%	3.4%	3.3%	4.2%	4.0%	10.2%	(D)	2.6%	(D)	4.0%	5.2%
Information	0.9%	(D)	0.6%	0.5%	0.6%	0.9%	1.1%	(D)	0.7%	1.4%	1.1%
Finance and insurance	2.1%	3.3%	3.3%	2.0%	3.6%	2.1%	3.2%	(D)	3.8%	2.2%	(D)
Real estate and rental and leasing	3.3%	5.6%	4.6%	2.7%	3.3%	3.2%	4.6%	(D)	3.5%	2.9%	(D)
Professional and technical services	1.8%	2.9%	3.3%	3.4%	(D)	2.0%	5.1%	(D)	7.3%	2.5%	(D)
Management of companies and enterprises	(L)	0.0%	(D)	0.1%	(D)	(L)	0.4%	0.0%	(D)	(L)	0.0%
Administrative and waste services	3.0%	2.2%	(D)	1.6%	2.9%	2.8%	3.5%	(D)	(D)	1.4%	(D)
Educational services	1.3%	(D)	(D)	0.2%	(D)	0.8%	0.4%	(D)	(D)	(D)	(L)
Health care and social assistance	4.3%	(D)	(D)	(D)	(D)	5.3%	7.5%	(D)	(D)	(D)	4.3%
Arts, entertainment, and recreation	0.7%	1.2%	1.1%	1.4%	2.6%	1.5%	2.4%	(D)	1.6%	0.9%	(D)
Accommodation and food services	6.0%	5.8%	4.0%	3.6%	3.0%	3.5%	6.9%	(D)	5.7%	5.8%	(D)
Other services, except public administration	4.2%	6.4%	6.6%	5.5%	6.0%	5.1%	8.5%	(D)	4.1%	6.1%	5.2%
Federal government	35.5%	2.8%	2.4%	1.7%	1.6%	1.3%	6.0%	5.0%	1.2%	1.6%	1.9%
State government	0.5%	6.1%	0.4%	1.3%	1.4%	0.7%	2.2%	4.0%	0.3%	0.5%	0.5%
Local government	9.7%	13.2%	11.8%	11.2%	11.5%	8.0%	11.1%	13.5%	10.7%	14.6%	20.0%
Categories for which data were not disclosed	1.2%	14.0%	20.4%	10.8%	9.2%	4.5%	4.7%	46.0%	29.3%	9.8%	22.4%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

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³ Fremont County includes Yellowstone Park.

⁴ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 2. Employment Percentages by Industry Sector and County in 2010 (continued)^{1,2}

	Owyhee, ID	Payette, ID	Power, ID	Twin Falls, ID	Washington, ID	Beaverhead, MT	Madison, MT
Farm	25.3%	10.1%	17.2%	4.7%	15.3%	9.2%	10.7%
Forestry, fishing, & related activities ³	(D)	(D)	3.8%	1.9%	4.3%	(D)	2.6%
Mining (including oil and gas)	(D)	(D)	0.9%	0.2%	0.8%	(D)	1.7%
Utilities	(D)	1.0%	(D)	0.5%	(D)	(D)	0.2%
Construction	5.5%	6.4%	2.4%	5.4%	4.6%	6.3%	11.0%
Manufacturing	5.5%	12.4%	24.8%	7.4%	10.7%	2.0%	2.6%
Wholesale trade	2.9%	3.1%	(D)	3.2%	3.9%	3.1%	0.7%
Retail trade	8.1%	7.9%	6.3%	13.1%	8.5%	10.1%	7.1%
Transportation and warehousing	(D)	3.5%	7.0%	3.9%	(D)	(D)	2.5%
Information	0.9%	(D)	(D)	1.5%	2.4%	0.8%	0.3%
Finance and insurance	(D)	4.3%	2.0%	3.9%	2.3%	3.3%	2.8%
Real estate and rental and leasing	(D)	3.9%	1.4%	4.5%	3.4%	7.0%	5.4%
Professional and technical services	(D)	(D)	1.5%	4.5%	2.7%	3.3%	(D)
Management of companies and enterprises	(D)	(D)	(D)	0.5%	(D)	0.0%	(D)
Administrative and waste services	2.9%	4.9%	(D)	6.8%	(D)	2.3%	3.2%
Educational services	(D)	(D)	(D)	0.9%	(D)	(D)	0.5%
Health care and social assistance	(D)	(D)	1.8%	12.9%	(D)	(D)	3.7%
Arts, entertainment, and recreation	1.4%	1.0%	(D)	1.2%	1.3%	2.9%	8.7%
Accommodation and food services	4.5%	3.4%	(D)	6.3%	4.0%	9.2%	17.6%
Other services, except public administration	4.9%	7.6%	4.4%	5.6%	4.7%	5.4%	5.2%
Federal government	2.4%	1.4%	1.4%	1.6%	2.2%	4.5%	1.9%
State government	0.7%	0.8%	1.1%	1.0%	0.5%	6.8%	0.2%
Local government	14.8%	10.4%	13.8%	8.7%	14.3%	6.4%	7.9%
Categories for which data were not disclosed	20.3%	18.0%	10.2%	0.0%	14.0%	17.4%	3.6%

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³ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 2. Employment Percentages by Industry Sector and County in 2010 (continued)^{1,2}

	Ada, ID ³	Bannock, ID	Boise, ID	Canyon, ID	Gallatin, MT	Silver Bow, MT
Farm	0.7%	2.2%	4.6%	4.3%	1.7%	0.7%
Forestry, fishing, & related activities ⁴	0.2%	(D)	(D)	1.5%	0.9%	(D)
Mining (including oil and gas)	0.1%	(D)	(D)	0.1%	0.6%	2.2%
Utilities	0.3%	0.3%	(D)	0.2%	0.2%	(D)
Construction	5.6%	6.2%	7.3%	7.2%	8.7%	4.6%
Manufacturing	5.9%	5.0%	1.5%	10.6%	4.2%	3.2%
Wholesale trade	3.6%	2.6%	(D)	3.3%	2.6%	2.2%
Retail trade	11.1%	12.2%	6.6%	12.3%	12.6%	13.0%
Transportation and warehousing	2.2%	3.1%	4.6%	3.9%	1.9%	(D)
Information	1.8%	1.2%	(D)	1.1%	1.3%	1.7%
Finance and insurance	5.8%	5.0%	(D)	4.0%	3.6%	2.9%
Real estate and rental and leasing	5.7%	3.7%	(D)	4.3%	6.6%	4.0%
Professional and technical services	6.9%	4.0%	(D)	3.8%	8.6%	5.5%
Management of companies and enterprises	1.6%	0.7%	(D)	0.5%	0.3%	(D)
Administrative and waste services	8.9%	5.7%	4.4%	4.9%	3.5%	(D)
Educational services	1.8%	1.1%	1.0%	2.9%	1.7%	1.2%
Health care and social assistance	12.0%	13.3%	3.3%	11.2%	7.7%	16.2%
Arts, entertainment, and recreation	2.1%	1.9%	17.0%	1.2%	3.8%	3.2%
Accommodation and food services	6.3%	7.5%	6.9%	4.7%	9.0%	9.5%
Other services, except public administration	4.8%	5.4%	4.4%	5.6%	5.4%	6.3%
Federal government	2.7%	2.0%	8.2%	1.5%	1.7%	2.3%
State government	4.5%	9.4%	0.8%	1.3%	9.1%	5.7%
Local government	5.4%	7.2%	13.5%	9.9%	4.4%	5.8%
Categories for which data were not disclosed	0.0%	0.3%	15.9%	0.0%	0.0%	9.6%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

¹ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

² (L) Less than 10 jobs, but the estimates for this item are included in the totals.

³ Ada, Bannock, Boise, and Canyon Counties in Idaho and Gallatin and Silver Bow Counties in Montana constitute a secondary study area, as documented in the Chapter 3 text.

⁴ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

Table 3. Labor Income Levels by Industry Sector and County and Non-Labor Income Levels by County in 2010, presented in 2010 dollars (millions)

	Adams, ID	Bear Lake, ID	Bingham, ID	Blaine, ID	Bonneville, ID	Butte, ID	Camas, ID	Caribou, ID	Cassia, ID	Clark, ID	Custer, ID
Population	3,954	5,975	45,742	21,334	104,622	2,899	1,108	6,982	23,091	980	4,370
Non-labor income ¹	\$61.8	\$70.4	\$459.3	\$760.7	\$1,246.9	\$34.1	\$12.5	\$81.9	\$266.9	\$8.3	\$64.3
Dividends, interest, and rent	\$31.8	\$26.6	\$189.5	\$655.7	\$606.9	\$13.1	\$6.8	\$37.7	\$117.1	\$3.6	\$35.2
Personal current transfer receipts ²	\$30.0	\$43.9	\$269.8	\$105.0	\$640.0	\$21.0	\$5.7	\$44.2	\$149.9	\$4.8	\$29.1
Adjustment for residence ³	\$4.7	\$31.4	\$88.9	-\$13.8	\$292.3	-\$654.6	\$6.2	-\$47.5	-\$38.5	-\$1.7	-\$10.6
Contributions for government social insurance ⁴	\$7.1	\$11.0	\$94.7	\$86.7	\$294.1	\$104.9	\$2.3	\$25.2	\$58.2	\$3.6	\$11.6
Total personal income by place of residence	\$109.9	\$172.9	\$1,203.0	\$1,362.9	\$3,626.9	\$93.3	\$38.5	\$215.3	\$725.2	\$38.9	\$142.1
Earnings by place of work ⁵	\$50.5	\$82.0	\$749.5	\$702.7	\$2,381.9	\$818.8	\$21.9	\$206.2	\$555.0	\$35.9	\$100.0
Total earnings by place of work by sector^{6,7}											
Farm	-\$1.0	\$6.4	\$39.7	\$10.2	\$40.3	\$10.6	\$6.5	\$11.5	\$156.3	\$11.4	\$9.5
Forestry, fishing, & related activities ⁸	\$3.2	(D)	(D)	\$1.6	(D)	(D)	(D)	(D)	\$12.6	(D)	(D)
Mining (including oil and gas)	(L)	(D)	(D)	\$2.0	(D)	(L)	(L)	\$26.2	\$4.0	(L)	(D)
Utilities	(D)	(D)	\$6.7	\$2.9	\$3.3	\$0.1	\$0.0	\$3.1	\$4.2	(L)	\$2.6
Construction	\$2.6	\$2.4	\$50.9	\$93.3	\$209.9	\$1.3	(D)	(D)	\$20.4	(D)	\$3.5
Manufacturing	\$2.1	\$2.6	\$126.9	\$30.4	\$101.9	\$1.5	(D)	(D)	\$60.3	(D)	\$0.3
Wholesale trade	\$0.9	\$3.2	\$84.1	\$11.7	\$265.9	(D)	(D)	\$4.4	\$21.7	(D)	\$1.0
Retail trade	\$8.2	\$7.0	\$36.5	\$58.7	\$244.2	\$2.1	(D)	\$6.9	\$43.1	(D)	\$4.5
Transportation and warehousing	(D)	(D)	\$20.3	\$9.6	\$92.8	(D)	(L)	\$3.3	\$37.2	(D)	\$0.9
Information	\$0.3	\$0.4	\$1.8	\$22.6	\$53.4	(D)	(L)	\$0.6	\$5.9	(D)	\$1.9
Finance and insurance	\$1.4	\$1.7	\$17.5	\$32.6	\$81.2	\$1.1	(D)	\$2.0	\$10.2	\$1.7	\$0.9
Real estate and rental and leasing	\$0.6	\$0.5	\$5.6	\$26.6	\$45.3	\$0.1	\$0.1	\$2.6	\$2.2	(L)	\$0.6
Professional and technical services	\$3.4	(D)	(D)	\$96.9	\$215.7	\$765.5	\$0.7	\$5.8	\$14.4	(D)	\$2.5

¹ Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

² Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

³ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁴ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁵ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁶ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁷ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁸ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Adams, ID	Bear Lake, ID	Bingham, ID	Blaine, ID	Bonneville, ID	Butte, ID	Camas, ID	Caribou, ID	Cassia, ID	Clark, ID	Custer, ID
Management of companies and enterprises	\$0.0	\$0.0	(D)	(D)	\$4.8	(D)	(D)	(D)	(D)	\$0.0	(D)
Administrative and waste services	\$1.0	(D)	\$14.6	(D)	\$90.0	(D)	(D)	(D)	(D)	(D)	(D)
Educational services	(D)	(D)	\$2.0	\$6.3	\$7.0	(D)	(D)	(D)	(D)	(D)	(L)
Health care and social assistance	(D)	(D)	\$72.5	\$50.4	\$396.3	(D)	(D)	(D)	(D)	(D)	\$2.0
Arts, entertainment, and recreation	\$3.2	\$0.6	\$1.9	\$21.0	\$11.5	(L)	(D)	\$0.3	\$2.4	(L)	\$3.5
Accommodation and food services	\$1.3	\$3.0	\$9.4	\$76.3	\$72.5	\$1.2	(D)	\$2.5	\$6.1	(D)	\$4.8
Other services, except public administration	\$2.4	\$3.9	\$33.6	\$33.2	\$107.5	(D)	(D)	\$4.4	\$17.1	\$0.3	\$1.8
Federal government	\$9.1	\$5.5	\$27.7	\$13.1	\$104.7	\$16.4	\$2.2	\$5.2	\$18.5	\$3.6	\$13.2
State government	(D)	\$1.2	\$19.4	\$2.2	\$36.1	\$0.7	(D)	\$1.3	\$9.9	(D)	\$2.5
Local government	(D)	\$24.1	\$130.6	\$71.0	\$188.4	\$5.2	(D)	\$24.4	\$48.9	(D)	\$8.9
Categories for which data were not disclosed	\$12.0	\$19.6	\$47.8	\$30.2	\$9.2	\$13.0	\$12.5	\$101.6	\$59.4	\$18.9	\$35.2

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

**Table 3. Labor Income Levels by Industry Sector and County and Non-Labor Income Levels by County in 2010, presented in 2010 dollars (millions)
(continued)**

	Elmore, ID	Fremont, ID ¹	Gem, ID	Gooding, ID	Jefferson, ID	Jerome, ID	Lemhi, ID	Lincoln, ID	Madison, ID	Minidoka, ID	Oneida, ID
Population	27,080	13,248	16,669	15,500	26,215	22,461	7,957	5,214	37,602	20,082	4,294
Non-labor income ²	\$262.7	\$142.0	\$216.2	\$176.3	\$207.1	\$207.1	\$138.0	\$47.8	\$273.8	\$213.2	\$46.5
Dividends, interest, and rent	\$109.8	\$63.0	\$81.2	\$77.7	\$79.5	\$82.5	\$64.6	\$16.6	\$106.2	\$86.9	\$17.6
Personal current transfer receipts ³	\$152.9	\$79.0	\$135.0	\$98.6	\$127.6	\$124.6	\$73.4	\$31.3	\$167.5	\$126.4	\$28.9
Adjustment for residence ⁴	\$16.4	\$60.2	\$119.3	\$26.9	\$191.0	\$5.1	\$1.1	\$3.3	-\$46.1	\$46.4	\$20.8
Contributions for government social insurance ⁵	\$67.5	\$18.3	\$21.9	\$34.2	\$34.7	\$52.4	\$15.9	\$8.7	\$69.3	\$40.1	\$5.7
Total personal income by place of residence	\$909.7	\$315.3	\$462.5	\$574.3	\$687.9	\$656.2	\$244.0	\$144.4	\$701.3	\$569.8	\$114.7
Earnings by place of work ⁶	\$698.1	\$131.4	\$148.9	\$405.4	\$324.4	\$496.4	\$120.9	\$102.0	\$543.0	\$350.3	\$53.1
<i>Total earnings by place of work by sector^{7,8}</i>											
Farm	\$46.3	-\$1.4	\$9.3	\$191.8	\$64.5	\$138.8	\$3.1	\$46.9	-\$6.1	\$84.3	\$14.7
Forestry, fishing, & related activities ⁹	(D)	(D)	(D)	(D)	\$13.7	\$23.0	(D)	(D)	(D)	(D)	(D)
Mining (including oil and gas)	(D)	(D)	(D)	(D)	(L)	(L)	(D)	(L)	(D)	(D)	(D)
Utilities	\$4.5	(D)	(L)	\$3.8	\$2.3	(D)	(D)	(D)	(D)	\$5.5	(L)
Construction	\$16.2	\$14.6	\$11.6	\$9.2	\$30.6	\$23.7	\$12.1	(D)	\$26.7	\$15.9	\$1.0
Manufacturing	\$14.5	\$2.7	\$8.8	\$42.3	\$45.4	\$61.6	\$3.7	(D)	\$44.6	\$61.7	\$0.5
Wholesale trade	\$4.2	(D)	\$7.1	\$10.9	\$13.7	(D)	\$2.0	(D)	\$42.2	\$28.5	\$1.2
Retail trade	\$29.3	\$8.4	\$10.0	\$10.4	\$17.0	\$32.8	\$10.1	\$2.2	\$43.3	\$14.4	\$2.4
Transportation and warehousing	\$11.8	\$7.0	\$7.8	\$29.0	\$16.4	\$62.0	(D)	\$1.5	(D)	\$13.1	\$3.3
Information	\$3.9	(D)	\$0.3	\$0.3	\$2.2	\$4.1	\$0.7	(D)	\$2.1	\$4.6	\$0.2
Finance and insurance	\$8.5	\$2.5	\$3.5	\$3.8	\$5.7	\$4.5	\$1.9	(D)	\$13.3	\$4.4	(D)

¹ Fremont County includes Yellowstone Park.

² Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

³ Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

⁴ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁵ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁶ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁷ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁸ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁹ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Elmore, ID	Fremont, ID ¹	Gem, ID	Gooding, ID	Jefferson, ID	Jerome, ID	Lemhi, ID	Lincoln, ID	Madison, ID	Minidoka, ID	Oneida, ID
Real estate and rental and leasing	\$2.3	\$2.7	\$1.6	\$1.9	\$6.4	\$4.7	\$1.3	(D)	\$7.6	\$2.1	(D)
Professional and technical services	\$8.5	\$2.8	\$4.8	\$9.9	(D)	\$10.5	\$6.6	(D)	\$38.8	\$6.5	(D)
Management of companies and enterprises	(L)	\$0.0	(D)	\$1.6	(D)	\$1.2	\$1.5	\$0.0	(D)	(L)	\$0.0
Administrative and waste services	\$10.1	\$2.2	(D)	\$0.4	\$3.5	\$5.4	\$2.4	(D)	(D)	\$0.7	(D)
Educational services	\$4.2	(D)	(D)	\$0.1	(D)	\$1.9	\$0.2	(D)	(D)	(D)	(L)
Health care and social assistance	\$18.6	(D)	(D)	(D)	(D)	\$20.8	\$8.8	(D)	(D)	(D)	\$1.5
Arts, entertainment, and recreation	\$1.0	\$0.8	\$0.7	\$1.8	\$2.7	\$4.8	\$2.1	(D)	\$3.8	\$1.8	(D)
Accommodation and food services	\$13.3	\$5.0	\$3.5	\$3.6	\$3.3	\$5.8	\$4.5	(D)	\$15.2	\$7.8	(D)
Other services, except public administration	\$15.2	\$8.1	\$8.1	\$12.6	\$14.2	\$16.1	\$9.0	(D)	\$17.8	\$12.9	\$1.8
Federal government	\$424.4	\$9.8	\$10.3	\$8.8	\$8.4	\$8.1	\$20.7	\$8.8	\$11.6	\$8.8	\$2.4
State government	\$3.3	\$19.0	\$1.4	\$5.1	\$7.2	\$3.8	\$5.3	\$5.5	\$2.6	\$2.6	\$0.6
Local government	\$54.9	\$25.1	\$28.8	\$33.8	\$39.4	\$34.8	\$21.2	\$10.6	\$77.7	\$50.6	\$13.9
Categories for which data were not disclosed	\$3.0	\$22.1	\$31.3	\$24.5	\$28.1	\$28.0	\$3.6	\$26.6	\$201.7	\$24.2	\$9.4

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

**Table 3. Labor Income Levels by Industry Sector and County and Non-Labor Income Levels by County in 2010, presented in 2010 dollars (millions)
(continued)**

	Owyhee, ID	Payette, ID	Power, ID	Twin Falls, ID	Washington, ID	Beaverhead, MT	Madison, MT
Population	11,491	22,635	7,867	77,490	10,217	9,256	7,698
Non-labor income ¹	\$115.4	\$258.8	\$79.8	\$963.4	\$136.4	\$156.7	\$133.0
Dividends, interest, and rent	\$48.6	\$100.4	\$33.4	\$417.3	\$53.0	\$84.0	\$79.1
Personal current transfer receipts ²	\$66.8	\$158.4	\$46.4	\$546.1	\$83.4	\$72.7	\$54.0
Adjustment for residence ³	\$55.4	\$95.6	-\$10.6	\$1.2	\$34.7	-\$0.3	-\$1.1
Contributions for government social insurance ⁴	\$15.1	\$40.9	\$20.4	\$200.8	\$17.5	\$22.7	\$23.4
Total personal income by place of residence	\$331.7	\$607.1	\$193.1	\$2,407.5	\$273.8	\$307.6	\$271.5
Earnings by place of work ⁵	\$176.0	\$293.6	\$144.3	\$1,643.7	\$120.2	\$173.9	\$163.0
Total earnings by place of work by sector^{6,7}							
Farm	\$82.6	\$24.5	\$14.0	\$179.5	\$8.7	\$9.2	\$3.1
Forestry, fishing, & related activities ⁸	(D)	(D)	\$3.8	\$32.1	\$4.5	(D)	\$2.0
Mining (including oil and gas)	(D)	(D)	(L)	\$1.0	(L)	(D)	\$4.3
Utilities	(D)	\$9.7	(D)	\$20.6	(D)	(D)	\$1.1
Construction	\$9.4	\$22.8	\$2.6	\$77.3	\$5.0	\$10.7	\$19.7
Manufacturing	\$10.5	\$48.3	\$47.5	\$169.2	\$16.4	\$0.6	\$1.1
Wholesale trade	\$5.7	\$10.6	(D)	\$70.3	\$6.1	\$5.5	\$1.4
Retail trade	\$6.3	\$13.1	\$4.2	\$161.8	\$8.5	\$12.5	\$8.0
Transportation and warehousing	(D)	\$13.2	\$13.0	\$74.7	(D)	(D)	\$5.2
Information	\$1.0	(D)	(D)	\$27.0	\$4.7	\$1.6	\$0.3
Finance and insurance	(D)	\$8.3	\$1.9	\$63.6	\$2.4	\$9.5	\$5.6
Real estate and rental and leasing	(D)	\$3.5	\$0.6	\$17.6	\$0.9	\$11.3	\$9.8
Professional and technical services	(D)	(D)	\$1.8	\$88.6	\$4.6	\$4.6	(D)

¹ Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

² Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

³ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁴ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁵ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁶ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁷ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁸ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Owyhee, ID	Payette, ID	Power, ID	Twin Falls, ID	Washington, ID	Beaverhead, MT	Madison, MT
Management of companies and enterprises	(D)	(D)	(D)	\$8.2	(D)	\$0.0	(D)
Administrative and waste services	\$3.9	\$8.2	(D)	\$53.0	(D)	\$2.0	\$4.4
Educational services	(D)	(D)	(D)	\$6.2	(D)	(D)	\$0.6
Health care and social assistance	(D)	(D)	\$2.1	\$246.4	(D)	(D)	\$7.7
Arts, entertainment, and recreation	\$0.3	\$0.8	(D)	\$6.7	\$0.9	\$1.7	\$23.7
Accommodation and food services	\$2.3	\$3.8	(D)	\$47.9	\$2.2	\$7.6	\$27.0
Other services, except public administration	\$4.6	\$16.8	\$4.8	\$64.3	\$4.3	\$6.9	\$6.2
Federal government	\$6.3	\$6.8	\$3.3	\$51.9	\$5.9	\$19.4	\$6.4
State government	\$1.4	\$4.2	\$2.4	\$23.3	\$1.1	\$16.8	\$0.7
Local government	\$22.7	\$36.6	\$23.2	\$152.5	\$26.2	\$15.6	\$18.6
Categories for which data were not disclosed	\$18.9	\$62.4	\$19.2	\$0.0	\$17.8	\$38.6	\$5.9

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

**Table 3. Labor Income Levels by Industry Sector and County and Non-Labor Income Levels by County in 2010, presented in 2010 dollars (millions)
(continued)**

	Ada, ID ¹	Bannock, ID	Boise, ID	Canyon, ID	Gallatin, MT	Silver Bow, MT
Population	393,466	83,020	7,017	189,410	89,616	34,233
Non-labor income ²	\$4,788.3	\$902.9	\$88.3	\$1,828.7	\$1,180.3	\$514.7
Dividends, interest, and rent	\$2,581.4	\$332.0	\$41.5	\$612.8	\$781.4	\$225.6
Personal current transfer receipts ³	\$2,206.9	\$570.9	\$46.8	\$1,215.9	\$398.9	\$289.1
Adjustment for residence ⁴	-\$616.9	\$96.9	\$111.0	\$379.8	-\$15.0	-\$13.0
Contributions for government social insurance ⁵	\$1,529.0	\$213.1	\$8.8	\$334.0	\$299.7	\$114.3
Total personal income by place of residence	\$15,234.3	\$2,373.5	\$252.9	\$4,304.0	\$3,222.0	\$1,256.6
Earnings by place of work ⁶	\$12,591.9	\$1,586.7	\$62.3	\$2,429.5	\$2,356.3	\$869.2
Total earnings by place of work by sector^{7,8}						
Farm	\$46.6	\$9.8	\$0.4	\$135.4	\$26.8	-\$0.1
Forestry, fishing, & related activities ⁹	\$11.6	(D)	(D)	\$31.1	\$10.1	(D)
Mining (including oil and gas)	\$14.2	(D)	(D)	\$1.2	\$15.5	\$74.4
Utilities	\$120.9	\$11.6	(D)	\$14.4	\$11.4	(D)
Construction	\$910.3	\$110.4	\$3.1	\$175.1	\$256.6	\$35.7
Manufacturing	\$1,443.6	\$133.5	\$0.6	\$327.4	\$131.9	\$40.4
Wholesale trade	\$651.8	\$56.6	(D)	\$131.8	\$98.4	\$23.9
Retail trade	\$889.8	\$126.1	\$2.5	\$231.9	\$247.4	\$93.8
Transportation and warehousing	\$262.1	\$87.7	\$2.5	\$129.7	\$45.6	(D)
Information	\$235.9	\$21.2	(D)	\$29.6	\$31.9	\$20.4
Finance and insurance	\$714.8	\$79.7	(D)	\$64.8	\$105.2	\$21.9
Real estate and rental and leasing	\$189.5	\$16.3	(D)	\$25.4	\$56.8	\$7.8
Professional and technical services	\$1,257.3	\$73.4	(D)	\$95.8	\$269.9	\$54.1

¹ Ada, Bannock, Boise, and Canyon Counties in Idaho and Gallatin and Silver Bow Counties in Montana constitute a secondary study area, as documented in the Chapter 3 text.

² Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

³ Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

⁴ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁵ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁶ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁷ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁸ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁹ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Ada, ID ¹	Bannock, ID	Boise, ID	Canyon, ID	Gallatin, MT	Silver Bow, MT
Management of companies and enterprises	\$436.5	\$12.6	(D)	\$18.1	\$9.1	(D)
Administrative and waste services	\$757.3	\$64.0	\$2.6	\$77.4	\$51.5	(D)
Educational services	\$104.6	\$7.5	\$0.2	\$48.1	\$15.8	\$3.8
Health care and social assistance	\$1,694.2	\$246.1	\$1.9	\$284.5	\$226.9	\$134.8
Arts, entertainment, and recreation	\$125.1	\$7.9	\$8.0	\$7.0	\$45.4	\$10.9
Accommodation and food services	\$331.3	\$53.5	\$2.6	\$55.1	\$119.7	\$35.3
Other services, except public administration	\$409.2	\$64.3	\$2.5	\$105.3	\$94.2	\$32.2
Federal government	\$637.7	\$69.2	\$15.9	\$68.1	\$83.1	\$35.3
State government	\$635.3	\$193.5	\$0.9	\$47.5	\$259.8	\$63.1
Local government	\$712.4	\$140.1	\$11.4	\$324.8	\$143.4	\$62.7
Categories for which data were not disclosed	\$0.0	\$1.6	\$7.2	\$0.0	\$0.0	\$118.7

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

Table 4. Labor Income Percentages by Industry Sector and County and Non-Labor Income Percentages by County in 2010

	Adams, ID	Bear Lake, ID	Bingham, ID	Blaine, ID	Bonneville, ID	Butte, ID	Camas, ID	Caribou, ID	Cassia, ID	Clark, ID	Custer, ID
Population	3,954	5,975	45,742	21,334	104,622	2,899	1,108	6,982	23,091	980	4,370
Non-labor income as a proportion of total personal income ¹	56.2%	40.7%	38.2%	55.8%	34.4%	36.5%	32.6%	38.0%	36.8%	21.4%	45.2%
Dividends, interest, and rent as a proportion of total personal income	28.9%	15.4%	15.8%	48.1%	16.7%	14.0%	17.7%	17.5%	16.1%	9.1%	24.8%
Personal current transfer receipts as a proportion of total personal income ²	27.3%	25.4%	22.4%	7.7%	17.6%	22.5%	14.9%	20.5%	20.7%	12.3%	20.5%
Adjustment for residence as a proportion of total personal income ³	4.3%	18.2%	7.4%	-1.0%	8.1%	-701.3%	16.2%	-22.1%	-5.3%	-4.4%	-7.5%
Contributions for government social insurance as a proportion of total personal income ⁴	6.4%	6.4%	7.9%	6.4%	8.1%	112.3%	5.9%	11.7%	8.0%	9.3%	8.1%
Total personal income by place of residence (\$ millions)	\$109.9	\$172.9	\$1,203.0	\$1,362.9	\$3,626.9	\$93.3	\$38.5	\$215.3	\$725.2	\$38.9	\$142.1
Earnings by place of work (\$ millions) ⁵	\$50.5	\$82.0	\$749.5	\$702.7	\$2,381.9	\$818.8	\$21.9	\$206.2	\$555.0	\$35.9	\$100.0
<i>Total earnings by place of work by sector</i> ^{6,7}											
Farm	-2.1%	7.8%	5.3%	1.4%	1.7%	1.3%	29.5%	5.6%	28.2%	31.6%	9.5%
Forestry, fishing, & related activities ⁸	6.4%	(D)	(D)	0.2%	(D)	(D)	(D)	(D)	2.3%	(D)	(D)
Mining (including oil and gas)	(L)	(D)	(D)	0.3%	(D)	(L)	(L)	12.7%	0.7%	(L)	(D)
Utilities	(D)	(D)	0.9%	0.4%	0.1%	0.0%	0.0%	1.5%	0.7%	(L)	2.6%
Construction	5.1%	2.9%	6.8%	13.3%	8.8%	0.2%	(D)	(D)	3.7%	(D)	3.5%
Manufacturing	4.1%	3.2%	16.9%	4.3%	4.3%	0.2%	(D)	(D)	10.9%	(D)	0.3%
Wholesale trade	1.7%	3.9%	11.2%	1.7%	11.2%	(D)	(D)	2.1%	3.9%	(D)	1.0%
Retail trade	16.2%	8.5%	4.9%	8.4%	10.3%	0.3%	(D)	3.4%	7.8%	(D)	4.5%

¹ Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

² Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

³ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁴ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁵ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁶ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁷ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁸ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Adams, ID	Bear Lake, ID	Bingham, ID	Blaine, ID	Bonneville, ID	Butte, ID	Camas, ID	Caribou, ID	Cassia, ID	Clark, ID	Custer, ID
Transportation and warehousing	(D)	(D)	2.7%	1.4%	3.9%	(D)	(L)	1.6%	6.7%	(D)	0.9%
Information	0.6%	0.5%	0.2%	3.2%	2.2%	(D)	(L)	0.3%	1.1%	(D)	1.9%
Finance and insurance	2.7%	2.0%	2.3%	4.6%	3.4%	0.1%	(D)	1.0%	1.8%	4.8%	0.9%
Real estate and rental and leasing	1.2%	0.6%	0.8%	3.8%	1.9%	0.0%	0.5%	1.3%	0.4%	(L)	0.6%
Professional and technical services	6.6%	(D)	(D)	13.8%	9.1%	93.5%	3.1%	2.8%	2.6%	(D)	2.5%
Management of companies and enterprises	0.0%	0.0%	(D)	(D)	0.2%	(D)	(D)	(D)	(D)	0.0%	(D)
Administrative and waste services	1.9%	(D)	1.9%	(D)	3.8%	(D)	(D)	(D)	(D)	(D)	(D)
Educational services	(D)	(D)	0.3%	0.9%	0.3%	(D)	(D)	(D)	(D)	(D)	(L)
Health care and social assistance	(D)	(D)	9.7%	7.2%	16.6%	(D)	(D)	(D)	(D)	(D)	2.0%
Arts, entertainment, and recreation	6.3%	0.7%	0.3%	3.0%	0.5%	(L)	(D)	0.2%	0.4%	(L)	3.5%
Accommodation and food services	2.5%	3.7%	1.3%	10.9%	3.0%	0.1%	(D)	1.2%	1.1%	(D)	4.8%
Other services, except public administration	4.8%	4.7%	4.5%	4.7%	4.5%	(D)	(D)	2.1%	3.1%	0.8%	1.8%
Federal government	17.9%	6.7%	3.7%	1.9%	4.4%	2.0%	10.1%	2.5%	3.3%	10.0%	13.2%
State government	(D)	1.4%	2.6%	0.3%	1.5%	0.1%	(D)	0.6%	1.8%	(D)	2.5%
Local government	(D)	29.4%	17.4%	10.1%	7.9%	0.6%	(D)	11.8%	8.8%	(D)	8.9%
Categories for which data were not disclosed	23.8%	23.8%	6.4%	4.3%	0.4%	1.6%	56.9%	49.3%	10.7%	52.7%	35.2%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

Table 4. Labor Income Percentages by Industry Sector and County and Non-Labor Income Percentages by County in 2010 (continued)

	Elmore, ID	Fremont, ID ¹	Gem, ID	Gooding, ID	Jefferson, ID	Jerome, ID	Lemhi, ID	Lincoln, ID	Madison, ID	Minidoka, ID	Oneida, ID
Population	27,080	13,248	16,669	15,500	26,215	22,461	7,957	5,214	37,602	20,082	4,294
Non-labor income as a proportion of total personal income ²	28.9%	45.0%	46.7%	30.7%	30.1%	31.6%	56.5%	33.1%	39.0%	37.4%	40.6%
Dividends, interest, and rent as a proportion of total personal income	12.1%	20.0%	17.6%	13.5%	11.6%	12.6%	26.5%	11.5%	15.1%	15.2%	15.3%
Personal current transfer receipts as a proportion of total personal income ³	16.8%	25.1%	29.2%	17.2%	18.6%	19.0%	30.1%	21.6%	23.9%	22.2%	25.2%
Adjustment for residence as a proportion of total personal income ⁴	1.8%	19.1%	25.8%	4.7%	27.8%	0.8%	0.4%	2.3%	-6.6%	8.1%	18.1%
Contributions for government social insurance as a proportion of total personal income ⁵	7.4%	5.8%	4.7%	6.0%	5.0%	8.0%	6.5%	6.1%	9.9%	7.0%	5.0%
Total personal income by place of residence (\$ millions)	\$909.7	\$315.3	\$462.5	\$574.3	\$687.9	\$656.2	\$244.0	\$144.4	\$701.3	\$569.8	\$114.7
Earnings by place of work (\$ millions) ⁶	\$698.1	\$131.4	\$148.9	\$405.4	\$324.4	\$496.4	\$120.9	\$102.0	\$543.0	\$350.3	\$53.1
<i>Total earnings by place of work by sector^{7,8}</i>											
Farm	6.6%	-1.1%	6.3%	47.3%	19.9%	28.0%	2.6%	46.0%	-1.1%	24.1%	27.8%
Forestry, fishing, & related activities ⁹	(D)	(D)	(D)	(D)	4.2%	4.6%	(D)	(D)	(D)	(D)	(D)
Mining (including oil and gas)	(D)	(D)	(D)	(D)	(L)	(L)	(D)	(L)	(D)	(D)	(D)
Utilities	0.7%	(D)	(L)	0.9%	0.7%	(D)	(D)	(D)	(D)	1.6%	(L)
Construction	2.3%	11.1%	7.8%	2.3%	9.4%	4.8%	10.0%	(D)	4.9%	4.5%	2.0%
Manufacturing	2.1%	2.1%	5.9%	10.4%	14.0%	12.4%	3.1%	(D)	8.2%	17.6%	1.0%

¹ Fremont County includes Yellowstone Park.

² Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

³ Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

⁴ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁵ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁶ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁷ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁸ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁹ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Elmore, ID	Fremont, ID ¹	Gem, ID	Gooding, ID	Jefferson, ID	Jerome, ID	Lemhi, ID	Lincol n, ID	Madiso n, ID	Minidoka, ID	Oneida, ID
Wholesale trade	0.6%	(D)	4.7%	2.7%	4.2%	(D)	1.7%	(D)	7.8%	8.1%	2.2%
Retail trade	4.2%	6.4%	6.7%	2.6%	5.2%	6.6%	8.3%	2.1%	8.0%	4.1%	4.6%
Transportation and warehousing	1.7%	5.4%	5.3%	7.2%	5.1%	12.5%	(D)	1.5%	(D)	3.7%	6.3%
Information	0.6%	(D)	0.2%	0.1%	0.7%	0.8%	0.6%	(D)	0.4%	1.3%	0.4%
Finance and insurance	1.2%	1.9%	2.3%	0.9%	1.8%	0.9%	1.6%	(D)	2.5%	1.3%	(D)
Real estate and rental and leasing	0.3%	2.1%	1.0%	0.5%	2.0%	0.9%	1.1%	(D)	1.4%	0.6%	(D)
Professional and technical services	1.2%	2.1%	3.2%	2.4%	(D)	2.1%	5.5%	(D)	7.1%	1.9%	(D)
Management of companies and enterprises	(L)	0.0%	(D)	0.4%	(D)	0.2%	1.2%	0.0%	(D)	(L)	0.0%
Administrative and waste services	1.5%	1.6%	(D)	0.1%	1.1%	1.1%	2.0%	(D)	(D)	0.2%	(D)
Educational services	0.6%	(D)	(D)	0.0%	(D)	0.4%	0.1%	(D)	(D)	(D)	(L)
Health care and social assistance	2.7%	(D)	(D)	(D)	(D)	4.2%	7.3%	(D)	(D)	(D)	2.8%
Arts, entertainment, and recreation	0.1%	0.6%	0.4%	0.4%	0.8%	1.0%	1.7%	(D)	0.7%	0.5%	(D)
Accommodation and food services	1.9%	3.8%	2.4%	0.9%	1.0%	1.2%	3.7%	(D)	2.8%	2.2%	(D)
Other services, except public administration	2.2%	6.2%	5.4%	3.1%	4.4%	3.3%	7.4%	(D)	3.3%	3.7%	3.4%
Federal government	60.8%	7.4%	6.9%	2.2%	2.6%	1.6%	17.1%	8.6%	2.1%	2.5%	4.5%
State government	0.5%	14.5%	0.9%	1.3%	2.2%	0.8%	4.4%	5.4%	0.5%	0.7%	1.1%
Local government	7.9%	19.1%	19.4%	8.3%	12.1%	7.0%	17.5%	10.4%	14.3%	14.5%	26.2%
Categories for which data were not disclosed	0.4%	16.8%	21.0%	6.0%	8.7%	5.6%	3.0%	26.1%	37.1%	6.9%	17.8%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

Table 4. Labor Income Percentages by Industry Sector and County and Non-Labor Income Percentages by County in 2010 (continued)

	Owyhee, ID	Payette, ID	Power, ID	Twin Falls, ID	Washington, ID	Beaverhead, MT	Madison, MT
Population	11,491	22,635	7,867	77,490	10,217	9,256	7,698
Non-labor income as a proportion of total personal income ¹	34.8%	42.6%	41.3%	40.0%	49.8%	50.9%	49.0%
Dividends, interest, and rent as a proportion of total personal income	14.7%	16.5%	17.3%	17.3%	19.4%	27.3%	29.1%
Personal current transfer receipts as a proportion of total personal income ²	20.1%	26.1%	24.0%	22.7%	30.5%	23.6%	19.9%
Adjustment for residence as a proportion of total personal income ³	16.7%	15.8%	-5.5%	0.1%	12.7%	-0.1%	-0.4%
Contributions for government social insurance as a proportion of total personal income ⁴	4.6%	6.7%	10.6%	8.3%	6.4%	7.4%	8.6%
Total personal income by place of residence (\$ millions)	\$331.7	\$607.1	\$193.1	\$2,407.5	\$273.8	\$307.6	\$271.5
Earnings by place of work (\$ millions) ⁵	\$176.0	\$293.6	\$144.3	\$1,643.7	\$120.2	\$173.9	\$163.0
Total earnings by place of work by sector^{6,7}							
Farm	46.9%	8.4%	9.7%	10.9%	7.2%	5.3%	1.9%
Forestry, fishing, & related activities ⁸	(D)	(D)	2.6%	2.0%	3.8%	(D)	1.2%
Mining (including oil and gas)	(D)	(D)	(L)	0.1%	(L)	(D)	2.7%
Utilities	(D)	3.3%	(D)	1.3%	(D)	(D)	0.7%
Construction	5.4%	7.8%	1.8%	4.7%	4.1%	6.1%	12.1%
Manufacturing	6.0%	16.4%	32.9%	10.3%	13.6%	0.4%	0.6%
Wholesale trade	3.2%	3.6%	(D)	4.3%	5.1%	3.2%	0.9%
Retail trade	3.6%	4.5%	2.9%	9.8%	7.1%	7.2%	4.9%
Transportation and warehousing	(D)	4.5%	9.0%	4.5%	(D)	(D)	3.2%
Information	0.6%	(D)	(D)	1.6%	3.9%	0.9%	0.2%

¹ Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

² Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

³ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁴ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁵ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁶ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁷ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁸ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Owyhee, ID	Payette, ID	Power, ID	Twin Falls, ID	Washington, ID	Beaverhead, MT	Madison, MT
Finance and insurance	(D)	2.8%	1.3%	3.9%	2.0%	5.5%	3.4%
Real estate and rental and leasing	(D)	1.2%	0.4%	1.1%	0.7%	6.5%	6.0%
Professional and technical services	(D)	(D)	1.3%	5.4%	3.8%	2.6%	(D)
Management of companies and enterprises	(D)	(D)	(D)	0.5%	(D)	0.0%	(D)
Administrative and waste services	2.2%	2.8%	(D)	3.2%	(D)	1.1%	2.7%
Educational services	(D)	(D)	(D)	0.4%	(D)	(D)	0.4%
Health care and social assistance	(D)	(D)	1.5%	15.0%	(D)	(D)	4.7%
Arts, entertainment, and recreation	0.2%	0.3%	(D)	0.4%	0.8%	1.0%	14.5%
Accommodation and food services	1.3%	1.3%	(D)	2.9%	1.8%	4.4%	16.6%
Other services, except public administration	2.6%	5.7%	3.3%	3.9%	3.6%	4.0%	3.8%
Federal government	3.6%	2.3%	2.3%	3.2%	4.9%	11.1%	3.9%
State government	0.8%	1.4%	1.6%	1.4%	0.9%	9.6%	0.4%
Local government	12.9%	12.5%	16.1%	9.3%	21.8%	9.0%	11.4%
Categories for which data were not disclosed	10.7%	21.3%	13.3%	0.0%	14.8%	22.2%	3.6%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

Table 4. Labor Income Percentages by Industry Sector and County and Non-Labor Income Percentages by County in 2010 (continued)

	Ada, ID ¹	Bannock, ID	Boise, ID	Canyon, ID	Gallatin, MT	Silver Bow, MT
Population	393,466	83,020	7,017	189,410	89,616	34,233
Non-labor income as a proportion of total personal income ²	31.4%	38.0%	34.9%	42.5%	36.6%	41.0%
Dividends, interest, and rent as a proportion of total personal income	16.9%	14.0%	16.4%	14.2%	24.3%	18.0%
Personal current transfer receipts as a proportion of total personal income ³	14.5%	24.1%	18.5%	28.3%	12.4%	23.0%
Adjustment for residence as a proportion of total personal income ⁴	-4.0%	4.1%	43.9%	8.8%	-0.5%	-1.0%
Contributions for government social insurance as a proportion of total personal income ⁵	10.0%	9.0%	3.5%	7.8%	9.3%	9.1%
Total personal income by place of residence (\$ millions)	\$15,234.3	\$2,373.5	\$252.9	\$4,304.0	\$3,222.0	\$1,256.6
Earnings by place of work (\$ millions) ⁶	\$12,591.9	\$1,586.7	\$62.3	\$2,429.5	\$2,356.3	\$869.2
Total earnings by place of work by sector^{7,8}						
Farm	0.4%	0.6%	0.7%	5.6%	1.1%	0.0%
Forestry, fishing, & related activities ⁹	0.1%	(D)	(D)	1.3%	0.4%	(D)
Mining (including oil and gas)	0.1%	(D)	(D)	0.1%	0.7%	8.6%
Utilities	1.0%	0.7%	(D)	0.6%	0.5%	(D)
Construction	7.2%	7.0%	4.9%	7.2%	10.9%	4.1%
Manufacturing	11.5%	8.4%	1.0%	13.5%	5.6%	4.6%
Wholesale trade	5.2%	3.6%	(D)	5.4%	4.2%	2.8%
Retail trade	7.1%	7.9%	4.0%	9.5%	10.5%	10.8%
Transportation and warehousing	2.1%	5.5%	4.0%	5.3%	1.9%	(D)

¹ Ada, Bannock, Boise, and Canyon Counties in Idaho and Gallatin and Silver Bow Counties in Montana constitute a secondary study area, as documented in the Chapter 3 text.

² Non-labor income includes dividends, interest, and rent and personal current transfer receipts.

³ Personal current transfer receipts are benefits received by persons for which no current services are performed. They are payments by government and business to individuals and institutions, such as retirement and disability insurance benefits.

⁴ Residence adjustment represents the net inflow of the earnings of inter-area commuters. A positive number indicates that, on balance, area residents commute outside to find jobs; a negative number indicates that, on balance, people from outside the area commute in to find jobs.

⁵ Contributions for government social insurance consist of payments by employers, employees, the self-employed, and other individuals who participate in the following government programs: Old-age, Survivors, and Disability Insurance; Medicare; unemployment insurance; railroad retirement; pension benefit guarantee; veterans' life insurance; publicly-administered workers' compensation; military medical insurance; and temporary disability insurance.

⁶ Earnings by place of work differs from total personal income by the exclusion of dividends, interest, and rent, as well as adjustments to account for net transfer payments (e.g., unemployment benefits and Social Security taxes and payments) and the residential adjustment.

⁷ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

⁸ (L) Less than \$50,000, but the estimates for this item are included in the totals.

⁹ "Related activities" includes hunting and trapping, as well as agricultural services such as custom tillage.

	Ada, ID ¹	Bannock, ID	Boise, ID	Canyon, ID	Gallatin, MT	Silver Bow, MT
Information	1.9%	1.3%	(D)	1.2%	1.4%	2.4%
Finance and insurance	5.7%	5.0%	(D)	2.7%	4.5%	2.5%
Real estate and rental and leasing	1.5%	1.0%	(D)	1.0%	2.4%	0.9%
Professional and technical services	10.0%	4.6%	(D)	3.9%	11.5%	6.2%
Management of companies and enterprises	3.5%	0.8%	(D)	0.7%	0.4%	(D)
Administrative and waste services	6.0%	4.0%	4.2%	3.2%	2.2%	(D)
Educational services	0.8%	0.5%	0.2%	2.0%	0.7%	0.4%
Health care and social assistance	13.5%	15.5%	3.0%	11.7%	9.6%	15.5%
Arts, entertainment, and recreation	1.0%	0.5%	12.9%	0.3%	1.9%	1.3%
Accommodation and food services	2.6%	3.4%	4.1%	2.3%	5.1%	4.1%
Other services, except public administration	3.2%	4.1%	4.1%	4.3%	4.0%	3.7%
Federal government	5.1%	4.4%	25.5%	2.8%	3.5%	4.1%
State government	5.0%	12.2%	1.4%	2.0%	11.0%	7.3%
Local government	5.7%	8.8%	18.3%	13.4%	6.1%	7.2%
Categories for which data were not disclosed	0.0%	0.1%	11.5%	0.0%	0.0%	13.7%

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

Table 5. Employment Trends by Select Industry Sector and County, 2001-2009^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Mining</i>									
Adams, ID	(D)	(L)	11	10	(L)	11	16	32	30
Bear Lake, ID	12	(L)	11	(D)	(D)	(D)	(D)	(D)	30
Bingham, ID	(D)	(D)	(D)						
Blaine, ID	139	109	(D)	99	95	112	139	104	87
Bonneville, ID	(D)	47	(D)	48	(D)	(D)	(D)	(D)	180
Butte, ID	12	(L)	12	10	(L)	11	17	36	33
Camas, ID	0	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)
Caribou, ID	340	358	(D)	(D)	350	361	377	352	319
Cassia, ID	131	121	129	173	217	204	187	166	114
Clark, ID	(D)	(D)	12	10	(L)	11	17	36	33
Custer, ID	(D)	(D)	(D)						
Elmore, ID	(D)	(D)	(D)						
Fremont, ID	(D)	(D)	(D)						
Gem, ID	(D)	(D)	(D)						
Gooding, ID	12	(L)	12	10	(D)	(D)	(D)	(D)	(D)
Jefferson, ID	12	(L)	12	10	(L)	11	(D)	(D)	(D)
Jerome, ID	12	(L)	12	10	(L)	11	17	36	33
Lemhi, ID	(D)	(D)	25	(D)	(D)	(D)	(D)	(D)	(D)
Lincoln, ID	12	(L)	(L)	(L)	(L)	(L)	(L)	(L)	(L)
Madison, ID	(D)	(D)	(D)						
Minidoka, ID	12	(L)	12	10	(D)	(D)	(D)	(D)	(D)
Oneida, ID	(D)	(D)	(D)						
Owyhee, ID	(D)	(D)	(D)						
Payette, ID	(D)	(D)	(D)						
Power, ID	12	(L)	12	10	(L)	11	17	36	33
Twin Falls, ID	(D)	67	80	63	64	72	105	107	75
Washington, ID	12	(L)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Beaverhead, MT	(D)	(D)	(D)						
Madison, MT	59	57	51	43	59	102	114	138	114
Socioeconomic Study Area	777	759	391	506	785	917	1,006	1,043	1,081

¹ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

² (L) Less than 10 jobs, but the estimates for this item are included in the totals.

Table 5. Employment Trends by Select Industry Sector and County, 2001-2009^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Farming¹</i>									
Adams, ID	356	355	332	309	291	269	253	253	254
Bear Lake, ID	526	516	506	499	498	490	488	492	489
Bingham, ID	2,450	2,532	2,400	2,361	2,292	2,259	2,187	2,234	2,178
Blaine, ID	463	503	444	406	361	325	284	293	284
Bonneville, ID	1,483	1,527	1,418	1,363	1,301	1,250	1,197	1,214	1,195
Butte, ID	295	290	278	276	271	269	265	270	265
Camas, ID	128	131	127	129	132	134	135	137	135
Caribou, ID	761	797	720	676	626	582	539	549	540
Cassia, ID	1,695	1,728	1,692	1,741	1,732	1,771	1,741	1,814	1,734
Clark, ID	168	162	154	152	147	143	136	142	138
Custer, ID	357	370	341	327	314	302	291	296	294
Elmore, ID	969	970	925	920	891	885	854	882	848
Fremont, ID	808	826	775	756	730	710	686	700	688
Gem, ID	989	1,022	978	944	924	895	879	875	874
Gooding, ID	2,128	2,199	2,129	2,161	2,120	2,147	2,087	2,169	2,071
Jefferson, ID	1,284	1,279	1,264	1,288	1,295	1,317	1,318	1,345	1,311
Jerome, ID	1,798	1,802	1,778	1,837	1,835	1,885	1,858	1,933	1,846
Lemhi, ID	457	464	435	425	413	404	397	400	397
Lincoln, ID	494	479	482	498	504	517	516	532	515
Madison, ID	810	811	754	735	702	683	651	668	651
Minidoka, ID	1,446	1,423	1,393	1,411	1,397	1,411	1,382	1,428	1,375
Oneida, ID	506	514	496	487	482	474	468	472	469
Owyhee, ID	1,242	1,301	1,219	1,190	1,139	1,113	1,064	1,093	1,060
Payette, ID	964	977	954	953	951	951	950	959	942
Power, ID	668	627	629	670	689	722	733	761	733
Twin Falls, ID	2,776	2,800	2,583	2,473	2,327	2,227	2,093	2,136	2,081
Washington, ID	712	694	676	677	679	683	691	693	686
Beaverhead, MT	609	595	560	555	537	533	530	544	529
Madison, MT	686	684	651	640	623	610	613	624	615
Socioeconomic Study Area	28,028	28,378	27,093	26,859	26,203	25,961	25,286	25,908	25,197

¹ Farming values sum data for “Farm” and “Agriculture and forestry support activities.”

Table 5. Employment Trends by Select Industry Sector and County, 2001-2009^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Retail trade</i>									
Adams, ID	243	221	236	360	377	377	369	284	316
Bear Lake, ID	414	408	402	408	405	432	438	481	472
Bingham, ID	1,989	1,975	1,999	2,036	2,126	2,225	2,295	2,091	2,052
Blaine, ID	1,919	1,927	1,996	2,101	2,174	2,215	2,325	2,144	1,981
Bonneville, ID	7,341	7,308	7,722	7,696	8,257	8,512	8,709	9,020	8,550
Butte, ID	152	152	146	147	142	149	167	162	160
Camas, ID	31	(D)	(D)	34	(D)	(D)	28	27	(D)
Caribou, ID	432	463	476	483	518	528	565	512	473
Cassia, ID	1,781	1,792	1,788	1,695	1,769	1,779	1,846	1,891	1,835
Clark, ID	52	(D)	(D)	48	(D)	(D)	35	68	(D)
Custer, ID	298	281	299	281	275	276	280	286	291
Elmore, ID	1,440	1,407	1,354	1,384	1,434	1,495	1,545	1,357	1,268
Fremont, ID	431	422	446	416	429	454	481	482	478
Gem, ID	649	624	661	670	727	759	788	683	631
Gooding, ID	577	577	615	640	671	694	707	627	591
Jefferson, ID	863	837	819	833	782	832	858	932	987
Jerome, ID	1,242	1,357	1,319	1,234	1,228	1,281	1,251	1,334	1,246
Lemhi, ID	567	512	535	537	550	578	594	490	460
Lincoln, ID	85	83	82	82	117	118	119	146	159
Madison, ID	1,719	1,798	1,837	1,806	1,825	1,956	2,064	2,087	1,985
Minidoka, ID	745	748	751	803	869	876	851	770	734
Oneida, ID	187	189	177	185	202	220	235	229	229
Owyhee, ID	308	308	331	365	400	412	429	381	351
Payette, ID	884	869	880	882	842	816	797	817	787
Power, ID	321	308	352	351	330	331	343	295	287
Twin Falls, ID	5,533	5,414	5,568	5,338	5,488	5,840	5,952	5,879	5,780
Washington, ID	374	368	375	371	381	410	445	459	416
Beaverhead, MT	602	586	568	548	541	537	579	640	598
Madison, MT	356	390	371	344	362	372	366	398	420
Socioeconomic Study Area	31,535	31,324	32,105	32,078	33,221	34,474	35,461	34,972	33,537
<i>Accommodation and food services</i>									
Adams, ID	162	(D)	95						
Bear Lake, ID	192	(D)	(D)	(D)	235	235	(D)	194	205
Bingham, ID	748	741	716	749	854	818	960	932	848

Table 5. Employment Trends by Select Industry Sector and County, 2001-2009^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Blaine, ID	2,611	2,580	2,611	2,617	2,744	2,823	2,909	2,876	2,680
Bonneville, ID	3,654	3,661	3,888	4,198	3,820	3,955	4,304	4,404	4,220
Butte, ID	(D)								
Camas, ID	(D)								
Caribou, ID	175	(D)	153	146	151	168	144	159	187
Cassia, ID	539	(D)	570	534	550	573	510	520	477
Clark, ID	27	(D)							
Custer, ID	244	215	230	230	225	231	255	313	300
Elmore, ID	726	694	725	744	813	838	853	847	822
Fremont, ID	349	370	320	326	287	337	347	331	(D)
Gem, ID	243	244	240	(D)	256	256	255	240	253
Gooding, ID	304	295	303	279	289	269	307	286	301
Jefferson, ID	196	216	219	225	229	265	264	250	246
Jerome, ID	359	385	431	376	419	415	404	441	424
Lemhi, ID	319	310	333	343	362	378	367	332	308
Lincoln, ID	78	79	80	76	71	(D)	(D)	(D)	(D)
Madison, ID	751	802	797	820	1,003	1,036	1,116	1,213	1,098
Minidoka, ID	520	526	548	539	544	568	591	558	532
Oneida, ID	(D)								
Owyhee, ID	(D)	(D)	(D)	(D)	160	198	206	210	200
Payette, ID	(D)	(D)	(D)	(D)	341	393	(D)	392	334
Power, ID	130	122	116	98	(D)	(D)	100	(D)	(D)
Twin Falls, ID	2,692	2,686	2,557	2,476	2,543	2,617	2,660	2,863	2,773
Washington, ID	218	198	189	172	193	224	248	208	199
Beaverhead, MT	559	511	515	495	512	527	520	519	533
Madison, MT	895	953	994	1,017	1,093	1,006	1,043	(D)	1,070
Socioeconomic Study Area	16,691	15,588	16,535	16,460	17,694	18,130	18,363	18,088	18,105
<i>Arts, entertainment, and recreation</i>									
Adams, ID	(D)	120							
Bear Lake, ID	22	(D)	(D)	(D)	32	33	(D)	59	58
Bingham, ID	197	193	214	206	189	204	211	210	193
Blaine, ID	584	667	701	718	742	781	802	780	829
Bonneville, ID	705	789	839	748	809	937	1,021	944	942
Butte, ID	(D)								

Table 5. Employment Trends by Select Industry Sector and County, 2001-2009^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Camas, ID	(D)								
Caribou, ID	39	(D)	51	(D)	(D)	(D)	50	54	46
Cassia, ID	197	(D)	159	161	175	176	178	159	161
Clark, ID	0	(D)	(D)	(D)	(D)	(D)	(D)	(L)	(L)
Custer, ID	91	96	92	97	84	88	95	94	98
Elmore, ID	84	73	82	83	91	95	101	99	93
Fremont, ID	56	68	65	58	59	64	71	65	(D)
Gem, ID	59	59	66	71	65	(D)	77	82	64
Gooding, ID	(D)	(D)	131	121	127	118	112	110	114
Jefferson, ID	179	183	187	191	230	258	245	289	228
Jerome, ID	123	149	147	147	151	151	163	162	159
Lemhi, ID	120	138	131	118	127	151	142	141	111
Lincoln, ID	15	16	13	14	14	(D)	(D)	(D)	(D)
Madison, ID	197	180	183	203	218	224	201	214	213
Minidoka, ID	56	63	56	60	67	87	83	91	81
Oneida, ID	(D)								
Owyhee, ID	(D)	(D)	(D)	(D)	37	43	49	61	60
Payette, ID	(D)	(D)	(D)	(D)	66	75	(D)	92	88
Power, ID	32	38	39	40	(D)	(D)	37	(D)	(D)
Twin Falls, ID	523	524	544	526	531	575	612	567	552
Washington, ID	45	58	60	53	61	65	72	60	62
Beaverhead, MT	(D)	145	153	147	161	200	207	195	187
Madison, MT	269	300	343	411	496	683	851	(D)	618
Socioeconomic Study Area	3,593	3,739	4,256	4,173	4,532	5,008	5,380	4,528	5,077

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>.

Table 6. Labor Earnings Trends by Select Industry Sector and County, 2001-2009, presented in 2010 dollars (thousands)^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Mining</i>									
Adams, ID	(D)	\$0.1	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2	(L)	(L)
Bear Lake, ID	\$0.1	\$0.1	\$0.1	(D)	(D)	(D)	(D)	(D)	(L)
Bingham, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Blaine, ID	\$3.3	\$3.4	(D)	\$3.2	\$3.3	\$4.4	\$3.6	\$4.5	\$2.3
Bonneville, ID	(D)	\$1.0	(D)	\$0.8	(D)	(D)	(D)	(D)	\$1.2
Butte, ID	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	(L)	(L)
Camas, ID	\$0.0	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	(L)	(L)
Caribou, ID	\$22.9	\$23.4	(D)	(D)	\$23.6	\$24.5	\$22.2	\$24.8	\$23.5
Cassia, ID	\$4.5	\$5.2	\$5.7	\$7.0	\$8.3	\$8.2	\$6.8	\$6.6	\$4.4
Clark, ID	(D)	(D)	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2	(L)	(L)
Custer, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Elmore, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Fremont, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Gem, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Gooding, ID	\$0.1	\$0.1	\$0.1	\$0.1	(D)	(D)	(D)	(D)	(D)
Jefferson, ID	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.2	(D)	(D)	(D)
Jerome, ID	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	(L)	(L)
Lemhi, ID	(D)	(D)	\$1.3	(D)	(D)	(D)	(D)	(D)	(D)
Lincoln, ID	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.2	\$0.1	(L)	(L)
Madison, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Minidoka, ID	\$0.1	\$0.1	\$0.1	\$0.2	(D)	(D)	(D)	(D)	(D)
Oneida, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Owyhee, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Payette, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Power, ID	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.2	\$0.1	(L)	(L)
Twin Falls, ID	(D)	\$1.3	\$1.0	\$1.3	\$1.2	\$1.5	\$2.0	\$2.7	\$1.6
Washington, ID	\$0.1	\$0.1	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Beaverhead, MT	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Madison, MT	\$1.0	\$1.4	\$0.7	\$0.8	\$1.4	\$5.0	\$5.1	\$6.0	\$5.9
Socioeconomic Study Area	\$32.60	\$36.80	\$9.80	\$14.20	\$38.60	\$44.90	\$40.60	\$44.60	\$38.90

¹ (D) Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals.

² (L) Less than \$50,000, but the estimates for this item are included in the totals.

Table 6. Labor Earnings Trends by Select Industry Sector and County, 2001-2009, presented in 2010 dollars (thousands)^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Farming¹									
Adams, ID	\$0.3	\$1.8	\$1.4	\$2.5	\$0.7	\$0.0	-\$1.2	-\$1.8	-\$1.7
Bear Lake, ID	\$7.1	\$5.0	\$6.9	\$7.9	\$7.6	\$4.6	\$6.4	\$6.6	\$5.7
Bingham, ID	\$37.3	\$44.1	\$8.2	\$51.1	\$23.1	\$39.0	\$53.3	\$60.8	\$65.0
Blaine, ID	\$10.5	\$13.6	\$9.8	\$12.6	\$10.9	\$12.4	\$10.8	\$12.0	\$12.9
Bonneville, ID	\$14.4	\$20.9	\$4.5	\$27.1	\$22.1	\$34.2	\$36.6	\$56.4	\$49.4
Butte, ID	\$11.0	\$8.7	\$5.9	\$7.8	\$6.2	\$5.4	\$6.5	\$15.9	\$14.4
Camas, ID	\$4.9	\$5.9	\$3.9	\$3.9	\$4.0	\$4.7	\$5.3	\$8.1	\$10.1
Caribou, ID	\$11.2	\$12.3	\$6.9	\$16.8	\$14.0	\$10.9	\$9.8	\$15.6	\$19.2
Cassia, ID	\$128.6	\$125.6	\$118.1	\$145.5	\$150.5	\$123.4	\$172.7	\$204.9	\$157.0
Clark, ID	\$11.2	\$6.8	\$3.0	\$4.9	\$4.2	\$1.6	\$4.2	\$11.9	\$12.5
Custer, ID	\$7.1	\$1.8	\$1.8	\$2.9	\$2.8	\$1.5	\$4.7	\$8.8	\$15.3
Elmore, ID	\$70.0	\$66.8	\$59.1	\$59.9	\$58.5	\$55.3	\$57.7	\$65.2	\$51.0
Fremont, ID	\$11.8	\$14.2	-\$3.0	\$10.0	-\$2.1	\$0.2	-\$2.0	-\$0.8	\$8.5
Gem, ID	\$9.1	\$10.4	\$7.8	\$10.3	\$5.8	\$3.5	\$4.2	\$6.5	\$8.4
Gooding, ID	\$191.0	\$144.0	\$126.1	\$215.6	\$179.9	\$134.0	\$224.1	\$222.1	\$106.4
Jefferson, ID	\$61.4	\$56.2	\$29.8	\$55.4	\$36.3	\$35.8	\$75.9	\$92.1	\$86.5
Jerome, ID	\$171.5	\$129.9	\$119.7	\$169.9	\$156.7	\$144.8	\$198.0	\$185.0	\$130.5
Lemhi, ID	\$7.3	\$4.2	\$2.1	\$4.5	\$1.4	-\$0.2	-\$1.6	\$1.3	\$1.6
Lincoln, ID	\$22.2	\$21.0	\$17.7	\$27.0	\$25.3	\$26.0	\$44.4	\$53.0	\$37.8
Madison, ID	\$6.9	\$4.8	-\$5.1	\$4.6	-\$0.7	\$3.7	\$3.2	\$5.4	\$13.1
Minidoka, ID	\$67.2	\$85.3	\$55.6	\$79.2	\$53.7	\$65.2	\$91.6	\$114.4	\$112.2
Oneida, ID	\$5.9	\$2.5	\$5.0	\$7.3	\$6.0	\$2.9	\$9.9	\$11.5	\$13.0
Owyhee, ID	\$60.3	\$61.3	\$54.5	\$74.5	\$59.7	\$62.2	\$85.3	\$89.0	\$76.3
Payette, ID	\$41.1	\$47.5	\$47.2	\$53.0	\$50.7	\$33.6	\$29.0	\$32.4	\$15.3
Power, ID	\$21.6	\$27.0	\$11.2	\$26.3	\$14.7	\$14.2	\$25.7	\$36.3	\$30.1
Twin Falls, ID	\$134.6	\$127.5	\$109.0	\$184.4	\$167.8	\$148.7	\$215.2	\$220.0	\$170.5
Washington, ID	\$10.1	\$12.9	\$16.6	\$18.5	\$11.4	\$11.0	\$14.6	\$15.5	\$14.6
Beaverhead, MT	\$19.1	\$9.8	\$10.8	\$16.6	\$26.2	\$11.8	\$12.4	\$4.9	\$8.0
Madison, MT	\$3.9	-\$2.9	-\$1.4	\$5.9	\$7.9	-\$1.7	-\$1.0	-\$1.5	\$0.9
Socioeconomic Study Area	\$1,158.60	\$1,068.90	\$833.10	\$1,305.90	\$1,105.30	\$988.70	\$1,395.70	\$1,551.50	\$1,244.50
Retail trade									
Adams, ID	\$3.4	\$3.6	\$3.7	\$8.8	\$9.3	\$9.3	\$8.4	\$6.9	\$7.9

¹ Farming values sum data for “Farm” and “Agriculture and forestry support activities.”

Table 6. Labor Earnings Trends by Select Industry Sector and County, 2001-2009, presented in 2010 dollars (thousands)^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Bear Lake, ID	\$7.9	\$8.1	\$7.9	\$7.9	\$7.7	\$7.7	\$7.9	\$7.5	\$7.1
Bingham, ID	\$41.9	\$42.7	\$44.5	\$43.2	\$45.1	\$48.5	\$48.5	\$40.2	\$37.7
Blaine, ID	\$65.6	\$66.4	\$69.3	\$74.3	\$77.1	\$79.2	\$80.9	\$72.2	\$62.7
Bonneville, ID	\$203.3	\$212.5	\$228.8	\$230.0	\$248.1	\$258.7	\$265.5	\$247.0	\$239.3
Butte, ID	\$2.3	\$2.2	\$2.3	\$2.2	\$2.1	\$2.1	\$2.3	\$1.9	\$2.0
Camas, ID	\$0.3	(D)	(D)	\$0.3	(D)	(D)	\$0.3	\$0.2	(D)
Caribou, ID	\$9.0	\$9.4	\$9.5	\$9.4	\$9.8	\$9.8	\$9.8	\$8.5	\$7.4
Cassia, ID	\$49.6	\$50.1	\$49.3	\$48.3	\$48.4	\$51.5	\$51.2	\$46.0	\$42.0
Clark, ID	\$0.6	(D)	(D)	\$0.6	(D)	(D)	\$0.3	\$0.7	(D)
Custer, ID	\$5.4	\$5.3	\$5.6	\$5.4	\$5.2	\$5.1	\$5.3	\$4.6	\$4.5
Elmore, ID	\$31.4	\$31.3	\$31.1	\$32.1	\$34.2	\$36.6	\$36.0	\$32.1	\$30.3
Fremont, ID	\$9.3	\$9.1	\$9.4	\$9.6	\$9.9	\$10.2	\$10.2	\$9.1	\$8.5
Gem, ID	\$11.3	\$10.6	\$11.0	\$11.1	\$11.7	\$14.0	\$13.9	\$11.9	\$9.7
Gooding, ID	\$10.9	\$11.0	\$13.5	\$13.8	\$14.0	\$13.6	\$13.6	\$13.1	\$12.6
Jefferson, ID	\$15.9	\$15.9	\$16.7	\$17.7	\$16.2	\$17.0	\$17.9	\$16.2	\$15.9
Jerome, ID	\$36.4	\$43.8	\$45.7	\$45.8	\$42.5	\$43.6	\$40.3	\$36.8	\$34.0
Lemhi, ID	\$12.6	\$12.7	\$12.6	\$12.4	\$12.3	\$12.7	\$13.0	\$10.8	\$9.8
Lincoln, ID	\$1.5	\$1.4	\$1.5	\$1.6	\$2.4	\$2.3	\$2.5	\$1.9	\$2.1
Madison, ID	\$39.1	\$42.6	\$44.4	\$44.8	\$46.2	\$49.7	\$50.5	\$48.4	\$44.7
Minidoka, ID	\$15.2	\$15.8	\$16.0	\$16.7	\$17.0	\$15.9	\$14.6	\$14.5	\$14.3
Oneida, ID	\$2.5	\$2.5	\$2.6	\$2.7	\$2.8	\$3.0	\$3.0	\$2.6	\$2.4
Owyhee, ID	\$5.1	\$5.1	\$5.6	\$6.1	\$6.9	\$7.1	\$7.2	\$6.6	\$6.2
Payette, ID	\$19.6	\$19.5	\$20.3	\$21.7	\$20.0	\$21.7	\$19.1	\$15.5	\$13.8
Power, ID	\$5.7	\$5.6	\$6.0	\$6.1	\$5.7	\$5.6	\$5.6	\$5.2	\$4.2
Twin Falls, ID	\$175.0	\$193.2	\$184.7	\$175.0	\$177.6	\$190.2	\$183.2	\$161.5	\$155.8
Washington, ID	\$8.4	\$8.5	\$8.7	\$8.8	\$8.9	\$9.8	\$10.6	\$8.9	\$8.6
Beaverhead, MT	\$12.7	\$12.4	\$12.4	\$12.4	\$11.5	\$11.9	\$13.3	\$13.2	\$12.2
Madison, MT	\$7.2	\$8.7	\$8.9	\$9.1	\$9.3	\$9.4	\$9.0	\$7.4	\$7.8
Socioeconomic Study Area	\$809.10	\$850.00	\$872.00	\$877.90	\$901.90	\$946.20	\$943.90	\$851.40	\$803.50
<i>Accommodation and food services</i>									
Adams, ID	\$2.2	(D)	\$1.2						
Bear Lake, ID	\$2.2	(D)	(D)	(D)	\$2.7	\$2.7	(D)	\$2.5	\$2.8
Bingham, ID	\$8.3	\$8.6	\$8.9	\$9.1	\$9.7	\$9.0	\$10.3	\$10.1	\$9.4
Blaine, ID	\$67.1	\$68.5	\$69.2	\$72.5	\$75.4	\$79.2	\$82.8	\$78.3	\$73.1

Table 6. Labor Earnings Trends by Select Industry Sector and County, 2001-2009, presented in 2010 dollars (thousands)^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Bonneville, ID	\$55.0	\$57.5	\$60.8	\$66.1	\$59.3	\$61.9	\$67.4	\$66.6	\$67.9
Butte, ID	(D)								
Camas, ID	(D)								
Caribou, ID	\$1.8	(D)	\$1.7	\$1.5	\$1.6	\$1.7	\$1.6	\$1.8	\$2.2
Cassia, ID	\$6.7	(D)	\$7.9	\$7.1	\$6.8	\$6.6	\$5.4	\$5.9	\$5.7
Clark, ID	\$0.2	(D)							
Custer, ID	\$4.1	\$3.8	\$3.8	\$4.0	\$3.9	\$3.9	\$4.3	\$4.7	\$4.5
Elmore, ID	\$11.5	\$12.0	\$11.8	\$12.5	\$14.3	\$14.5	\$13.8	\$13.7	\$12.6
Fremont, ID	\$5.1	\$5.5	\$4.9	\$4.9	\$4.5	\$4.6	\$4.8	\$4.7	(D)
Gem, ID	\$3.0	\$3.2	\$3.2	(D)	\$3.4	\$3.5	\$3.4	\$3.1	\$3.4
Gooding, ID	\$3.8	\$3.5	\$3.6	\$3.3	\$3.6	\$3.3	\$3.4	\$3.1	\$3.3
Jefferson, ID	\$1.8	\$2.0	\$2.3	\$2.5	\$2.4	\$2.9	\$2.8	\$2.5	\$2.5
Jerome, ID	\$4.5	\$5.0	\$5.7	\$5.5	\$5.5	\$5.6	\$5.4	\$5.7	\$5.7
Lemhi, ID	\$4.2	\$4.3	\$4.6	\$4.9	\$5.3	\$5.2	\$5.2	\$4.2	\$3.9
Lincoln, ID	\$1.0	\$0.9	\$0.9	\$0.9	\$0.9	(D)	(D)	(D)	(D)
Madison, ID	\$10.4	\$11.1	\$11.2	\$12.0	\$13.9	\$14.7	\$14.9	\$16.4	\$15.4
Minidoka, ID	\$7.4	\$7.8	\$8.0	\$7.8	\$7.6	\$7.8	\$8.2	\$7.5	\$7.3
Oneida, ID	(D)								
Owyhee, ID	(D)	(D)	(D)	(D)	\$2.0	\$2.2	\$2.1	\$2.2	\$2.1
Payette, ID	(D)	(D)	(D)	(D)	\$4.3	\$4.8	(D)	\$4.1	\$3.7
Power, ID	\$1.3	\$1.3	\$1.2	\$1.0	(D)	(D)	\$1.0	(D)	(D)
Twin Falls, ID	\$40.6	\$39.4	\$38.7	\$38.8	\$39.5	\$40.8	\$40.1	\$44.7	\$44.0
Washington, ID	\$2.2	\$2.2	\$2.2	\$2.1	\$2.2	\$2.4	\$2.7	\$2.3	\$2.3
Beaverhead, MT	\$6.6	\$6.5	\$6.6	\$6.8	\$6.5	\$6.7	\$6.7	\$6.9	\$7.1
Madison, MT	\$19.4	\$20.1	\$21.0	\$21.0	\$22.8	\$24.5	\$28.4	(D)	\$25.7
Socioeconomic Study Area	\$270.40	\$263.20	\$278.20	\$284.30	\$298.10	\$308.50	\$314.70	\$291.00	\$305.80
<i>Arts, entertainment, and recreation</i>									
Adams, ID	(D)	\$2.9							
Bear Lake, ID	\$0.2	(D)	(D)	(D)	\$0.3	\$0.3	(D)	\$0.5	\$0.5
Bingham, ID	\$1.9	\$2.3	\$2.3	\$2.3	\$1.9	\$2.0	\$2.0	\$2.0	\$2.0
Blaine, ID	\$70.8	\$82.5	\$39.8	\$28.8	\$19.1	\$20.3	\$22.9	\$19.5	\$18.8
Bonneville, ID	\$18.0	\$19.0	\$18.9	\$11.8	\$11.9	\$12.4	\$13.1	\$11.2	\$11.4
Butte, ID	(D)								
Camas, ID	(D)								
Caribou, ID	\$0.2	(D)	\$0.2	(D)	(D)	(D)	\$0.2	\$0.3	\$0.3

Table 6. Labor Earnings Trends by Select Industry Sector and County, 2001-2009, presented in 2010 dollars (thousands)^{1,2}

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cassia, ID	\$2.0	(D)	\$2.0	\$2.1	\$1.9	\$2.0	\$1.7	\$2.0	\$2.2
Clark, ID	\$0.0	(D)	(D)	(D)	(D)	(D)	(D)	(L)	(L)
Custer, ID	\$1.8	\$3.9	\$4.8	\$4.9	\$4.0	\$3.6	\$3.4	\$3.4	\$3.4
Elmore, ID	\$1.0	\$1.3	\$0.8	\$1.0	\$0.8	\$0.8	\$0.9	\$0.8	\$1.0
Fremont, ID	\$0.6	\$0.8	\$0.7	\$0.8	\$0.5	\$0.5	\$0.4	\$0.7	(D)
Gem, ID	\$0.5	\$0.5	\$0.5	\$0.5	\$0.4	(D)	\$0.3	\$0.6	\$0.5
Gooding, ID	(D)	(D)	\$1.8	\$1.8	\$1.5	\$1.3	\$1.2	\$1.3	\$1.5
Jefferson, ID	\$2.0	\$2.9	\$2.7	\$3.0	\$2.7	\$2.7	\$2.6	\$2.5	\$2.3
Jerome, ID	\$2.6	\$3.3	\$3.1	\$3.5	\$3.1	\$3.2	\$3.2	\$4.1	\$4.1
Lemhi, ID	\$2.1	\$3.0	\$2.7	\$2.7	\$2.6	\$3.0	\$2.7	\$2.7	\$2.0
Lincoln, ID	\$0.3	\$0.3	\$0.2	\$0.2	\$0.3	(D)	(D)	(D)	(D)
Madison, ID	\$1.1	\$2.3	\$1.9	\$2.3	\$1.9	\$1.9	\$1.4	\$2.5	\$2.7
Minidoka, ID	\$1.0	\$1.3	\$1.1	\$1.3	\$1.1	\$1.2	\$0.9	\$1.4	\$1.5
Oneida, ID	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Owyhee, ID	(D)	(D)	(D)	(D)	\$0.4	\$0.4	\$0.4	\$0.3	\$0.3
Payette, ID	(D)	(D)	(D)	(D)	\$0.6	\$0.6	(D)	\$0.6	\$0.7
Power, ID	\$0.4	\$0.6	\$0.5	\$0.6	(D)	(D)	\$0.2	(D)	(D)
Twin Falls, ID	\$4.3	\$8.1	\$7.4	\$6.8	\$6.3	\$6.8	\$7.2	\$6.5	\$6.8
Washington, ID	\$1.0	\$0.9	\$0.9	\$0.8	\$1.0	\$1.0	\$1.0	\$1.0	\$0.8
Beaverhead, MT	(D)	\$1.7	\$1.4	\$1.4	\$1.4	\$1.6	\$1.7	\$1.6	\$1.7
Madison, MT	\$8.2	\$8.7	\$11.6	\$14.1	\$19.5	\$25.2	\$24.2	(D)	\$19.5
Socioeconomic Study Area	\$120.00	\$143.40	\$105.30	\$90.70	\$83.20	\$90.80	\$91.60	\$65.50	\$86.90

Source: U.S. Department of Commerce. 2012. Bureau of Economic Analysis, Regional Economic Information System, Local Area Personal Income & Employment. Available at: <http://www.bea.gov/regional/index.htm>. Values reported in 2001 dollars were converted to 2010 dollars using the Consumer Price Index (BLS, 2012a).

Table 7. Annual Population by County, 2000-2010¹

Geographic Area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010²
Adams, ID	3,477	3,495	3,559	3,624	3,693	3,817	3,788	3,949	4,021	4,000	3,953
Bear Lake, ID	6,424	6,394	6,219	6,219	6,170	6,077	6,071	6,049	6,027	6,014	5,971
Bingham, ID	41,753	42,073	42,101	42,555	42,702	43,173	43,396	43,816	44,414	45,087	45,769
Blaine, ID	19,115	19,755	20,189	20,557	20,811	20,897	21,082	21,169	21,477	21,590	21,326
Bonneville, ID	82,968	83,907	85,060	86,846	89,514	91,709	94,756	97,890	100,811	103,016	104,592
Butte, ID	2,894	2,853	2,906	2,842	2,812	2,825	2,786	2,838	2,846	2,835	2,907
Camas, ID	968	1,000	1,025	1,029	1,022	1,069	1,073	1,103	1,120	1,133	1,109
Caribou, ID	7,281	7,326	7,161	7,105	7,106	6,963	6,886	6,873	6,840	6,922	6,977
Cassia, ID	21,393	21,557	21,504	21,466	21,323	21,372	21,281	21,568	22,134	22,476	23,088
Clark, ID	1,024	965	948	892	923	925	947	948	981	961	988
Custer, ID	4,336	4,223	4,143	4,116	4,129	4,084	4,155	4,200	4,300	4,363	4,366
Elmore, ID	28,610	27,613	27,047	25,972	26,355	25,919	25,927	26,595	26,930	26,769	27,123
Fremont, ID	11,769	11,891	12,029	12,370	12,640	12,610	12,770	13,005	13,112	13,173	13,251
Gem, ID	15,215	15,393	15,488	15,693	15,925	16,304	16,632	16,833	16,941	16,809	16,675
Gooding, ID	14,196	14,215	14,342	14,483	14,562	14,614	14,749	14,963	15,216	15,270	15,503
Jefferson, ID	19,193	19,322	19,802	20,249	20,842	21,674	22,439	23,475	24,696	25,770	26,236
Jerome, ID	18,493	18,579	18,730	18,971	19,331	19,654	20,111	20,572	21,217	22,039	22,469
Lemhi, ID	7,724	7,593	7,590	7,600	7,660	7,708	7,795	7,780	7,902	7,870	7,957
Lincoln, ID	4,051	4,159	4,242	4,372	4,441	4,694	4,762	4,938	5,041	5,151	5,211
Madison, ID	27,519	27,699	28,478	29,997	31,990	33,807	34,984	35,771	36,564	37,121	37,623
Minidoka, ID	20,103	19,603	19,542	19,389	19,167	19,013	19,046	19,184	19,393	19,884	20,112
Oneida, ID	4,135	4,176	4,125	4,089	4,086	4,137	4,146	4,167	4,201	4,248	4,298
Owyhee, ID	10,690	10,877	10,876	11,033	10,990	10,993	11,114	11,255	11,515	11,547	11,512
Payette, ID	20,624	20,796	20,966	21,133	21,139	21,484	21,916	22,437	22,618	22,665	22,621
Power, ID	7,484	7,422	7,371	7,293	7,432	7,426	7,564	7,532	7,564	7,628	7,879
Twin Falls, ID	64,360	64,556	65,473	67,092	68,309	69,833	71,974	73,738	75,143	76,271	77,517
Washington, ID	9,970	9,936	9,904	9,904	9,947	9,995	10,025	10,027	10,095	10,173	10,205
Beaverhead, MT	9,204	9,058	9,018	8,924	8,908	8,904	9,012	9,028	9,166	9,200	9,253
Madison, MT	6,870	6,856	6,935	6,894	6,999	7,211	7,343	7,560	7,674	7,674	7,691
Socioeconomic Study Area	491,843	493,292	496,773	502,709	510,928	518,891	528,530	539,263	549,959	557,659	564,182

¹ Population values provided as of July 1 of each year.

² The values for July 1, 2010 were produced by applying estimates of change in the population between April 1 and July 1 of 2010 to the 2010 Census counts. Further details on this methodology are available at http://www.census.gov/popest/methodology/intercensal_nat_meth.pdf.

Table 7. Annual Population by County, 2000-2010¹

Geographic Area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010²
Idaho	1,299,430	1,319,962	1,340,372	1,363,380	1,391,802	1,428,241	1,468,669	1,505,105	1,534,320	1,554,439	1,571,450
Montana	903,773	906,961	911,667	919,630	930,009	940,102	952,692	964,706	976,415	983,982	990,898
Ada, ID ¹	303,328	313,896	321,616	327,393	334,926	348,755	363,498	375,368	382,618	388,577	393,531
Bannock, ID	75,728	76,296	76,487	76,312	76,834	77,419	78,491	79,338	80,609	81,994	83,071
Boise, ID	6,702	6,733	6,854	6,977	7,004	6,981	7,151	7,229	7,148	7,051	7,032
Canyon, ID	133,082	139,179	145,160	151,395	157,130	163,947	172,188	179,645	184,996	187,357	189,428
Gallatin, MT	68,375	70,120	71,824	74,504	77,124	80,310	83,984	86,620	88,932	89,187	89,658
Silver Bow, MT	34,571	33,882	33,636	33,474	33,416	33,414	33,441	33,489	33,812	34,008	34,234

Source: U.S. Census Bureau. 2011. Population Estimates, Intercensal Estimates of the Resident Population for Counties: April 1, 2000 to July 1, 2010. Available at: <http://www.census.gov/popest/data/intercensal/county/CO-EST00INT-01.html>.

¹ Ada, Bannock, Boise, and Canyon Counties in Idaho and Gallatin and Silver Bow Counties in Montana constitute a secondary study area, as documented in the Chapter 3 text.

Appendix R

Economic Impact Analysis Methodology



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R. Economic Impact Analysis Methodology

R.1 Introduction

This appendix describes the methods and data that underlie the economic impact modeling analysis. Input-output models such as the Impact Analysis for Planning (IMPLAN) model, an economic impact analysis model, provide a quantitative representation of the production relationships between individual economic sectors. Thus, the economic modeling analysis uses information about physical production quantities and the prices and costs for goods and services. The inputs required to run the IMPLAN model are described in the following narrative and tables. The resulting estimates from the IMPLAN model, by alternative, are in **Chapter 4**, Environmental Consequences, **Section 4.X**, Social and Economic Conditions. The first portion of the following information describes general aspects of the IMPLAN model and how it was used to estimate economic impacts. The remaining sections provide additional detailed data used in the analysis for livestock grazing and recreation.

R.2 The IMPLAN Model

IMPLAN is a regional economic model that provides a mathematical accounting of the flow of money, goods, and services through a region's economy. The model provides estimates of how a specific economic activity translates into jobs and income for the region. It includes the ripple effect (also called the multiplier effect) of changes in economic sectors that may not be directly impacted by management actions, but are linked to industries that are directly impacted. In IMPLAN, these ripple effects are termed indirect impacts (for changes in industries that sell inputs to the industries that are directly impacted) and induced impacts (for changes in household spending as household income increases or decreases due to the changes in production).

This analysis used IMPLAN 2011; prior to running the model, cost and price data were converted to a consistent dollar year (2011) using sector-specific adjustment factors from the IMPLAN model. However, the values in this appendix are expressed in year 2010 dollars for comparability with the data provided in the socioeconomics section in chapter 3.

The current IMPLAN model has 440 economic sectors, of which 333 are represented in the Socioeconomic Study Area counties. This analysis involved direct changes in economic activity for 25 IMPLAN economic sectors, as well as changes in all other related sectors due to the ripple effect. The IMPLAN production coefficients were modified to reflect the interaction of producing sectors in the Socioeconomic Study Areas. As a result, the calibrated model does a better job of generating multipliers and the subsequent impacts that reflect the interaction between and among the sectors in the Socioeconomic Study Area compared to a model using unadjusted national coefficients. Key variables used in the IMPLAN model were filled in using data specific to the Socioeconomic Study Area, including employment estimates, labor earnings, and total industry output.

The trade data available in the current version of IMPLAN (Version 3.0) make it possible to do multi-region analysis to track how an impact on any of the IMPLAN sectors in the study area affects production in any of the sectors in any other region of the US. For this analysis,

this feature allowed the estimation of how an impact in the primary study area disperses into the secondary study area, and how these effects in the secondary study area create additional local effects in the primary study area. As a result, it was possible to estimate not only the jobs and income generation in the primary study area, but to also estimate how the economic activity in the primary study area affected jobs and income generation in the secondary study area.

R.3 Livestock Grazing

Economic impacts from changes to livestock grazing are a function of the amount of forage available and the economic value of forage.

Forage availability was measured in Animal Unit Months (AUMs), with one AUM defined as the amount of forage needed to feed one cow, one horse, or five sheep for one month. Data on forage availability were obtained from BLM's Rangeland Administration System (BLM 2012a) and from the Forest Service's INFRA range module (Forest Service 2013). Two types of AUM measures were used: Active AUMs and Billed AUMs. Active AUMs measure the amount of forage from land available for grazing. The Forest Service designates this measure "permitted" AUMs. Billed AUMs measure the amount of forage for which the BLM and Forest Service bill annually (i.e., the amount of forage that ranchers actually use, which is typically less than the amount of forage available). The Forest Service uses the designation "authorized" AUMs.

Data for 2011 and 2013 were used for active AUMs. BLM provided data on the breakdown of active AUMs in various GRSG habitat and non-habitat classes by alternative. For billed AUMs, data for 2000 to 2011 were used to develop a 12-year average for billed AUMs on BLM lands. Under current management (Alternative A), the analysis estimated 2,047,170 total active AUMs in the Socioeconomic Study Area, with 1,190,255 active AUMs in GRSG habitat (all designated habitat [ADH]) in the Socioeconomic Study Area (BLM 2012a, BLM 2013, and Forest Service 2013).¹² The data on active and billed AUMs were used to determine the historical ratio of billed AUMs to active AUMs for each BLM field office. The analysis assumed a billed to active ratio of 100 percent for FS lands because FS has historically adjusted the number of active AUMs to correspond to the number of recently billed AUMs. **Table R-1**, Current and Historical Annual Animal Unit Months Data, presents the current and historical data used in the analysis.

¹ Because permitted AUMs include active and suspended AUMs (in BLM terminology), this comparison of total active AUMs with ADH permitted AUMs may overestimate the loss of AUMs under Alternative C.

² When a portion of an allotment was found in GRSG habitat, only the portion with GRSG was excluded from total active AUMs, under Alternatives C (not the entire allotment).

Table R-1
Current and Historical Annual Animal Unit Months Data

	Active AUMs	Active AUMs in ADH	Billed as Share of Active
Bruneau FO	109,567	98,528	78%
Burley FO	123,505	76,765	72%
Challis FO	53,570	39,935	59%
Dillon FO	72,637	64,283	75%
Four Rivers FO	118,918	43,602	81%
Jarbridge FO	178,271	129,014	84%
Owyhee FO	125,140	101,029	86%
Pocatello FO	68,768	40,876	86%
Salmon FO	55,966	37,376	80%
Shoshone FO	196,137	182,430	61%
Upper Snake River FO	140,084	126,608	67%
Beaverhead-Deerlodge NF	154,629	42,832	100%
Boise NF	59,319	9,596	100%
Caribou-Targhee NF	288,344	59,660	100%
Salmon-Challis NF	146,804	54,478	100%
Sawtooth NF	155,511	83,244	100%
Socioeconomic Study Area	2,047,170	1,190,255	-

Sources: Calculated based on data from BLM 2012a, BLM 2013a, and Forest Service 2013.

Forage availability was estimated for all alternatives. Alternatives A, B, D, and E used the current data for active AUMs (obtained as explained above). Alternative C discounted the current data to remove 100 percent of active AUMs in ADH, as designated by the alternative. Alternative F discounted the current data to remove 25 percent of billed AUMs in ADH, as designated by the alternative. This information was used to calculate the total active and billed AUMs that would be available for grazing under each alternative, including those in and not in ADH. The results of these calculations are presented in **Table R-2**, Estimated Active and Billed Annual Animal Unit Months by Alternative, below.

Table R-2
Estimated Active and Billed Annual Animal Unit Months by Alternative

	Initial	Alternatives A, B, D, and E	Alternative C	Alternative F
Active				
Bruneau FO	109,567	109,567	19,080	109,567
Burley FO	123,505	123,505	46,554	123,505
Challis FO	53,570	53,570	5,936	53,570
Dillon FO	72,637	72,637	11,252	72,637
Four Rivers FO	118,918	118,918	86,624	118,918
Jarbridge FO	178,271	178,271	50,466	178,271
Owyhee FO	125,140	125,140	17,998	125,140
Pocatello FO	68,768	68,768	23,736	68,768
Salmon FO	55,966	55,966	13,494	55,966

Table R-2
Estimated Active and Billed Annual Animal Unit Months by Alternative

	Initial	Alternatives A, B, D, and E	Alternative C	Alternative F
Shoshone FO	196,137	196,137	44,422	196,137
Upper Snake River FO	140,084	140,084	10,083	140,084
Beaverhead-Deerlodge NF	154,629	154,629	111,797	154,629
Boise NF	59,319	59,319	49,723	59,319
Caribou-Targhee NF	288,344	288,344	228,684	288,344
Salmon-Challis NF	146,804	146,804	92,326	146,804
Sawtooth NF	155,511	155,511	72,267	155,511
Socioeconomic Study Area	2,047,170	2,047,170	884,443	2,047,170
Billed				
Bruneau FO	85,035	85,035	14,808	65,508
Burley FO	89,489	89,489	33,732	75,237
Challis FO	31,605	31,605	3,502	24,580
Dillon FO	54,155	54,155	8,389	42,714
Four Rivers FO	96,382	96,382	70,208	87,345
Jarbridge FO	150,048	150,048	42,476	122,424
Owyhee FO	107,620	107,620	15,478	84,536
Pocatello FO	58,829	58,829	20,305	49,199
Salmon FO	44,917	44,917	10,830	36,396
Shoshone FO	120,183	120,183	27,220	93,355
Upper Snake River FO	93,424	93,424	6,725	71,730
Beaverhead-Deerlodge NF	154,629	154,629	111,797	143,921
Boise NF	59,319	59,319	49,723	56,920
Caribou-Targhee NF	288,344	288,344	228,684	273,429
Salmon-Challis NF	146,804	146,804	92,326	133,185
Sawtooth NF	155,511	155,511	72,267	134,700
Socioeconomic Study Area	1,736,294	1,736,294	808,471	1,495,178

Sources: Calculated based on data from BLM 2012a, BLM 2013a, and Forest Service 2013.

Table R-3, Estimated Reduction in Annual Animal Unit Months by Alternative and Livestock Type, shows the resulting reductions in billed AUMs, calculated as the difference between the initial billed AUMs and the reduced billed AUMs under each alternative. AUMs are distinguished between those allocated to sheep, and those allocated to cattle and other animals, to allow different valuation of forage, as explained further below.

Table R-3
Estimated Reduction in Annual Animal Unit Months by Alternative and Livestock Type

	Alternatives A, B, D, and E	Alternative C	Alternative F
Total			
Bruneau FO	0	-70,227	-19,528
Burley FO	0	-55,757	-14,252
Challis FO	0	-28,103	-7,026

Table R-3
Estimated Reduction in Annual Animal Unit Months by Alternative and Livestock Type

	Alternatives A, B, D, and E	Alternative C	Alternative F
Dillon FO	0	-45,766	-11,441
Four Rivers FO	0	-26,174	-9,036
Jarbidge FO	0	-107,571	-27,623
Owyhee FO	0	-92,142	-23,084
Pocatello FO	0	-38,523	-9,630
Salmon FO	0	-34,087	-8,522
Shoshone FO	0	-92,963	-26,828
Upper Snake River FO	0	-86,700	-21,695
Beaverhead-Deerlodge NF	0	-42,832	-10,708
Boise NF	0	-9,596	-2,399
Caribou-Targhee NF	0	-59,660	-14,915
Salmon-Challis NF	0	-54,478	-13,619
Sawtooth NF	0	-83,244	-20,811
Socioeconomic Study Area	0	-927,823	-241,116
Cattle and Other			
Bruneau FO	0	-70,157	-19,508
Burley FO	0	-50,973	-13,029
Challis FO	0	-27,710	-6,927
Dillon FO	0	-44,857	-11,213
Four Rivers FO	0	-24,562	-8,480
Jarbidge FO	0	-103,319	-26,531
Owyhee FO	0	-90,634	-22,706
Pocatello FO	0	-34,665	-8,665
Salmon FO	0	-33,944	-8,486
Shoshone FO	0	-78,244	-22,580
Upper Snake River FO	0	-70,327	-17,598
Beaverhead-Deerlodge NF	0	-57,768	-14,442
Boise NF	0	-9,964	-2,491
Caribou-Targhee NF	0	-45,984	-11,496
Salmon-Challis NF	0	-57,274	-14,318
Sawtooth NF	0	-68,865	-17,216
Socioeconomic Study Area	0	-869,247	-225,688
Sheep			
Bruneau FO	0	-70	-20
Burley FO	0	-4,784	-1,223
Challis FO	0	-394	-99
Dillon FO	0	-909	-227
Four Rivers FO	0	-1,612	-556
Jarbidge FO	0	-4,253	-1,092
Owyhee FO	0	-1,507	-378
Pocatello FO	0	-3,859	-965
Salmon FO	0	-144	-36
Shoshone FO	0	-14,719	-4,248
Upper Snake River FO	0	-16,373	-4,097

Table R-3
Estimated Reduction in Annual Animal Unit Months by Alternative and Livestock Type

	Alternatives A, B, D, and E	Alternative C	Alternative F
Beaverhead-Deerlodge NF	0	-2,373	-593
Boise NF	0	-3,527	-882
Caribou-Targhee NF	0	-18,046	-4,512
Salmon-Challis NF	0	-2,318	-580
Sawtooth NF	0	-19,648	-4,912
Socioeconomic Study Area	0	-94,535	-24,417

Sources: Calculated based on data from BLM 2012a, BLM 2013a, and Forest Service 2013.

The economic value of forage is estimated based on the value of production associated with the forage. Values for cattle and sheep are estimated separately, with the value of forage for other animals considered equivalent to the value for cattle. Due to price fluctuations, average per-AUM values for cattle and sheep are based on the 2002 to 2011 average value of production estimates from the (US Department of Agriculture, Economic Research Service 2012). The value for cattle is \$50.37 per AUM, and the value for sheep is \$57.20 per AUM (in 2010 dollars). Including indirect and induced impacts, the per-AUM values are \$103.56 for cattle and \$130.80 for sheep in the primary study area and \$105.24 for cattle and \$133.60 for sheep in the primary and secondary study area (in 2010 dollars). **Table R-4**, Assumptions for Analysis of Impacts on Output for Livestock Grazing, shows the economic impact assumptions for cattle and sheep. The direct economic impact is the estimated change in livestock output per AUM; IMPLAN generates the indirect and induced impacts.

Table R-4
Assumptions for Analysis of Impacts on Output for Livestock Grazing

Economic Impact	Cattle	Sheep
Primary Study Area		
Direct Economic Impact (\$/AUM)	\$50.37	\$57.20
Indirect Economic Impact (\$/AUM) ¹	\$44.69	\$59.61
Induced Economic Impact (\$/AUM) ²	\$6.83	\$10.74
Total Economic Impact (\$/AUM)	\$101.90	\$127.54
Multiplier (Total Impact/Direct Impact)	2.02	2.23
Primary and Secondary Study Area		
Direct Economic Impact (\$/AUM)	\$50.37	\$57.20
Indirect Economic Impact (\$/AUM) ¹	\$44.92	\$59.86
Induced Economic Impact (\$/AUM) ²	\$6.90	\$10.83
Total Economic Impact (\$/AUM)	\$102.19	\$127.89
Multiplier (Total Impact/Direct Impact)	2.03	2.24

Note: All dollar values are in 2010 dollars.

¹ Indirect impacts reflect increased demand in sectors that directly or indirectly provide supplies to the livestock industry.

² Induced impacts reflect increased demand in the consumer and government sectors.

Table R-5, Assumptions for Analysis of Employment Impacts for Livestock Grazing, provides a summary of the employment impacts that would result, according to IMPLAN, based on unit changes in livestock AUMs.

**Table R-5
Assumptions for Analysis of Employment Impacts for Livestock Grazing**

Employment Impact	Cattle	Sheep
Primary Study Area		
Direct Employment (Jobs/1,000 AUMs)	0.000559	0.000980
Indirect Employment (Jobs/1,000 AUMs)	0.000338	0.000603
Induced Employment (Jobs/1,000 AUMs)	0.000067	0.000104
Total Employment (Jobs/1,000 AUMs)	0.000963	0.001688
Multiplier (Total Impact/Direct Impact)	1.72	1.72
Average Earnings per Job (2010 dollars)	\$36,839	\$22,890
Primary and Secondary Study Area		
Direct Employment (Jobs/1,000 AUMs)	0.000559	0.000980
Indirect Employment (Jobs/1,000 AUMs)	0.000338	0.000603
Induced Employment (Jobs/1,000 AUMs)	0.000067	0.000104
Total Employment (Jobs/1,000 AUMs)	0.000963	0.001688
Multiplier (Total Impact/Direct Impact)	1.72	1.72
Average Earnings per Job (2010 dollars)	\$36,904	\$22,934

Note: Direct, indirect, and induced employment impacts and average earnings per job are calculated using IMPLAN.

R.4 Recreation

Economic impacts from recreation are a function of visits to recreation areas and expenditures per visit. The analysis estimated the average annual party visits over a 20-year period (2015 to 2034) under each alternative for the primary study area. First, BLM recreational specialists provided data on estimated party visits, based on data from BLM's Recreation Management Information System, for the latest year available (Fiscal Year 2012) (BLM 2012b).

Second, BLM recreational specialists estimated the share of all party visits associated with several broad types of recreational activity: hunting, motorized recreation, and non-motorized recreation.

Third, BLM recreational specialists estimated initial shifts in recreation visits (if any) and projected future growth rates under each action alternative, based on knowledge of local recreational facilities and on management actions under each alternative. Note that these projections apply only to BLM-administered lands; the Forest Service recreational specialist determined that the overall number of visits to the National Forests would be unchanged, because potentially affected recreational activities are unlikely to occur during times that overlap with leks, and any displaced recreational activity is likely to move to another nearby location (i.e., recreational activity will simply move rather than ceasing altogether).

Fourth, the analysis divided the resulting projections into local and nonlocal, day and overnight trips, for each broad recreational category, based on the BLM recreational specialists' knowledge of local recreational activities. Only the share of nonlocal visits was considered in the impact analysis, based on the assumption that expenditures of local visitors would occur in the study area regardless of BLM's actions that impact recreational opportunities. Changes in nonlocal recreation patterns would alter the amount of money entering the study area. Nonlocal visitors were all those coming from over 60 miles away from the recreational area destination.

Fifth, the analysis used nonlocal party visit projections per alternative to estimate nonlocal individual visits per alternative by applying a ratio of persons per party visit, based on average party size data in **Table 3-87**, Visitor Spending from Recreation on BLM and USFS Land in Socioeconomic Study Area, FY 2011, of **Chapter 3, Section 3.X**, Social and Economic Conditions (Including Environmental Justice). **Table R-6**, Estimated Nonlocal Visits, Average Annual (2015–2034), shows the estimated nonlocal average annual individual visits over the 20-year period by alternative.

Table R-6
Estimated Nonlocal Visits, Average Annual (2015–2034)

Alternative	Nonlocal Day	Nonlocal Overnight on BLM	Nonlocal Overnight off BLM	Total Nonlocal
Alternative A	1,593,506	637,402	1,434,155	3,665,063
Alternative B	1,630,223	652,089	1,467,200	3,749,512
Alternative C	1,197,617	479,047	1,077,856	2,754,520
Alternative D	1,704,370	681,748	1,533,933	3,920,052
Alternative E	1,704,370	681,748	1,533,933	3,920,052
Alternative F	1,273,852	509,541	1,146,467	2,929,860

Source: Calculated based on BLM 2012b, as described in the text.

Expenditures per party per visit by type of expenditure (e.g., restaurants, groceries, camping, motels) were obtained from White and Goodding (2012). Based on these expenditures and average party size, expenditures per person per visit were estimated. IMPLAN individual sector price indices were used to convert estimated expenditures to 2010 dollars, and each type of expenditure was allocated to an IMPLAN sector. IMPLAN was then used to generate output, employment, and earnings multipliers per million dollars of expenditures. The estimates for average expenditure per visit, in 2010 dollars, are \$24.92 for nonlocal day visits, \$197.83 for nonlocal overnight visits, and \$89.18 for nonlocal overnight visits on national forests. These multipliers were applied to the estimated individual visits by alternative to calculate the impacts for each alternative. (The lower nonlocal overnight multiplier for national forests was applied to nonlocal overnight visits on BLM lands; the higher nonlocal overnight multiplier was applied to nonlocal overnight visits off BLM lands.) **Table R-7**, Assumptions for Analysis of Impacts on Output for Recreation Activities, shows the direct, indirect, and induced output per visit in 2010 dollars.

Table R-7
Assumptions for Analysis of Impacts on Output for Recreation Activities

Economic Impact	Primary Study Area	Primary and Secondary Study Area
Nonlocal Day Visit		
Direct Economic Impact ¹	\$24.92	\$24.92
Indirect Economic Impact ²	\$2.97	\$3.07
Induced Economic Impact ³	\$3.21	\$3.24
Total Economic Impact	\$31.10	\$31.23
Multiplier (total impact/direct impact)	1.25	1.25
Nonlocal Overnight Visit on BLM		
Direct Economic Impact ¹	\$89.18	\$89.18
Indirect Economic Impact ²	\$13.54	\$14.02
Induced Economic Impact ³	\$12.20	\$12.34
Total Economic Impact	\$114.92	\$115.53
Multiplier (total impact/direct impact)	1.29	1.30
Nonlocal Overnight Visit off BLM		
Direct Economic Impact ¹	\$197.83	\$197.83
Indirect Economic Impact ²	\$30.97	\$32.06
Induced Economic Impact ³	\$27.43	\$27.74
Total Economic Impact	\$256.23	\$257.62
Multiplier (total impact/direct impact)	1.30	1.30

¹Direct economic impact is the average expenditure per visit.

²Indirect impacts from IMPLAN reflect increased demand in sectors that directly or indirectly provide support for the recreation industry.

³Induced impacts from IMPLAN reflect increased demand in the consumer and government sectors.

Table R-8, Assumptions for Employment Impact Analysis for Recreation Activities, provides a summary of employment impacts according to IMPLAN results, based on unit changes in the number of visits.

Table R-8
Assumptions for Employment Impact Analysis for Recreation Activities

Employment Impact (annual number of jobs per visit)	Primary Study Area	Primary and Secondary Study Area
Nonlocal Day Visit		
Direct Employment	0.000244	0.000244
Indirect Employment	0.000025	0.000025
Induced Employment	0.000031	0.000031
Total Employment	0.000300	0.000300
Multiplier (Total Impact/Direct Impact)	1.23	1.23
Average Earnings per Job (2010 \$)	\$23,174	\$23,261
Nonlocal Overnight Visit on BLM		
Direct Employment	0.000820	0.000820
Indirect Employment	0.000128	0.000128
Induced Employment	0.000118	0.000118

Table R-8
Assumptions for Employment Impact Analysis for Recreation Activities

Employment Impact (annual number of jobs per visit)	Primary Study Area	Primary and Secondary Study Area
Total Employment	0.001066	0.001066
Multiplier (Total Impact/Direct Impact)	1.30	1.30
Average Earnings per Job (2010 \$)	\$24,918	\$25,034
Nonlocal Overnight Visit off BLM		
Direct Employment	0.001940	0.001940
Indirect Employment	0.000303	0.000303
Induced Employment	0.000263	0.000263
Total Employment	0.002506	0.002506
Multiplier (Total Impact/Direct Impact)	1.29	1.29
Average Earnings per Job (2010 \$)	\$23,842	\$23,954

Note: Direct, indirect, and induced employment impact and average earnings per job are calculated using IMPLAN.

R.5 References

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Appendix S

Non-Market Valuation Methods



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S. Non-Market Valuation Methods

S.1 Non-Market Valuation Methods

This section addresses economic valuation of three categories of non-market resources that are present in the study area and could potentially be affected by the alternatives. These three categories of non-market value are recreation, values of GRSG to households in the intermountain west, and value of the ranching tradition to the ranchers themselves, residents, and visitors to the region. Recreation is included because actions that promote the conservation of GRSG habitat may result in changes in recreation opportunities, such as increasing the amount of habitat for other wildlife species that may be hunted or viewed that depend on public lands, roads open or closed for recreation access, and the quality of the recreation experience.

The economic non-market values described in this appendix are not directly comparable to regional economic indicators commonly used to describe how natural resources on public lands contribute to the regional economic indicators such as output/sales, labor income, and employment. These indicators provide valuable information to the local public as well as to regional government agencies for purposes of public service and infrastructure planning. These impacts or contributions are often referred to as distributional effects as they describe the effects to the region. However, these indicators do not represent net economic value. For example, in economic terms, labor income associated with mineral production would actually be considered a cost to the producer. Similarly, expenditures by a recreation visitor associated with a visit to public lands would be viewed by the recreationist as a cost. One last example would be the total sales generated by the sale of minerals extracted from federally owned minerals: the total sales do not reflect the net economic value since the costs associated with the extraction are not accounted for (including labor income, supplies, and equipment, as well as potentially non-market costs such as those associated with pollution). This section considers the economic value of the non-market outputs, a concept described below.

S.1.1 Total Non-Market Economic Value

Many of the multiple uses in the study area are not bought and sold in competitive markets. For instance, many recreational visitors to public lands pay no or low admission fees, and the presence of and/or ability to view scenic landscapes, unique geological features, and wild animals such as GRSG have no “market price,” yet have value to people. In some cases people gain value from using these non-market resources, such as photographing ranch houses, old barns and bridges, collecting colorful rocks, driving backcountry roads, and other recreation on public lands; in other cases, protection of some natural resources provides both a use value (e.g., viewing ranch and agricultural land scenery, historic buildings, and wildlife) as well as a non-use value (e.g., the value some people hold for knowing that a specific natural resource exists and is protected even if they never intend to “use” or visit it).

Economists call the sum of these two values Total Economic Value. Use values typically can be consumptive use (e.g., hunting) and/or non-consumptive, such as viewing or being

present on site (e.g., camping and hiking). In contrast, non-use values occur off-site to people who derive enjoyment from knowing a scenic ranching community, historic mining town, natural environment, habitat or species exists in its natural state, either for themselves (existence value) and/or future generations (bequest value). Krutilla (1967) documents the conceptual origins of these two elements of non-use value, and Freeman (2003) provides a rigorous theoretical treatment.

Non-use or existence values can potentially be enjoyed by millions if the good or service (e.g., the presence of a specific wild species such as wild salmon or rare bird species) is of widespread interest. Thus, while the non-use value per household may much lower than a value per day received by a visitor, in total, non-use values may be quite large.

S.1.2 Recreation Values

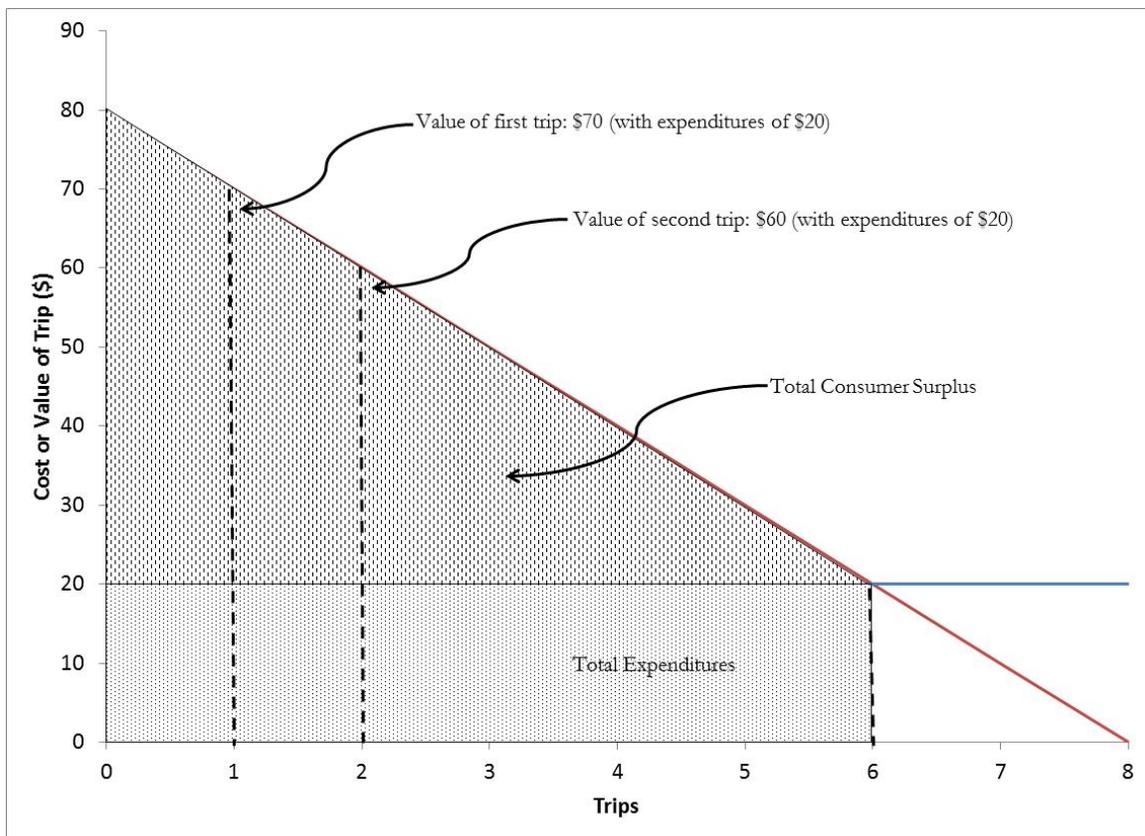
Economists measure the net economic use and non-use values as “Consumer Surplus.” At its most basic level, consumer surplus is the maximum amount a person would pay minus the amount they actually have to pay. Consumer surplus, which is also sometimes referred to as “net willingness to pay,” is a measure of benefit that has been used by economists and federal agencies for decades (US Water Resources Council 1983; US Environmental Protection Agency 2009, 2010).

For public land recreation, especially on BLM and Forest Service recreation sites, entrance fees are typically very low or non-existent, so the value people place on these public land recreation opportunities is not fully measured simply by the entrance fees they pay. In economic terms, there is not a competitive market or a “market clearing price” for access to public recreation sites. Therefore, there can be a substantial difference between what people pay to visit a recreation site (e.g., entrance fees plus travel costs, including the value of time) and the maximum amount they would pay.

A common non-market valuation method used for recreation is the travel cost method. In this method, economists survey visitors to a recreation site and collect data on their frequency of trips, travel distance and costs incurred to access the site. Because the survey uses information from actual visitors, the travel cost method is a “revealed preference” method of valuation; economists use the travel costs as a proxy to determine the value that people gain from using the site. Variations in the travel cost across visitors, along with their respective number of trips, allow economists to statistically estimate a relationship between travel cost and quantity of trips – an aggregate demand curve for the recreation site, much like a demand curve for goods and services that are sold in competitive markets. This aggregate demand curve will tend to show that individuals with a relatively high travel cost take fewer trips on average, while individuals with a lower cost take more trips on average. From this aggregate demand curve, economists can calculate consumer surplus. Many of the consumer surplus values for recreation in the literature (Loomis 2005) and recently developed by the Forest Service (Bowker et al. 2009) rely upon the travel cost method.

Diagram S-1, Consumer Demand Curve and Consumer Surplus for Recreation Trips, provides an illustration of a demand curve for recreation on a particular site. In Diagram S-1, the aggregate demand is shown on an average basis, that is, for an average individual consumer. The downward-sloping diagonal line in Diagram S-1 represents the relationship between the travel cost and quantity of trips demanded by this average consumer. In the diagram, the value of the first several trips is relatively high (\$70 for the first and \$60 for the second trip), while the value of the sixth trip is lower (\$20 in the diagram). In a travel cost method study, these values are statistically derived from the aggregate demand calculated for the entire population. The downward slope of the demand curve corresponds to declining value associated with each trip, which is typical for most goods and services.¹ It also corresponds to the fact that visitors will take fewer trips to areas with a higher travel cost.

Diagram S-1. Consumer Demand Curve and Consumer Surplus for Recreation Trips



¹ Note that for some types of recreation use, users may gain increased value over a portion of the number of trips; for example, mountain bikers may experience increased enjoyment of subsequent trips to a single location as their trail-specific skills and knowledge increase with repeat visits. Climbers and other users may also experience similar gains over repeat visits. However, even these users will likely hit a point where the marginal value begins to decrease with more trips.

Each visitor receives a net benefit from each trip, which is measured by the difference between what they had to pay and the maximum amount they would pay for each trip. In **Diagram S-1**, Consumer Demand Curve and Consumer Surplus for Recreation Trips, the net benefit for the average visitor is the difference between their actual expenditures of \$20 per trip and the maximum amount they would pay for each trip. As shown, the first trip has a net benefit of \$50 (\$70 of value less \$20 in expenditures), the second trip \$40 (\$60 less \$20), and so on until the sixth trip. At the sixth trip the visitor's cost is the same as their benefit, and hence there is no net benefit from further trips. Thus, this gain to the visitor over and above what they spend is their "consumer surplus."

Given the large range and diversity of sites in the study area, the BLM and Forest Service did not perform original travel cost method analysis of visitation in the study area. Rather, they relied upon transferring existing recreation values from travel cost method studies such as Bowker et al. (2009) and other recreation values from the existing literature (Loomis 2005; Loomis and Richardson 2007; USFWS 2009) to the recreation activities in the study area, focusing on existing studies in the Rocky Mountain and Great Basin area (Idaho, Montana, Utah, Colorado, Wyoming, Arizona, New Mexico, and Nevada). This approach, known as "Benefit Transfer," is well-developed in academic and policy literature and has been used by federal agencies including the US Environmental Protection Agency (see Griffiths et al. 2012 for a recent listing of economic studies where benefit transfer was used), US Army Corps of Engineers, US Bureau of Reclamation, Forest Service (Forest Service 1991; also see Ervin et al. 2012 for a recent application of benefit transfer to the Mount Hood National Forest), and other agencies. Benefit transfer is widely used in academic applications as well; see Wilson and Hoehn (2006) for a series of journal articles on benefit transfer.

The BLM measures recreation activity in various units, including a "visitor hour," which represents the presence of one or more persons in an area for continuous or simultaneous periods of time aggregating 1 hour (i.e., one person for 1 hour or two persons for 30 minutes each). A "visitor day" as defined by BLM represents 12 visitor hours (BLM 2003). The BLM Recreation Management Information System provides data on recreation visitor days (RVDs); to be compatible with these units, BLM identified non-market values for various recreation activities in units of dollars per RVD. Values from economic literature, based on primary research conducted on various recreation sites, were matched to BLM and Forest Service recreation activity classifications. **Table S-1**, Consumer Surplus for Recreation Activities, provides a listing of the values per day representing the Idaho and Southwest Montana sub-region.

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Forest Service recreation activity classifications. **Table S-1**, Consumer Surplus for Recreation Activities, provides a listing of the values per day representing the Idaho and Southwest Montana sub-region.

Table S-1
Consumer Surplus for Recreation Activities

Recreation Activity Category	Consumer Surplus per Visitor Day (2012 dollars)
Backpacking	36.48
Camping	31.73
Cross Country Skiing	36.32
Fishing	66.00
Floatboating/Rafting/Canoeing	82.28
General Recreation	42.96
Hiking	107.16
Hunting	65.51
Motorboating	65.24
Mountain Biking	175.21
Off-Road Vehicle Driving/Off-Highway Vehicle	51.35
Other Recreation	47.69
Picnicking	52.27
Pleasure Driving	71.65
Rock Climbing	61.32
Sightseeing	41.33
Snowmobiling	51.75
Swimming	35.10
Waterskiing	69.23
Wildlife Viewing	37.00

Sources: Rosenberger 2012; Loomis 2005; Loomis and Richardson 2007; Bowker et al., 2009; USFWS 2009.

Consistent with the description above of consumer surplus and the travel cost method, readers should interpret the values in **Table S-1**, Consumer Surplus for Recreation Activities, as the consumer surplus or the amount of value that the average visitor derives from a full day of recreation beyond their actual expenditures. Thus, a typical off-highway vehicle user would pay an average value of \$51.35 more than their trip cost to have the opportunity to participate in a typical day of driving off-road vehicles.

Table S-2, Total Consumer Surplus for Recreation in Idaho and Southwest Montana Sub-Region, shows the total consumer surplus associated with recreation activities on BLM-administered and National Forest System lands for the sub-region, including the BLM Field Offices of Bruneau, Burley, Challis, Four Rivers, Jarbidge, Owyhee, Pocatello, Salmon, Shoshone, and Upper Snake (in Idaho) and Dillon (in Montana), as well as five National Forests: the Beaverhead-Deerlodge, Boise, Caribou-Targhee, Salmon-Challis, and Sawtooth. Note that NVUM does not provide recreation data for the Curlew National Grassland.

RVDs on BLM lands presented in **Table S-2**, Total Consumer Surplus for Recreation in Idaho and Southwest Montana Sub-Region, are calculated directly from Report 26 from the BLM RMIS (Report 26 provides RVDs based on recorded visitor hours – defined above – and dividing by twelve). For this analysis, BLM used average RVDs per year over the period 2008 to 2012. RVDs on the five national forests are calculated from the most recent available data (ranging from FY2005 to FY2009 for the forests noted) from the USFS National Visitor Use Monitoring (NVUM) report (Forest Service 2013). RVDs for National Forest lands were calculated based on the total number of site visits, the “main activity” reported by recreators, and the number of hours per day reported engaging in that activity, with the number of RVDs equal to the number of hours divided by 12. Note that conservation measures for GRSB may affect only specific types and fractions of the public lands that contributed to the visitor days used to estimate the surplus values in **Table S-2**, Total Consumer Surplus for Recreation in Idaho and Southwest Montana Sub-Region.

Table S-2
Total Consumer Surplus for Recreation in Idaho and Southwest Montana Sub-Region

Recreation Activity	Average RVDs Per Year	Total Consumer Surplus (millions of 2012 dollars)
Backpacking	156,967	\$5.7
Big Game Hunting	400,326	\$26.2
Camping	1,633,912	\$51.8
Cross Country Skiing	104,161	\$3.8
Fishing	748,876	\$49.4
Floatboating/Rafting/Canoeing	275,991	\$22.7
General Recreation	90,202	\$3.9
Hiking	405,905	\$43.5
Hunting – Other	755,614	\$49.5
Motorboating	147,705	\$9.6
Mountain Biking	70,077	\$12.3
Off Road Vehicle Driving/ Off-Highway Vehicle	331,502	\$17.0
Other Recreation	568,989	\$27.1
Picnicking	226,755	\$11.9
Pleasure Driving	329,768	\$23.6
Rock Climbing	25,166	\$1.5
Sightseeing	874,365	\$36.1
Small Game Hunting	89,930	\$5.9
Snowmobiling	273,649	\$14.2
Swimming	43,151	\$1.5
Waterfowl Hunting	35,193	\$2.3
Waterskiing	7,403	\$0.5
Wildlife Viewing	313,937	\$11.6
Total	7,909,545	\$431.8

Source: BLM 2012; Forest Service 2013; consumer surplus per RVD shown in **Table S-1**, Consumer Surplus for Recreation Activities.

To estimate impacts on consumer surplus associated with changes in RVDs, BLM economists worked with BLM and Forest Service recreation specialists to project how RVDs for various activities would change under the alternatives. Forest Service recreation specialists determined that RVDs would not differ across the alternatives for National Forest System lands, for the reasons documented in **Section 4.X, Recreation**, and **Section 4.X, Social and Economic Conditions (Including Environmental Justice)**. However, BLM recreation specialists projected that RVDs on BLM-administered lands would be differentially affected based on the alternative chosen. **Table S-3**, Forecasted Changes in RVDs in Idaho and Southwest Montana Sub-Region, provides a summary of changes in visits and annual growth associated with each type of activity and each alternative analyzed.

Table S-3
Forecasted Changes in RVDs in Idaho and Southwest Montana Sub-Region

Type of Recreation Activity ¹	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
<i>Changes in visits</i>						
Hunting	0%	-5%	-20%	-5%	-5%	-20%
Motorized Recreation	0%	-15%	-20%	-10%	-10%	-20%
Non-Motorized Recreation	0%	5%	5%	5%	5%	5%
<i>Annual growth</i>						
Hunting	1%	1.25%	-1%	1.5%	1.5%	-0.5%
Motorized Recreation	1%	1.25%	-1%	1.5%	1.5%	-0.5%
Non-Motorized Recreation	1%	1.25%	-1%	1.5%	1.5%	-0.5%

Source: BLM 2013.

Table S-4, Projected RVDs in Idaho and Southwest Montana Sub-Region By Alternative, summarizes the resulting predictions for RVDs. This table includes forecasted RVDs on BLM-administered lands (i.e., affected by the changes described above) as well as on National Forest lands (i.e., not forecasted to change from current values).

Table S-4
Projected RVDs in Idaho and Southwest Montana Sub-Region By Alternative

Recreation Activity	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Backpacking	160,454	162,926	155,087	163,962	163,962	156,620
Big Game Hunting	454,094	445,338	282,926	459,793	459,793	300,936
Camping	1,756,826	1,843,971	1,567,651	1,880,496	1,880,496	1,621,687
Cross Country Skiing	107,110	109,201	102,572	110,077	110,077	103,868
Fishing	804,793	844,437	718,732	861,053	861,053	743,314

Table S-4
Projected RVDs in Idaho and Southwest Montana Sub-Region By Alternative

Recreation Activity	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F
Floatboating, Rafting, Canoeing	301,724	319,969	262,118	327,616	327,616	273,431
General Recreation	102,317	110,906	83,671	114,506	114,506	88,997
Hiking	434,213	454,283	390,645	462,694	462,694	403,089
Hunting – Other	756,230	756,129	754,269	756,295	756,295	754,475
Motorboating	160,810	147,250	119,093	156,301	156,301	123,482
Mountain Biking	77,509	82,778	66,070	84,986	84,986	69,338
Off Road Vehicle Driving/ Off-Highway Vehicle	370,338	330,153	246,703	356,975	356,975	259,711
Other Recreation	622,781	660,919	539,991	676,904	676,904	563,639
Picnicking	240,909	250,944	219,125	255,150	255,150	225,348
Pleasure Driving	365,098	328,541	252,626	352,942	352,942	264,460
Rock Climbing	28,546	30,943	23,344	31,947	31,947	24,830
Sightseeing	883,470	889,925	869,457	892,630	892,630	873,460
Small Game Hunting	102,009	100,042	63,557	103,289	103,289	67,603
Snowmobiling	283,333	273,313	252,504	280,001	280,001	255,748
Swimming	48,946	53,055	40,026	54,777	54,777	42,574
Waterfowl Hunting	39,919	39,150	24,872	40,420	40,420	26,455
Waterskiing	8,397	7,368	5,232	8,055	8,055	5,565
Wildlife Viewing	336,100	351,813	301,989	358,399	358,399	311,733
Total (RVDs)	8,445,927	8,593,356	7,342,259	8,789,270	8,789,270	7,560,363
Total (consumer surplus)¹	\$462.1	\$469.2	\$398.0	\$480.4	\$480.4	\$410.2

Source: BLM 2013; Forest Service 2013; final row uses consumer surplus per RVD shown in **Table S-1**, Consumer Surplus for Recreation Activities.

1. Values in millions of year 2010 dollars.

Section 4.X, Social and Economic Conditions (Including Environmental Justice), provides a summary of the implications of these results for the consumer surplus value associated with each alternative.

S.1.3 Values Associated with Greater Sage-Grouse Populations

Economists have long recognized that wildlife species, especially rare, threatened, and endangered species, have economic values beyond just viewing. This is supported by a series of legal decisions and technical analyses. The US Court of Appeals in 1989 first clarified that the US Department of the Interior, in assessing damages in Natural Resource Damage Assessment cases, should include what it termed as “passive use values,” that is, existence values provided to non-users of the species, as a compensable value in addition to any use value. These passive use values are also included in Oil Pollution Act damage assessments as well. The term passive values is interchangeable with the term non-use values defined previously. This ruling and subsequent analysis for Natural Resource Damage Assessment and Oil Pollution Act assessments are consistent with well-established economic theory showing that people derive value from passive use or non-use as well as active uses of resources (Krutilla 1967). Economists have devoted a great deal of conceptual and empirical work to refining concepts and developing methods to measure these passive use values.

The dominant methods are “stated preference” methods, of which the most prominent is the Contingent Valuation Method. The basic element of this method is to use a survey to construct or simulate a market or referendum for protection or improvement of a natural environment, habitat, or species, and then having the respondent indicate whether or not they would pay for an increment of protection, and if so, how much they would pay. While the method has developed a great deal of sophistication that has increased the validity of the willingness to pay responses, there is admittedly a degree of bias that can result in stated willingness to pay exceeding actual willingness to pay by a factor averaging two to three (Loomis 2011; Murphy et al. 2005; List and Gallet 2001). While not a perfect estimator of willingness to pay, the Contingent Valuation Method provides a useful means for estimating the public’s passive use values.

Numerous academic papers and even entire books have been written on the Contingent Valuation Method. Mitchell and Carson (1989) was one of the first, while Alberini and Kahn (2006) is a more recent treatment. To date there have been about 7,500 Contingent Valuation Method studies in over 130 countries (Carson 2011). A number of federal agencies have used or referenced stated preference methods, including the US Bureau of Reclamation, US Environmental Protection Agency, National Park Service, and state agencies such as the California Department of Fish and Game, Idaho Fish and Game, and Montana Fish, Wildlife, and Parks. The USFWS commissioned an original Contingent Valuation Method study of the economic values the public receives from reintroduction of wolves in the areas of Idaho, Montana, and Wyoming, and used those values in an EIS on wolf reintroduction (USFWS 1994). The US Bureau of Reclamation, National Park Service, and Lower Elwha S’Klallam Tribe commissioned a Contingent Valuation Method study on the value of removal of the Elwha and Glines Canyon Dams (Meyer et al. 1995). The US Bureau of Reclamation also commissioned an original Contingent Valuation Method study

on the values of providing stable river flows to benefit riparian vegetation, endangered species, and cultural resources. That study was cited by then-Secretary of the Interior Bruce Babbitt as a factor in selecting the more protective flow regime from Glen Canyon Dam despite it having more foregone hydroelectricity (Babbitt 1996).

The BLM and Forest Service conducted a literature search to demonstrate the potential range of values that could be associated with species that are candidates for listing as threatened or endangered, such as GRSG populations. Analysts first verified there are no existing studies on Total Economic Value or non-use valuation specific to the GRSG. This is not an uncommon occurrence, as there are dozens of rare or potentially threatened species that have not been valued despite the very high policy relevance of the species and the large magnitude of economic value at stake in these policy decisions.

The BLM and Forest Service used three criteria to identify studies that are most applicable to the current analysis: (1) whether the species valuation study was located in the same geographic region as the GRSG habitat; (2) whether the species was listed or not listed as threatened or endangered; and (3) whether the species was hunted or not (implying a mix of use and non-use values).

The primary database of articles was the recent peer-reviewed journal article by Richardson and Loomis (2009), which is a compilation of the economic values of threatened, endangered, and rare species. A literature review was also conducted to determine if there had been any recent studies on GRSG or closely related species. Unfortunately, there is not a perfect match in the literature in terms of geographic region (intermountain) and a species that is both hunted and rare. **Table S-5**, Existing Estimates of Annual Total Economic Value of Protecting Habitat for Species Similar to GRSG, provides a summary of the studies with features most similar to the GRSG species.

As can be seen in **Table S-5**, Existing Estimates of Annual Total Economic Value of Protecting Habitat for Species Similar to GRSG, there is one study with a geographic region overlapping the sub-region (Mexican spotted owl), and one study on a species that was hunted at the time (wild turkey). At the time of the study, the Mexican spotted owl was a threatened species under the Endangered Species Act, and respondents were told in the survey that it was a threatened species. The whooping crane, red-cockaded woodpecker, and peregrine falcon studies involved an endangered species.

All of these studies used the Contingent Valuation Method in a mail survey. Households were asked whether they would pay a specific dollar amount, with that amount varying across individuals in the sample (i.e., the valuation questions were “closed-ended,” although the wild turkey study and red-cockaded woodpecker also used an open-ended valuation question for some respondents). Researchers used the closed-ended valuation questions to generate a statistical valuation function. This valuation function exhibited internal validity: the higher the dollar amount households were asked to pay, the lower the percentage of them that would pay that dollar amount.

Table S-5
Existing Estimates of Annual Total Economic Value of Protecting Habitat for Species
Similar to GRSG

Region	Species	Listed	Hunted	Annual Value per Household ^b	Change Valued
Four Corners (AZ, CO, NM, UT)	Mexican Spotted Owl	Yes	No	\$58.49	Avoid extinction in 15 years in Four Corners region
New England	Wild Turkey	No	Yes	\$16.72 ^a	Avoid extinction in New England
Texas (also L.A., NYC, Chicago, Atlanta)	Whooping Crane	Yes	No	\$43.69 ^a	Avoid extinction
Maine	Peregrine Falcon	Yes	No	\$32.37 (one time)	Restore self-sustaining population
South Carolina & Rest of US	Red-Cockaded Woodpecker	Yes	No	\$14.69	Restore habitat to increase chance of survival to 99%

Sources: Loomis and Ekstrand 1997 (Mexican spotted owl); Stevens et al. 1991 (New England wild turkey); Bowker and Stoll 1988 (whooping crane); Kotchen and Reiling 2000 (peregrine falcon); Reaves et al. 1999 (red-cockaded woodpecker). All of these sources are as cited in Richardson and Loomis (2009).

Notes:

- a. Average of estimates from the study.
- b. As noted in the text, these stated preference values for household may have a degree of hypothetical bias that could overstate the actual monetary amount households would pay by a factor of two to three.

With the exception of the peregrine falcon study, which asked respondents to commit to a one-time payment, each survey asked respondents to pay annually to accomplish the stated goal (typically, preventing the species from going extinct in the region of interest, although this varied by study as the table shows). For the peregrine falcon and red-cockaded woodpecker, households were told that their payment would restore a self-sustaining population (i.e., one that would not go extinct).

The original wild turkey study provided an estimate of three values (in 1990 dollars) that were averaged and then adjusted to 2012 dollars using the Consumer Price Index, resulting in a value of \$16.72 per household per year. The same procedure was used to update the 1996 dollar values of the Mexican spotted owl to 2012, resulting in values of \$58.49 per household per year. The higher values for the Mexican spotted owl may be due to the large area of habitat (4.6 million acres stated in the survey and shown on a map) that would be protected in the Four Corners area by paying, and the fact the species was not a hunted species. The whooping crane values are fairly large at \$43.69 per household per year; this value represents a Total Economic Value, including both use and non-use value, as some of the sample included people who actively “used” the species (as wildlife viewers).

The study values in **Table S-3**, Existing Estimates of Annual Total Economic Value of Protecting Habitat for Species Similar to GRSG, demonstrate that many people, or segments of the public, hold substantial value for protecting threatened and endangered species, which

may carry over to the GRSG. However, additional studies would be needed to identify values specifically for GRSG protection. Given that protection is a public good available to all households in the intermountain west, the aggregate or intermountain regional value could be substantial.

S.1.4 Values Associated with Grazing Land

Public lands managed for livestock grazing provides both market values (e.g., forage for livestock) and non-market values. Many ranchers themselves value the ranching lifestyle in excess of the income generated by the ranching operations. This is evident in some ranch sales transaction data which suggests some ranch properties have sold for more than the market value of the public land forage (Bartlett et al. 2002; Taylor 2006). One of the primary reasons public lands ranchers indicate they own land is for the “tradition, values and culture” rather than primarily for profit (Tanaka et al. 2005). Many public land ranchers work elsewhere part-time and rely on the ranch for only 20 percent of their income (Hanus 2011), relying instead on outside jobs or other savings to support their ranching lifestyle. Land appreciation has also provided increased value and therefore served as an economic resource for ranchers (Tanaka et al. 2005; Torell et al. 2005). As several of these authors note, changes in public land grazing that reduce the profitability of grazing may not directly translate to withdrawal from ranching, due to the fact that economic factors are not necessarily the primary motivation for public land ranching.

Some studies have found non-market values of ranching associated with use values to residents (Mangun et al. 2005) and tourists in the form of open space and western ranch scenery (Ellingson et al. 2006). However, some others see non-market opportunity costs associated with livestock grazing that may, depending on management methods and other variables, reduce native plant species and forage for wildlife (Todres et al. 2003). The potential exists for other residents or visitors to prefer lifestyles or have lifestyle needs that are not consistent with grazing or ranching lifestyles or landscapes.

Methods available to measure the use values to residents and tourists associated with grazing land include stated preference methods similar to contingent valuation (Ellingson et al. 2006; Mangun et al. 2005). Methods for attempting to isolate any amenity values that ranchers themselves may hold include the hedonic price method. This method uses observed sale prices of ranch land as a function of the characteristics, including both conventional market factors (e.g., size of ranch and quantity of forage) but also amenity values (e.g., scenic views, presence of wildlife species, and on-site fishing or hunting opportunities) that may be provided by the ranch (Torell et al. 2005). The additional value that ranchers pay for the amenity values of the ranch provide some indication of how much they value these amenities. Using the hedonic price method to estimate a “lifestyle value” separate from the market and amenity values has yet to be done in the literature. This may be due to the fact that lifestyle values attributed to living on a ranch or ranching is present on nearly all ranch properties sold. As such, statistically it is difficult to isolate the contribution of ranching lifestyle to differences in ranch property values as ranching lifestyle is a common feature of nearly all ranch properties sold.



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